

CATALOGUE OF MAMMALS IN THE ZOOLOGICAL SURVEY OF INDIA*

IV PRIMATES : PROSIMII, TARSIOIDEA AND PLATYRRHINE¹

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(Plate II)

Except the Oriental Lorisoidea, the groups of Primates under report are very poorly represented in this collection. There are in all 171 specimens representing forty-eight forms. For want of skulls and localities, the identification in some cases is provisional. Several geographical and individual variations have been recorded in the present study. Wherever subspecies cannot be determined, the distributions are not given.

I am indebted to Drs. S. L. Hora and B. Biswas of this department for many useful suggestions.

REMARKS ON THE CLASSIFICATION

Although no attempt is here made to deny the affinities of Tupacoids with the Primates, yet it has been thought convenient to exclude them from the Primates for the present (*contra* Simpson, 1945). It matters a little whether border-line forms between any two groups are referred to one group or the other; but it does matter much to cause a radical change in the old procedure (*see also* Evans, 1942; Ellerman and Morrison-Scott, 1951, pp. 8 and 189; and Hill, 1953, pp. 5 and 24).

Hill (1953) in his monumental monograph has divided Primates into two grades, Strepsirhine and Haplorhine. Strepsirhine has been further divided into suborders Lorisoidea and Lemuroidea, and Haplorhini into suborders Tarsioidea and Pithecoidea. Preferring a compromise between this system and the one advocated by Simpson (1945) in his great work on the classification of mammals, I would divide the Primates into three suborders, Prosimii, Tarsioidea² and Anthropeoidea³ which arrangement was also recommended by Gadow (1898). While giving Tarsioids an infraordinal rank under the suborder Prosimi, Simpson (*op. cit.*, p. 182) says "The Paleocene and the earlier Eocene members of the two groups are very much alike, indeed often indistinguishable on more than a generic level unless known by excellent material. Synthetic and intermediate types occur" In all probability, as Simpson (*op. cit.* p. 185), himself suggests, Anthropeoidea also arose from Prosimian ancestors if not later than Tarsioidea at least

* The earlier parts (No. II and III) of this series were headed: "Catalogue of Mammals in the Indian Museum (Zool. Surv.)"

¹ For reports Nos. I, II and III see Khajuria (1953, 1955 and 1956). Report No. I also contains some general remarks on the collection and the explanation of the abbreviations used in the measurements of the skulls.

² An earlier name for this group is Tarsii (Gadow, 1898) but is not in general usage.

³ No doubt the name Pithecoidea Pocock as used by Hill (*op. cit.*) for this group is more expressive than the earlier and commonly used name Anthropeoidea but the rejection of the nomenclatorial terms on the basis of their literary meaning will lead to a great confusion.

about the same time and, therefore, there should be contemporaneous synthetic types between Prosimii and Anthropeida also. The fact that those types have not been discovered so far cannot jeopardize their existence. Regarding the arrangement followed by Hill (*op. cit.*) it appears to me that the differences between Tarsioids and Anthropoids are more than those between Lorisoids and Lemuroids. These differences, on the whole, appear to be almost of the same value as those between Prosimii and Anthropeida. This consideration coupled with the belief that both Tarsioida and Anthropeida arose from the Prosimian ancestors in the Palaeocene or the early Eocene leaves me with no alternative but to accede to all these three groups equal taxonomic ranks.¹

The classification of Prosimii is strictly in accordance with Simpson (*op. cit.*), except that following Hill (*op. cit.*) Galagos are raised to a family rank.

The classification of Cebidae below generic level is in more unsatisfactory state than that of the other Primates. Good revisions except a few like that of genus *Ateles* by Kellogg and Goldman (1944) are not available; and in many cases the results of various workers are contradictory. In the case of Callithricidae Hershkovitz (1949) has cleared off much of the difficulty, although he has left the genus *Callithrix* as it was. I have followed him in the division of Callithricidae into three genera, *Leontocebus*, *Marikina* and *Callithrix* with three subgenera under *Marikina*. Thomas's (1922) genera, *Mico* and *Hapale*, are considered as synonyms of *Callithrix*, but *Cebuella* has been given a subgeneric rank on account of some dental peculiarities and diminutive size. Pocock (1925) and Simpson (1945) have been mostly followed in the classification of the generic and super-generic groups of Platyrrhine.

THE CATALOGUE
Sub-order PROSIMII
Infra-order LEMURIFORMES
Super-family LEMUROIDEA
Family LEMURIDAE
Sub-family LEMURINAE
Lemur² catta Linnaeus

1758. *Lemur catta*, Linnaeus, *Syst. Nat.* I, p. 30 (Madagascar).

Material—

10560	♀	. Skin and skull	. Zool. Gardens, Calcutta (13-1-1914).
10729	♂	. Skull (exhibited)	Zool. Gardens, Calcutta (30-9-1929).
12270 (I.M. 74a)	♂	. Skin and skull (damaged).	Madagascar. E. F. Kelaart (1852).
12271 young (I.M. 74b).	♂	. Skin and skeleton	W. Rutledge (4-2-1876).
12272	.	. Skin (exhibited)	....

¹ When this work was in press, Hill's (1955) wonderful work on Tarsioida was received. A perusal of his learned views (pp. 1—2) has increased my belief in the correctness of the classification here recommended.

²Hill (*op. cit.*) has divided the genus *Lemur* into three subgenera, *Lemur*, *Varecia* and *Prosimia*. Since the species included under the sub-genus *Prosimia* are distinguishable on the basis of important cranial characters, it seems reasonable to replace sub-genus *Prosimia* by three sub-genera typified by (1) *Lemur macaco*, (2) *L. mongoz* and (3) *L. rubiventis* and *L. fulvus*. However, as I have not examined sufficient material no names for these sub-genera are proposed here.

Measurements—

Skin No. 10560.—*hb*, 450 ; *t*, 575 ; *hf*, 100.

*Skulls.*¹

Z. S. I. Reg. Nos.	<i>l</i>	<i>cb</i>	<i>ow</i>	<i>mw</i>	<i>ml</i>
10560 . . .	82.5	74.7	47.1	16.9	—
10729 . . .	84.3	76.8	47.1	18.2	55.5
12270 . . .	82.5	75.1	48.4	18.7	54.2

Remarks.—The pinnae of the specimens are well clothed with long white hairs on both sides ; and the hairs on the hands are much darker at their bases (*cf.*, Hill, 1953, p. 389). The description of the pelage well agrees with that given by Elliot (1913). Elliot (*op. cit.*) and Hill (*op. cit.*) gave the length of the skull as 75 mm. which is noticeably shorter than those of the adult skulls in this collection.

Distribution.—Madagascar : from Fort Dauphin towards the south, and along the western border to the Morondava River.

Lemur variegatus variegatus Kerr

1792. *Lemur macaco variegatus*, Kerr, *Anim. King.* p. 86 (Madagascar).

Material—

10566	Skin . . .	No history.
12276, 12277,	} Skins and skulls . . .	Do.
12278, 12279		

Remarks.—The specimens agree well with the description of this sub-species as given by Hill (1953) ; but as stated by him, there are many variations. In all the skins there is a variable amount of pale orange yellow in the white parts of the pelage especially on the dorsal surface. In No. 12276, it is much more pronounced. Nos. 10566 and 12276 are much darker in the black parts of their pelage than other specimens. An important variation occurs in the extension of the white of the dorsal side. In No. 12276 it is connected with the white of the sides of the head and the neck by a broad white mid-dorsal band, while in Nos. 10566, 12278, and 12279 it does not extend beyond the shoulders. No. 12277 shows an intermediate condition between these two extremes.

Distribution.—Coastal area of Madagascar north of the Bay of Antongil.

¹ Young skulls and those inserted within the skins are not measured.

Lemur macaco Linnaeus

1766. *Lemur macaco*, Linnaeus, *Syst. Nat.* I, p. 34 (Madagascar).

Material—

6789	♂	.	.	Skin	.	W. Rutledge.	
10557	♀	.	.	Do.	.	Zool. Gardens, (26-10-1917).	Calcutta
10558	♂	.	.	Do.	.	Zool. Gardens, (21-9-1914).	Calcutta
12273	♂	.	.	Do.	.	Purchased (29-11-1879).	
12274 (I.M. 76b).	♂	.	.	Skin and skull without lower jaw.	.	Rajendar Mullick (1864).	
12275 (I.M. 76c).	♂	.	.	Skin	.	Purchased (27-11-1879).	
12285	♂	.	.	Skin (damaged) and skull.	.	Zool. Gardens, (1-9-1914).	Calcutta

Measurements—

Skins—

Z. S. I. Reg. Nos.	<i>hb</i>	<i>t</i>	<i>hf</i>	<i>e</i>
10557	475	..	100	37.5
10558	469	515	107.5	25

Skull No. 12285.—*l*, 94.5; *cb*, 86.5; *ow*, 53.5; *mw*, 18.5; *ml* 64.2.

Remarks.—The ventral surface is slightly paler than the dorsal surface in the males also. In the female the forelimbs are much paler than the neck and the hind limbs. The tail is well-suffused with orange especially towards the tip. The toes are blackish only towards their distal ends. There are no red suffusions on the occiput. The base of the tail is yellowish with an orange tinge (*cf.* Hill, 1953, p. 402). In the skull No. 12285 there are large bony tumours on the anterior ends of the premaxillae, the maxillae and the nasals (Pl. II, figs. 1 and 2). This has been diagnosed by Prof. S. K. Bose of Nil Ratan Sircar Medical College, Calcutta, as a case of exostosis which according to him sometimes occurs in mammals. The left tumour is much larger and is perforated by holes communicating with the sockets of the canine and of the first premolar.

Distribution.—Madagascar: confined to the forested parts of north-west coastal area and to the neighbouring coastal islands, including Nosy bé. Range extends southwards as far as Bay of Bombetoka (Hill, 1953).

Lemur fulvus rufus Audebert

1800. *Lemur rufus*, Audebert, *Hist. Nat. Singes makis*, p. 12, pl. 2 (Madagascar).

Material—

10559	♂	.	.	Skin	.	Zoological Gardens, Calcutta (11-11-1914)	
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Measurements of the skin.—*hb*, 400; *t*, 489; *hb*, 100; *e*, 31.2.

Remarks.—The following variations are worthy of note. The scrotum is brownish black which colour also spreads towards the root of the tail. The underside is very pale ochraceous buff but with the white predominating. There is a pygal patch of brownish hue. On the dorsal surface the shorter hairs are tipped with white and the longer ones with black. The rufous hue on other parts of the body is on the whole less pronounced (*cf.* Hill, 1953, p. 416).

Distribution.—Along the west coast of Madagascar from the Bay of St. Augustin to the Bay of Narinda, also on whole of the central plateau.

Lemur fulvus albifrons E. Geoffroy

1796. *Lemur albifrons*, E. Geoffroy, *Mag. Encyclop.* I, p. 20 (Madagascar).

Material—

12283 ♂ Skin and damaged skull . Maharaja of Burdwan (1858).
(I.M. 77a).

Remarks.—The description of the specimen closely agrees with that given by Hill (1953, p. 414), but the white also spreads on the throat and the chest. The colour becomes gradually paler towards the rump.

Distribution.—North-eastern Madagascar about as far south as Bay of Antongil.

Lemur fulvus fulvus E. Geoffroy

1812. *Lemur fulvus*, E. Geoffroy, *Annu. Mus. Hist. nat.* XIX, p. 161 (Type locality unknown but probably Tamatave region, East Madagascar).

Material—

10054	♂	. Skin and skull	. . . Zool. Gardens, Calcutta (25-9-1915).
12280 (I.M. 80b).	♀	. Skin and incomplete skull	Maharaja of Burdwan (1858).
12281 (I.M. 80a).	♀	. . Skin (damaged)	Rajindar Mullick (1851).
12292	♂	Skin and skull	....
12293	. .	Do.	...

Measurements—

Skin No. 10054.—*hb*, 462.5; *t*, 535.5; *hf*, 77.5; *e*, 37.8.

Skull No. 10054.—*l*, 90.7; *cb*, 88.5; *ow*, 51.7; *mw*, 19.0.

Remarks.—No. 10054 is noticeably darker than the other specimens and the spots above the eyes are reddish brown. In No. 12295 the hairs towards the mid-dorsal line are a tint of orange. In No. 12280 the skin of the muzzles has been peeled off, but its colour was described by Blyth¹ (1858) as blackish. The specimen was identified by Anderson (1881) as *L. mongoz* Linn. which was evidently a mistake. No. 12281 has been provisionally identified as the head portion is missing; but according to Anderson (*op. cit.*) the specimen resembled No. 12280 in its characters.

¹ Blyth (*loc. cit.*) described this specimen as *L. flaviventer* Lesson. Anderson *loc. cit.* refers it as the type of *L. flaviventer* Blyth.

Distribution.—Eastern coastal tracts of Madagascar in the Tamatave district (Hill).

Lemur fulvus collaris E. Geoffroy

1812. *Lemur collaris*, E. Geoffroy, *Annu. Mus. Hist. nat.* XIX, p. 161 (Madagascar).

Material—

12290 (I.M. 78a).	♂	.	.	Skin and skull	W. Rutledge (27-8-1880).
12291	♂	.	.	Skin	Zool. Gardens, Calcutta (15-11-1881).

Measurements of the skull No. 12290.—*l*, 88.5; *cb*, 79.4; *ow*, 47.0; *mw*, 17.2; *ml*, 58.1.

Remarks.—In No. 12290 the general effect of the colour is brownish. The individual hairs are greyish brown with a very pale orange band. The tips of the hairs are also pale orange (*cf.* Hill, 1953, p. 416), but the longer and coarser hairs are mostly black. The other specimen (No. 12291) is more brightly coloured but the outside of the arms are quite dark. In No. 12290 the spots above the eyes are reddish brown. The colour towards the dorsal median line is darker but there is no well-defined stripe. The top of the head in No. 12290 is much darker than in No. 12291. The pygal patch in No. 12290 is reddish brown but in the other specimen it is not so clearly defined. The under parts in both the specimens are yellowish buff.

Distribution.—Eastern coastal tract of Madagascar south of the area occupied by the nominate race (Hill).

Lemur fulvus E. Geoffroy (subsp. ?)

Material—

10956	♂	.	.	Skin (exhibited)	Zool. Gardens, Calcutta (28-3-1932).
12288 (I.M. 80c).	♀	.	.	Skin	W. Rutledge (11-10-1880).
12289 young (I.M. 80e).	♂	.	.	Skin and skull	Do. (17-8-1880).

Remarks.—These specimens were identified by Anderson (1881, p. 93) as *L. mongoz* Linn. but they lack the white muzzle which is characteristic of that species. The colour of the muzzle in No. 12288 is blackish with a tinge of red. The cheeks are not differentiated from the general colour of the head where the individual hairs are greyish with white tips. There is a predominance of orange rufous over the whole of the dorsal surface behind the neck and over the tail. The under parts including the throat and inner side of the limbs are dirty white or yellowish. The hands and the feet are brownish with reddish tinge.

No. 12289 differs from the preceding specimen in having the muzzle and the top of the head entirely black and also in the presence of less red in the pelage except on the hands and the feet. No. 10956 is bright

orange all over. The individual hairs are provided with grey bases and orange tips, but they are interspersed with some longer black-tipped hairs as usual. The hairs on the ventral surface have paler bases. The pinnae and the areas below the ears are provided with noticeably long hairs which are Hay's Russet (Ridgway, 1912, pl. XIV) in colour. This coloration also spreads over the forehead but the top and the back of the head are black. The areas just above the eyes are orange, but are less bright than the adjoining areas. The muzzle as usual is black and is joined by a narrow streak of the same colour with the black crown. The hands and the feet are much darker than the arms and the legs. The tail towards its distal end is especially long-haired and gradually darkens towards the tip. The specimen appears to represent an important variation of some race of *L. fulvus*, possibly *L. f. collaris*.

Lemur [?] *fulvus* E. Geoffroy

Material—

12284	.	.	Skull	.	.	.	Zool. Gardens,	Calcutta
							(21-9-1914).	
12286	.	.	Do.	.	.	.	....

Measurements of the skulls—

Z. S. I. Reg. Nos.	<i>l</i>	<i>cb</i>	<i>ow</i>	<i>mw</i>	<i>ml</i>
12284.	91.5	85.1	54.4	18.5	..
12286.	91.8	85.6	53.5	19.0	..

Remarks.—The specimens have been identified according to the key provided by Hill (1953, p. 388), but as the skins are not available the identification is provisional.

Lemur *mongoz mongoz* Linnaeus

1766. *Lemur mongoz*, Linnaeus, *Syst. nat.* 12 ed., I, p. 44 (Probably Anjouan Island).

Material—

12282	♂	.	.	Skin and skull	.	Purchased (4-12-1880).
(I.M. 80d).						

Measurements of the skull.—*l*, 75.2; *cb*, 67.0; *ow*, 44.4; *mw*, 16.7; *ml*, 48.7

Remarks.—The following differences from Hill's description have been noted. The red of the cheeks spreads as light orange over whole of the head, the neck, and the shoulders. The individual hairs of these areas are dark grey at the base with an orange subterminal band. On the rest of the back and the limbs the subterminal band is whitish though the orange tint is still slightly visible here and there. A patch near the root of the tail is brownish. The under parts are yellowish without any greyish band across the chest.

Distribution.—Anjouan and Mohéli in Comoro Islands but not in Mayotte. Mainland of Madagascar along the south bank of the Bet-siboka River upto its headwaters at least as far as on the plateau as Ambatondrazaka, Sihanaka country (Hill).

Lemur mongoz Linnaeus (subsp. ?)*Material—*

12360 ♂ . . . Skull Zool. Gardens, Calcutta
(I.M. 79a). (28-10-1879).

Measurements of the skull.—*l*, 88.2; *cb*, 78.2; *ow*, 19.4; *ml*, 57.8.

Remarks.—The specimen seems to resemble *L. m. coronatus* Gray in its size and in the development of palatine air sinuses. The cranial bones are thick and heavy showing pathological condition.

Lemur [?] rubriventer¹ I. Geoffroy

1850. *Lemur rubriventer*, I. Geoffroy, *Compt. Rend.* XXXI, p. 876 (Madagascar)

Material—

12287 ♂ . . . Skull Zool. Gardens, Calcutta.

Measurements of the skull No. 12287.—*l*, 86.6; *cb*, 79.0; *ow*, 49.5; *mw*, 18.2; *ml*, 60.0.

Remarks.—The specimen has been identified according to the key provided by Hill (1953, p. 388). As the skin is not available the identification is provisional.

Distribution.—Greater part of Madagascar.

Family INDRIIDAE

Propithecus diadema diadema Bennett

1832. *Propithecus diadema*; Bennet, *Proc. zool. Soc. Lond.* p. 20 (Madagascar).

Material—

10564 ♀ . . . Damaged skin Purchased (21-1-1879).
(I.M. 81b). and skull

12269 Ad. Skin and skull British Museum, Exchange
(I.M. 81a). (6-1-1879).

Remarks.—The specimens closely agree with the description given by Hill (1953, p. 569) except that the back of the head does not match with the shoulders, extensor surface of the arms, and the sides of the body, and is much darker than these parts. Also, the tail in No. 12269 (in No. 10564, it is missing) is uniformly creamy and is not paler in the middle. No. 10564 is much darker than No. 12269.

Distribution.—Madagascar, eastern coastal belt from the Bay of Antongil southwards to Masora River extending inland in suitable country as far as the capital or little beyond (Hill).

¹ It is not clear why this lemur has been distinguished by Schwarz (1931b) and Hill (1953) from *L. fulvus* and *L. mongoz* by the ear being hairy both on the inner and on the outer sides. I find that at least in those forms of *L. fulvus* and *L. mongoz* which are present in this collection the pinnae are hairy on both sides.

Super-family DAUBENTONOIDEA¹

Family DAUBENTONIIDAE

Daubentonia madagascariensis (Gmelin)

1788. *Sciurus madagascariensis*, Gmelin, *Syst. at.* 13 ed., I, p. 152 (North-Western Madagascar).

Material—

7612	♂	Skin and skull (exhibited)	Madagascar.	Purchased
			from E. Gerard.	

Remarks.—Some differences from the description of the pelage given by Elliot (1913, p. 1) and Hill (1953, p. 697) have been noted. The general colour may be described as dark reddish brown with the white showing here and there. Many long hairs on the neck, the shoulders and the back are white-tipped. Mostly, the individual hair has two kinds of bands, a dark reddish brown and a paler. These bands vary much in their extent and intensity of colour. Some hairs are either reddish brown or yellowish white.

Distribution.—North-west of Madagascar and in the eastern Madagascar from the Bay of Antongil to Mahanoro.

Infraorder LORISIFORMES

Family LORISIDAE

Loris tardigradus lydekkerianus Cabrera

1908. *Loris lydekkerianus*, Cabrera, *Bol. Soc. Exp. Hist. nat. Madrid*, p. 139 (Madras, India).

Material—

10786♂, 10787♂	. .	Skins and skulls	. .	Chettiri Range, Salem District, Madras, 4 to 9-6-1929. N. A. Baptista.
12233 S. ad. ♂, 12234♀, 12235♂.		Skins and skulls	.	Malur, Kolar Dist., East Mysore, 2,200', 12-10-1912. G. C. Shortridge.
12236 .		Skin and skull	.	Nundidroog, N. W. Kolar District, East Mysore, 3,000', 20-10-1912. G. C. Shortridge.

Measurements—

Skulls.—2♂ from Chettiri Range : *l*, 51.4-52.4 ; *cb*, 47.4-48.5 ; *ow*, 30.5-31.5 ; *mw* 8.8-10.0 ; *ml*, 29.1-30.2.

1♂ from Kolar District : *l*, 51.2 ; *cb*, 45.6 ; *ow*, 31.5 ; *mw*, 10.1 ; *ml*, 28.8.

1♀ from Kolar District : *l*, 50.4 ; *cb*, 45.6 0 ; *ow*, 27.7 ; *mw*, 9.4 ; *ml*, 27.2.

1 unsexed ad. from Kolar District : *l*, 49.1 ; *cb* (broken) ; *ow*, 28.4 ; *mw*, 9.8 ; *ml*, 26.7.

Skins.—2♂ from Chettiri Range : *hb*, 222-240 ; *hf*, 46-50 ; *e*, 30.

1♂ from Kolar District : *hb*, 250 ; *hf*, 53 ; *e*, 30.

1♀ from Kolar District : *hb*, 202 ; *hf*, 48 ; *e*, 28.

¹ The dental formula for this group as given by Forbes (1894, p. 15) and Hill (1953) p. 677 is I, 1/1 ; C, 0/0 ; P, 1/0 ; M, 3/3 ; but Schwarz (1931b, p. 400) gives the formula as I, 3/0 ; C, 1/1 ; P, 4/0 ; M. 1.2.3/1.2.3 which is evidently an error.

Remarks.—The two skins from Chettiri range are markedly different in colour from the other skins, being clearly tinged with pale buff in the dorsal pelage. Out of the three specimens from the same locality in the collection of the British Museum, one was described by Pocock (1939, p. 178) as having the same colour as the skins just mentioned. Thus three out of the five specimens collected from Chettiri range resemble the Malabar race *L.t. malabaricus*. Apparently the species is unstable in this area. There is no indication of the darker median line on the foreback as described by Pocock (*op. cit.*).

Distribution.—The Eastern Ghats extending westward to Mangalore and Mysore.

Loris tardigradus (Linnaeus) (subsp. ?)

1758. *Lemur tardigradus*, Linnaeus, *Syst. nat.* ed. 10, p. 29 ('Ceylon').

Material—

6770 .		Skin and skull	Ceylon. Colombo Museum.
10569	♂	Do. .	Zool. Gardens, Calcutta (21-2-1919).
10570	♂ .	Skin	Zool. Gardens, Calcutta (12-2-1919).
10734	♂	Skin and skull	Madras ? Purchased (29-11-1929).
12237	.	Incomplete skeleton	W. Elliot (1843 ?).
12238	♂	In spirit	Zool. Gardens, Calcutta (18-6-1914).
12239	♂	Do. .	Zool. Gardens, Calcutta (10-11-1914).
12240	♂ .	} In spirit	Zool. Gardens, Calcutta (28-5-1914).
12241	♀ .		
12242	S. ad. .	Skin	Medical College, Calcutta (1844).
12243 (I.M. 84e)	S. ad. .	Imperfect skin and skeleton	Shan States, J. Anderson (1870).
12260, 12261, 12262, 12263	(♀).	Parts of skins and skulls .	Zool. Gardens Calcutta (Nov., 1915).
12296	.	Skull (damaged) . .	
12365 (I.M. 84g).	♂ .	Incomplete skeleton .	W. Rutledge (21-7-1876).

Measurements—

Skins—

Z. S. I. Reg. Nos.	<i>hb</i>	<i>hf</i>	<i>e</i>
10569 .	240	50	25
10570	237	50	1

Skulls—

Z. S. I. Reg. Nos.	<i>l</i>	<i>cb</i>	<i>ow</i>	<i>mw</i>	<i>mi</i>
10569.	48.8	46.2	32.0	9.0	28.0
12260.	50.2	46.9	31.8	9.1	28.5
12261.	46.7	41.6	27.9	8.9	24.8
12262.	48.8	44.5	32.4	9.3	27.1
12263.	50.9	47.1	32.5	9.5	28.5

Remarks.—No. 12243 was identified by Anderson (1881, p. 98) as *L. gracilis* Geoffroy St. Hillaire which is a synonym of *L. tardigradus* (Linnaeus). The latter, and in fact the whole of the genus *Loris*, is considered at present to be confined to South India and Ceylon only. While giving Shan States as the locality of this specimen Anderson (*loc. cit.*) stated that the specimen along with another was purchased in Rangoon from a Shan who said that he had obtained them in Shan States. Although the possibility of a wrong information about the locality is not ruled out, yet the chances of a Shan or any one else obtaining specimens from South India or Ceylon and selling them in Rangoon were also very remote in 1870. The specimen cannot be identified very accurately because only a part of the skin is available. It was described by Anderson (*loc. cit.*) as shorter-limbed and with smaller orbits and narrower and more pointed muzzle than the animals from Ceylon and India (Pl. II, figs. 3 and 4). If the locality is taken as correct, there are two possibilities: (1) an undescribed form of *Loris* may be occurring in the Eastern Shan States—an interesting case in support of Hora's Satpura Hypothesis (Hora, 1944); (2) The specimen may be a *Nycticebus pygmaeus* Bonhote which is a very interesting border-line form between *Loris* and *Nycticebus*, resembling the former in important cranial and dental characters and even in the absence of the spinal stripe in some specimens. In fact the only important character in which the present specimen differs from *N. pygmaeus* is the presence of sub-equal upper incisors (Pl. II, fig. 3). Although nothing is on record regarding the character of the upper incisors in *N. pygmaeus*, yet in the figure published by Bonhote (1907) the inner upper incisor is shown to be appreciably larger than the outer one.

The range of *N. pygmaeus* is now considered to include Laos, Cochin China and Tonkin, and thus very much approach the locality of the present specimen. The tail appears to be absent in the present specimen but this is also true in some specimens of *Nycticebus* (*vide* Hill, 1953).

***Nycticebus coucong coucong* (Boddaert)**

1785. *Tardigradus coucong*, Boddaert, *Elench. Anim.* p. 67 (Java according to Thomas and Malacca according to Chasen).

Material—

5239	♀	Skin and skull	Padan, Mergui,	13-2-1881.
			J. Anderson.	
12247, (I.M. 83m)	♂	Skins	Malacca.	F. W. Lindstedt
12248, (I.M. 83*)	Adol.			(1846).

12258 ♂ . Skin and skull . Penang. Zool. Gardens,
(I.M. 83s). Calcutta (26-5-1877).

Measurements of the skull No. 12258.—*l*, 59·7 ; *cb*, 57·9 ; *ow*, 38·2 ; *mw*, 13·5 ; *ml*, 2.

Remarks.—In all the specimens the facial mask is not so distinct as in a specimen of *javanicus* in this collection. No. 12248 is much paler than the other specimens and appears to approach *N. c. bengalensis*, but this is probably due to the imminence of moult. In Nos. 5239 and 12258 the spinal stripe is much broader and darker on the shoulders.

Distribution.—Java ?, Sumatra, Malaya and Mergui Archipelago.

Nycticebus coucong bengalensis (Lacépède)

1800. *Loris bengalensis*, Lacépède, *Tabl. Mam. Oies.* 2nd ed., p. 68 (Bengal).

Material—

7730	.	Foetus in spirit	Chittagong, East Pakistan. B. B. Osmaton.
12244 (I.M. 83a).	♀	Skin . . .	Tippera, East Pakistan. F. Skipwith (1846).
12245 (I.M. 83c).	Ad.	Skin and skull	Tippera, East Pakistan. A. Grote (28-7-1864).
12246 (I.M. 83b).	Young	Do.	Tippera, East Pakistan. F. Skipwith (1846).
12256 (I.M. 83h).	♂	In spirit	Dhubri, Goalpara District, Assam. P. R. Chowdary (17-8-1867).
12257 (I.M. 83i).	♂	Do.	Bhamo, Upper Burma. J. Anderson [2nd Exped. W. China (1875)].
12356 (I.M. 83j).	♂	Skeleton	Dhubri, Goalpara Diat., Assam. P. R. Chowdary (5-7-1868).

Measurements of the skull No. 12356.—*l*, 66·9 ; *cb*, 64·2 ; *ow*, 41·1 ; *mw*, 15·5.

Remarks.—The colour of the specimens has appreciably faded away on account of long exposure during exhibition in the Museum Galleries or due to the action of the preservative, but still close approximation to the characteristic colour pattern is visible. The young one No. 12246 is in full coat with somewhat indistinct spinal stripe. It is also provided with a single pair of upper incisors.

Distribution.—From Assam in the west to Annam in the East.

Nycticebus coucong javanicus E. Geoffroy

1812. *Nycticebus javanicus*, E. Geoffroy, *Annu. Mus. Hist. nat.* XIX, p. 164 (Java).

Material—

12249 (I.M. 83gg)	.	Skin	Java. Batavian Society (1845).
12359 (I.M. 83k)	Ad.	Skull without lower jaw	Do.

Measurements of the skull No. 12359.—*l*, 64·5 ; *cb*, 61·8 ; *ow*, 40·8 ; *mw*, 13·7.

Measurements of skulls—

Z. S. I. Reg. Nos.	<i>l</i>	<i>cb</i>	<i>ow</i>	<i>mw</i>	<i>ml</i>
12259 .	56.9	54.8	36.6	12.1	35.0
12264 .	54.4	52.8	36.5	12.3	36.0
12265	65.8	53.8	36.8	12.1	..
12297 .	63.8	61.5	40.9	13.8	41.0
12349	57.4	54.5	34.4	12.5	36.7
12350	56.2	53.8	36.2	12.5	37.2
12351 .	57.2	54.5	36.0	12.0	35.7
12352	62.2	60.4	37.0	12.8	41.8
12353	62.2	59.6	39.1	13.2	40.5
12354	61.5	58.3	37.6	12.2	39.2
12355 .	61.5	57.5	39.5	13.6	41.4
12357	58.0	55.7	38.5	12.0	..

Remarks.—No. 7712 is dirty whitish all over with a well-marked spinal stripe which is nearly black on the foreback, but the head mask is indistinct. In No. 7673 the head mask is quite distinct, almost approaching *N. c. javanicus*. The colour, however, resembles that of *N. c. coucong*. No. 12251 is probably a *N. c. coucong*. Nos. 12250 and 12252 are dismantled specimens from the Museum Galleries and as such have suffered much from foxing. In the spirit preserved specimens also the colour has been much faded away.

In the skulls measured the temporal ridges may be upto 12.8 mm. apart in the middle. The measurements as given above are much smaller than those of *N. c. bengalensis* Lacépède and *N. c. tenasserimensis* Elliot as given by Pocock (1939, p. 173). In No. 12353 there is a supernumerary upper molar on the right side.

Family GALAGIDAE

Galago crassicaudatus E. Geoffroy

1812. *Galago crassicaudatus*, E. Geoffroy, *Annu. Mus. Hist. nat.* XIX, p. 166 (No locality but fixed by Thomas as Quelimane, Mozambique),

Material—

12267 ♂ Skin Earl Northbrook (14-1-1875).
(I.M. 86a).

Remarks.—The specimen was identified by Anderson (1881, p. 98) as *G. garnetti* Ogilby which is now considered as a race of *G. crassicaudatus*. According to Schwarz (1931, p. 44) there is a dark tip to the tail in *G. garnetti*, and the general colour is brownish; but Hill (1953) states that the head and the neck are also darker. None of these characters are present in the present specimen. Since the colour is buffy the specimen appears to approximate to the nominate race.

Distribution.—Confined to savannah tracts in the whole of tropical Africa south of Sahara as far south on the east as Natal and as far inland as Zoutpansberg in Transvaal.

Galago senegalensis E. Geoffroy

1796. *Galago senegalensis*, E. Geoffroy, *Mag. Encyclop.* I, pp. 38-41 (Senegal, French West Africa).

Material—

12266 Skin (exhibited). No history

Remarks.—The colour of the specimen as far as it can at present be examined is dark grey with longer or shorter paler tips to the hairs except on the tail where the hairs are wholly whitish. There is no interocular whitish stripe and the eyes are not bordered by black as described by Hill (1953, p. 227) in the case of the nominate race.

Distribution.—In savannah country throughout Sudan and East Africa, from Senegal and Gambia to Limpopo, westwards into Angola (Hill).

Galago alleni Waterhouse

1838 (1837). *Galago alleni*, Waterhouse, *Proc. zool. Soc. Lond.* p. 87 (Island of Fernando Po)

Material—

12268 ♂ In spirit . Zool. Gardens, Calcutta (8-10-1882).

Remarks.—Although the measurements of the specimen are not recorded in the fresh state, yet they appear to be much larger than those given by Hill (1953, p. 230). The distal ends of the nails especially on the toes are strongly concave. The penis resembles in form with the figure given by Hill (*op. cit.*) but the number of the spines on each basal plate varies from one to three.

Nothing can be said about the coloration as the specimens has been in spirit for quite a long time.

Distribution.—From the lower Niger, the Ubangi, the Congo, the Gulf of Guinea and the Island of Fernando Po (West Africa).

Suborder TARSIOIDEA

Family Tarsiidae

Tarsius tarsier borneanus Elliot

1910. *Tarsius borneanus*, Elliot, *Bull. Amer. Mus. nat. Hist.* XXVIII, p. 153 (Sandak River, Dutch West Borneo).

Material—

7608 In spirit . Borneo. Purchased (E. Gerard).

Remarks.—Chasen (1940) described this race as very richly coloured and showing rufous and golden buff on upper parts. As these colours are not now visible on account of the action of the preservative, the identification should be taken as provisional.

Distribution.—Borneo.

Suborder ANTHROPOIDEA
 Infraorder PLATYRRHINE¹
 Family CEBIDAE
 Subfamily AOTINAE

***Aotus trivirgatus nigriceps* Dollman**

1909. *Aotus nigriceps*, Dollman, *Ann. Mag. nat. Hist.* (8) LV, p. 200 (Chanchamayo, Peru).

Material—

7617 . . . Skin (exhibited) . . . Peru. Purchased (E. Gerard, 18-3-1898).

Remarks.—The hairs on the dorsal surface are banded with buff and blackish but the bases are brownish. The ventral side of the root of the tail is liver brown. There are white spots over the eye but they do not extend backward and then curve inward to meet at the occiput as described by Elliot (1913, p. 8). Also, the colour is not the darkest on the mid-dorsal line with hairs tipped with reddish brown as described by him.

Distribution.—Peruvian Andes.

***Aotus trivirgatus* Humboldt (subsp. ?)**

1812 (1811). *Simia trivirgata*, Humboldt, *Rec. Observ. Zool.* I, p. 28 (Cassiquare).

Material—

12299 (I.M. 63a) ♀ . In spirit . . . W. Rutledge (16-9-1880).

Remarks.—The specimen was identified by Anderson (1881, p. 85) as *Nyctipithecus* (= *Aotus*) *felinus* Spix and by Elliot (1913, p. 5) as *Aotus infulnatus* (Kuhl). Both these names are considered by Hershkovitz (1949, p. 401) as synonyms of the present species which, according to him, is the sole representative of the genus *Aotus*.

The colour is much faded away on account of the action of the preservative. The hairs are annulated with whitish and brownish bands. The underparts and the eyespots are yellowish. The three head stripes just reach the top of the head. The tail has got an orange wash especially on the ventral side of its root.

Subfamily PITHECINAE²

***Pithecia*³ *pithecia* (Linnaeus)**

1766. *Simia pithecia*, Linnaeus, *Syst. Nat.* I, p. 40 (Guiana).

Material—

10550 . . . ♀ Skin and skull . . . Eriquito River, British
 (I.M. 64a) . . . Guinea. Exchange (21-1-1879).

Remarks.—The hairs are banded brownish black and whitish. The hairs on the side of the muzzle, the lips, and the chin are yellowish.

Distribution.—Interior of Demerara, French Guiana and the region of the Rio Negro and the Rio Branco, Brazil (Elliot).

¹ At the time when infraordinal rank for this group was proposed by me (Khajuria, 1953), I was unaware of similar views of Romer (1949) independently arrived at.

² The specimens are identified according to Elliot (1913).

³ Placed on the official list of the generic names in Zoology (Opinion 122); but see Miranda Ribeiro (1941, p. 800).

Chiropotes satanus (Hoffmannsegg)

1807. *Simia satanus*, Hoffmannsegg, *Mag. Ges. Nat. Freunde, Berlin, X*, p. 93
(Cameta, on the right bank of the Rio Tocantins near its mouth, Brazil).

Material—

12298 . . . ♂ . . . In spirit . . . W. Rutledge (13-8-1879.)
(I.M.65a)

Remarks.—As the specimen is preserved in spirit the true nature of its colour pattern cannot be judged. It is being retained in this form under the authority of Anderson (1881, p. 86).

Distribution.—British Guiana, forests near Para, Lower Amazon banks of the Rio Orinoco, the Rio Tocantins, the Rio Negro, Brazil (Elliot).

Subfamily *ALOUATTINAE*¹**Alouatta villosus** (Gray)

1845. *Mycetes villosus*, Gray, *Ann., Mag. nat. Hist. XVI*, p. 220 (Guatemala).

Material—

10549 . . . ♀ Skin and skull . . . Panama. By Exchange
(I.M. 55a) (21-1-1879).

Remarks.—The specimen was identified by Anderson (1881, p. 83) as *Mycetes palliatus* Gray; but on the basis of the description given by Elliot (1913), it is difficult to agree with Anderson. Locality of the specimen, however, does fall within the range of *A. palliatus*. The specimen agrees well with the description of *A. villosus* as given by Elliot (*op. cit.*, p. 268). The entire colour is jet black with a slight brownish tinge on the underside. Some silvery hairs are found along the lateral parts of the body especially along the left side. Some similar hairs are also found along the back but are totally hidden by the black hairs. Bases of the black hairs are slightly paler.

Distribution.—Eastern and north-eastern Guatemala, Honduras and upto ? Panama (Elliot).

Alouatta ursina Humboldt

1815. *Simia (Stentor) ursina*, Humboldt, *Rec. Obs. Zool. I*, p. 355, pl. 30
(Venezuela).

Material—

10547 . . . ♂ Skin and skull . . . Brazil. Exchange (21-1
(I.M.53a) 1879).

Remarks.—There is no dorsal line darker than the flanks as described by Elliot (*op. cit.*, p. 274). The dorsal surface including the head is yellowish. The individual hairs are banded yellow and brownish but the yellow predominates.

Distribution.—Venezuela, districts of Brazil from Espirito Santo to Bahia, Peru (Elliot).

¹ The forms included under this group are identified according to Elliot (1913). No better revisionary work based on the skin characters appears to be available.

Alouatta senicula (Linnaeus)1766. *Simia senicula*, Linnaeus, *Syst. Nat.* I, p. 37 (Cartagena, Columbia).*Material*—

10548 . . ♀ . . Skin and skull . . Exchange (21-1-1879).
(I. M. 54a)

Remarks.—The back is golden yellow and is much contrasted against the head, the neck, the shoulders, the arms, the legs, and the tail which are chestnut brown. The under surface is sparsely haired. The tip of the tail is paler.

Distribution.—Columbia and forests between Rio Negro and Solimões, Rio Madeira, and Brazil (Elliot).

Subfamily *CEBINAE***Cebus¹ capucinus** (Linnaeus)1758 (nec. 1766). *Simia capucina*, Linnaeus, *Syst. Nat.* ed. 10, p. 29 [Type locality unknown but fixed by Goldman (1914, p. 99) as 'Northern Columbia'].*Material*—

10544 . Young ♂ . . Skin . . . Zool. Gardens, Calcutta (27-11-1911).
10536 . . ♂ . Skin and skull . . Exchange (21-1-1879).
(I.M. 62a)
11965 . Adol. ♀ . . Do. . . . Purchased (16-12-1878).
(I.M. 62b)
11979 . Young ♂ . . Do. . . . Do. (27-11-1879).
(I.M. 62d)
12320 . Young ♂ . . Skin and incomplete . . Do. (23-12-1879).
(I.M. 62c) skeleton.
12321 . Young ♂ . . In spirit W. Rutledge (27-1-1879).
12322 . Young ♂ . . Do. Do. (19-5-1881).
12358 . . ♂ . Skeleton (incomplete) . . Zool. Gardens, Calcutta (15-10-1880).
(I.M. 61a)

Measurements of the skull No. 12358.—*l*, 90.5 ; *cb*, 69.0 ; *zw*, 61.5 ; *ow*, 43.0 ; *mw*, 25.5 ; *c¹m³* 26.8 ; *ml*, 58.6.

Remarks.—The specimens are identified according to Hershkovitz (1949). The races of this species are little understood and those mentioned by Hershkovitz are not diagnosed by him. The colour of the darker parts varies from black to brownish black with a tinge of red. The paler parts vary from buff to chamois (Ridgway, 1912, pl. XXX). In No. 10544 the hairs of the anterior border of the black crown cap appear to be erect. In No. 11965 the hairs of the pale band on the forehead are divided into two horn-like groups of hairs. The hairs of the dark crown cap radiate from a whorl. The spirit preserved specimens have been provisionally identified as their colour has mostly been bleached by the preservative.

¹Placed on the *Official list of generic names in Zoology* (Opinion 91), but see Miranda Ribeiro (1941, p. 829).

Nos. 10546, 11965, 11979, and 12320 were identified by Anderson (1881, p. 85) as *C. hypoleucus* Humboldt. This was evidently due to the great confusion which existed regarding the identity of *C. hypoleucus* and *C. capucinus* in those days.

Distribution.—From Honduras south into Western Columbia and Western Equador (Herskovitz).

Cebus albifrons Humboldt

1812 (1811). *Simia albifrons*, Humboldt, *Rec. Obs. Zool.* I, pp. 324-356 (No locality).

Material—

10545	♂	Skin	.	.	.	.	Exchange (21-1-1879).
(I.M. 60a)							
12323	♂?	Skin and skull	.				Zool. Gardens, Calcutta (3-6-1913).

Measurements of the skull No. 12323.—*l*, 93.5 ; *cb*, 67.5 ; *zw*, 55.3 ; *ow*, 43.1 ; *mw*, 26.8 ; *c¹m³*, 28.0 ; *ml*, 55.2.

Remarks.—For want of localities the correct subspecific identification is not possible. No. 10545 was identified by Anderson as *C. flavus* (Schreber) which is now considered as unidentifiable. In this specimen the colour is snuff brown (Ridgway, 1912, pl. XXIX) all over the upper surface and on the external surface of the legs becoming darker on the tail and still darker on the crown. On the outer surface of the arms it is much paler. The upper surfaces of the hands and the feet are somewhat darker than the adjoining parts. On the other parts of the body the colour is buff or brownish buff. The dark crown cap is pointed in front and projects into the pale forehead area. No. 12323 is much paler all over the body than No. 10545, with the tail not darker than the back.

Distribution.—Undefined.

Cebus apella (Linnaeus)

1754. *Simia apella*, Linnaeus, *Mus. Reg. Ad. Fred.* p. 3, pl. 1 (Surinam or Dutch Guiana).

Material—

12324	♂	.	.	Skin and skull	.	.	Zool. Gardens	Calcutta
							(2-5-1910).	
12325	♂	.		Do. (exhibited)	.		....

Measurements—

Skin No. 12324 : *hb*, 412.5 ; *t*, 475 ; *hf*, 125 ; *e*, 37.5.

Skull No. 12324 ; *l*, 99.3 ; *cb*, 77.0 ; *zw*, 60.4 ; *ow*, 43.2 ; *mw*, 30.5 ; *c¹m³*, 29.2 ; *ml*, 63.5.

Remarks.—Tate (1939) and Herskovitz (1949) have suggested that probably only one species of the tufted cebus is recognizable and that the oldest name for this species is *C. apella* (Linnaeus). The number and diagnostic characters of the subspecies under this species have, however, yet to be ascertained.

In No. 12324 the back is walnut brown (Ridgway, 1912, pl. XXVIII) becoming darker on the shoulders, the arms, the thighs and the base of the tail, but the bases of the hairs are whitish. Towards the distal half, the tail is covered with black and white hairs. A notable feature of the specimen is the presence of the patches of white hairs on the left

side of the back, the arms, the legs, and on the tail. The ventral side is sparsely haired with white hairs on the belly, the chest, and the throat (behind the black beard). On the chest the white and the reddish brown hairs are mixed up. On the inner surface of the legs and the arms, there is a mixing up of the white and the black hairs. The ventral side of the root of the tail is reddish. The tuft on the crown is in the form of a longitudinal crest formed by inwardly directed hairs from the forepart of the crown. There is a whorl on the right side of this crest. Behind this tuft there is also a transverse crest of hairs.

No. 12325 mainly differs from the preceding specimen in being slightly paler and in the absence of white hair patches. The white hairs around the face are also much fewer. On the back the hairs lack the whitish bases on No. 12324. The tufts on the crown in this specimen appears to be absent.

Both the specimens are provided with broad black crown caps with extension on the side of the face meeting on the chin.

Distribution.—Undefined.

Saimiri sciurea (Linnaeus)

1758. *Simia sciurea*, Linnaeus, *Syst. Nat.* I, p. 19 ("India"=South America)

Material—

3691	.	.	♂	.	Skin and skull	.	.	British Guiana. Exchange (1878).
7641	.	.	Adol. ♂	.	Do.	.	.	Zool. Garden, Calcutta (26-12-1897).
8037	.	.	.	.	Skin	.	.	D. Ezra (31-1-1906).
10960	.	.	♀	.	Skin (exhibited)	.	.	Zool. Gardens, Calcutta (19-2-1934).
12316	.	.	♂	.	Skin, incomplete skeleton and viscera in spirit.	.	.	O.L. Fraser (30-10-1878).
(I. M. 66c)								
12317	.	.	♂	.	In spirit	.	.	W. Rutledge (30-9-1879).
(I. M. 66e)								
12318	.	.	♂	.	Do.	.	.	Do. (20-5-1879).
(I. M. 66f)								
12319	.	.	♂	.	Imperfect skin	.	.	Do. (19-3-1886).

Remarks.—The specimens agree well with the description given by Lönnberg (1940a). In none of the specimens there is a black spot between the eye and the ear. In No. 7641 the crown cap is separated off from the back by a pale band. The colour on the back and the forelegs is also much redder. The specimens can thus be referred to *S. sciurea codajazensis* Lönnberg (1940a), but for want of locality no commitment is advisable.

The colour of the spirit-preserved specimens is much faded away. The lips in these specimens are blackened and tips of the tail are reddish-brown. The identification in their cases is tentative.

Distribution.—Northern South America in Venezuela (Schlegel), Guianas (English, Dutch and French), on the Amazon and several of its tributaries ; Santa Fe de Bogota [I. Geoffroy, quoted by Elliot, 1913)].

Saimiri (?) madeirae Thomas

1908. *Saimiri madeirae*, Thomas, *Ann. Mag. nat. Hist.* (8) II, p. 90 (Humayta, Middle Rio Madeira, Amazonas).

Material—

7494 ♂ . Skin and skull . W. Rutledge (21-12-1896).

Remarks.—Elliot (1913, p. 310) distinguished this species from others by its blue grey head. However, Lönnberg (1940a, p. 2) considers the restriction of the ochraceous colour of the hands generally to the wrist as the chief distinguishing character of this species. According to him there is a yellowish tint basally to the hairs of the crown, and the bluish grey may be restricted to the hind limbs only. The present specimen agrees well, with the Lönnberg's description. The grey of the arm is contrasted with the colour of the back. There is a black bar in front of the ear. The bluish tinge is only very faintly visible. In some hairs from the dorsal side, there are two black rings instead of only one as described by Lönnberg (*op. cit.*). As the locality is unknown the identification is provisional.

A study of Lönnberg's account shows that this species and *S. sciurea* (and probably many others) are merely geographical races of one and the same species.

Distribution.—Rio Madeira, the Rio Tapajoz and adjoining areas, Amazonas.

Ateles¹ paniscus (Linnaeus)

1758. (*Simia*) *paniscus*, Linnaeus, *Syst. Nat.* ed. 10, I, p. 26 [Brazil but restricted to French Guiana by Kellogg and Goldman (1944)].

Material—

3685 . . ♂ . Skin (Damaged) . By Exchange (21-1-1879).
(I.M. 57a)
10733 ♂ . Skull . . Zool. Gardens, Calcutta (29-11-1929).

Measurements of the skull.—*l*, 112.0 ; *cb*, 91.3 ; *zw*, 67.2 ; *ow*, 52.2 ; *mw*, 28.9 ; *c¹-m³*, 30.9 ; *ml*, 75.2.

Remarks.—It is difficult to decide as to which of the two races recognized by Kellogg and Goldman (1944) of this species the specimen under report may belong. The length of the hair shows it to be *A. p. chamak* (Humboldt) ; but, since the face appears to be flesh-coloured, the specimen can also be referred to the nominate race. The skull is provisionally determined as the skin is not available.

Distribution.—Western Matto Grasso, Eastern Bolivia, and from north-eastern Peru to Carribean coast of Guianas.

¹ Placed on the *Official list of generic names in Zoology* (Opinion 91) ; but see Miranda Ribeiro (1941, p. 828).

Ateles belzebuth belzebuth E. Geoffroy

1806. *Ateles belzebuth*, E. Geoffroy, *Ann. Mus. Hist. nat. Paris*, VII, p. 272, pl. 16 [Unknown but restricted by Kellogg and Goldman (1944) to Esmeralda, West of the mouth of the Rio Guapo, on the Rio Orinoco and south of Duida, Venezuela].

Material—

3680 ♂ Skin By Exchange (21-1-1879).
(I.M. 59a)

Remarks.—The specimen was identified by Anderson (1881, p. 84) as *A. chuva* Schlegel which is now considered as a synonym of the form under report. The specimen agrees well with the description given by Kellogg and Goldman (1944).

Distribution.—Lowlands from near the junction of the Rio Orinoco and the Rio Caura in central Venezuela south to the valley of the Rio Negro, westward to Colombia east of Cordillera Oriental (Mambita), Ecuador, east of the crest of the Andes and North-eastern Peru (Sarayacu)—Kellogg and Goldman.

Ateles geoffroyi (?) geoffroyi (Kuhl)

1820. *Atele(s) geoffroyi*, Kuhl, *Beitr. Zool. Anat.* p. 26 [Type locality unknown but restricted by Kellogg and Goldman (1944) to San Juan del Norte (Greytown), Nicaragua].

Material—

3688 ♀ Skin (damaged) Central America. By Exchange (21-1-1879).
(I.M. 58a)

Remarks.—The colour is conspicuous by the absence of the black except on the forehead, the back of the head, the knees, the outer sides of the forearms, the hands and on the feet. The general colour on the back, the arms, the chest, and the belly is a tint of ochraceous buff but slightly redder on the belly. Black hairs are present on the arms especially on the outer side of the forearm. The hairs on the throat and the cheeks are paler. The hairs on the forehead are entirely black. There is a marked darker patch on the back of the head but the bases of the hairs are of the same colour as that of the back.

Distribution.—Coastal region bordering San Juan del Norte or Martina Bay, south eastern Nicaragua, probably ranging across through the low-land to the Pacific coast (Kellogg and Goldman).

Ateles geoffroyi (?) vellerosus Gray

1865. *Ateles vellerosus*, Gray, *Proc. zool. Soc. Lond.* p. 73 [Brazil ? but restricted by Kellogg and Goldman (1944) to Mirador, about 15 miles north-east of Huatusco, Veracruz, Mexico, altitude 2,000 ft.].

Material—

3689 Ad. Skin and skull By exchange (21-1-1879).
(I.M. 58b)

Remarks.—For want of locality the subspecific identification is provisional. The specimen agrees well with the description of *vellosus* given by Kellogg and Goldman (1944). There is, however, no darkening along the median line of the back. The forwardly directed hairs of the crown prominently project over the forehead and are mixed with some silvery hairs.

Distribution.—Unbroken forests of Veracruz and eastern San Luis Potosi and southeast-ward through Tobasco across the Isthmus of Tehuantepec in eastern Oaxaca, to Honduras and El Salvador, except highlands of Guatemala (Kellogg and Goldman).

Ateles [?] *geoffroyi* *grisescens* Gray

1868. *Ateles grisescens*, Gray, *Proc. zool. Soc. Lond.* p. 732 [Type locality unknown but restricted by Kellogg and Goldman (1944) to the Rio Tuyra, southeastern Panama].

Material—

3684 . . . ♀ . Skin and skull . . . Brazil ? By Exchange (21-1-1879).
(I.M. 56a)

12300 Adol. ♂ . Skin and viscera in spirit . W. Rutledge (18-8-1878).
(I.M. 58c)

Remarks.—The identification of the specimens is tentative. No. 3684 was identified by Anderson (1881) as *Ateles ater* F. Cuv. which is now considered as synonym of *A. paniscus* (Linnaeus). The specimen differs from *A. paniscus* in having white side whiskers and a small partially concealed forehead patch. Also, in addition to black hairs there are many hairs which are either yellowish or silvery with black tips or with black and yellowish annulations. The locality given is Brazil which does not appear to fall within the range of the present form. No. 12300 was referred by Anderson (*op. cit.*) to *Ateles geoffroyi* Kuhl. It differs from No. 3684 in being brownish instead of black and in greater abundance of yellowish or old gold hue (Ridgway, 1912, pl. XVI) in the pelage. In most of the features the specimens agree well with the description of the present form as given by Kellogg and Goldman (1944).

Distribution.—Presumably the valley of the Rio Tuyra and probably south-east-ward through the Serrania del Sapo of extreme southeastern Panama and the Cordillera de Baudo of north-western Colombia (Kellogg and Goldman).

Family CALLITHRICIDAE

Leontocebus rosalia (Linnaeus)

1766. *Simia rosalia*, Linnaeus, *Syst. Nat.* ed. 12, I, p. 41 ("Brazil").

Material—

3695 . . . Ad. . Skin and skull . . . By Exchange (21-1-1897).
(I.M. 70a)

7662 . . . ♂ . Do. . . . Zool. Gardens, Calcutta 29).
11-1898).

10881 Skin (exhibited) . . . Do.
11966 . . . ♂ . Skull . . . W. Rutledge (22-12-1889),
12305 . . . ♂ . Skin (exhibited) . . . Do. (3-11-1880).
12361 . . . ♂ . Incomplete skeleton . . . Do. (3-11-1880).
(I.M. 70b)

12362 . . . ♂ . Do. . . . Exchange (28-5-1880).

Measurements of skulls—

Z.S.I. Reg. No.	<i>l</i>	<i>cb</i>	<i>zw</i>	<i>ow</i>	<i>mw</i>	<i>c¹.m²</i>	<i>ml</i>
11966 . . .	55.0	44.8	34.0	26.7	16.5	15.4	..
12361 . . .	54.0	44.8	33.4	27.2	16.7	15.0	36.0
12362 . . .	55.9	44.4	..	..	16.1	15.5	35.2
1 ZS1/55							30

Remarks.—No. 10881 is much paler (pale buff) on the upper surface but perhaps this may be due to long exposure. In No. 12305 the front side of the legs and some areas towards the root of the tail are pale buff and much contrasted with other parts of the body.

Distribution.—Coastal southeastern Brazil (Rio De Janeiro and Sao Paulo).

Subgenus **Tamarin**

Marikina tamarin (Link)

1795. *Cebus tomarin*, Link, in J. E. Gray's *List Mam. Coll. Brit. Mus.* XIV (1843)¹ (Pará).

Material—

12303 . . ♂ . . Skin and incomplete skeleton W. Rutledge (May, 1879).
(I.M. 73a)
1967 . . ♀ . . Skin and skeleton . . Do. (30-8-1882).
12304 . . ♀ . . In spirit Do. (14-5-1879).
(I.M. 73b)

Measurements of the skull No. 11967.—*l*, 47.3; *cb*, 39.8; *zw*, ?; *ow*, 23.2; *mw*, c^1-m^2 , ?; *ml*, 31.9.

Remarks.—Herskovitz (1949) recognized two sub-species but without giving their diagnostic characters. As the localities of the above specimens are unknown, it is not possible to identify them subspecifically.

Distribution.—Lower Amazon, Pará, and near the mouth of the River Tocantins (Hoffmannsegg).

Subgenus **Oedipomidas**

Marikina oedipus Linnaeus

1758. *Simia oedipus*, Linnaeus, *Syst. Nat.* ed. 10, I, p. 28 (America, but restricted by Herskovitz (1949) to Rio Sinú, department of Bolivar, Colombia).

Material—

3694 ♂ Skin and skull By Exchange (21-1-1879).
(I.M. 71a)
8040 Skin D. Ezra (31-1-1906).
12301 ♂ Skin W. Rutledge (28-10-1880).
(I.M. 71e)
12302 ♂ In spirit Do. (13-9-1880).
(I.M. 71c)
12363 ♂ Skeleton Do. (3-11-1880).
12364 ♀ Do. . . . Do. (13-9-1880).

Measurements of skulls—

Z.S.I. Reg. Nos.	<i>l</i>	<i>cb</i>	<i>zw</i>	<i>ow</i>	<i>mw</i>	c^1m^2	<i>ml</i>
12363	7.8	38.6	30.7	26.0	13.8	12.8	30.3
12364	48.4	38.9	30.9	25.2	13.8	12.5	..

¹Gray's original work is not available to me. Sherborn gives the reference as follows.—Jacobs (Link), J. E. Gray's *List Mam. coll. B.M.*, 1843, 14.—*Cebus* 1795. See Herskovitz (1939) who revived *tamarin* Link to replace *ursula* Geoffroy and *ursula* Hoffmannsegg but without giving the original reference.

Remarks.—In all the specimens the rump and the outer surface of the thighs is mars orange or burnt sienna (Ridgway, 1912, pl. II). No. 8040 is peculiar in the absence of buffy grizzling on the back and in being paler. No. 3694 is redder, the burnt sienna also appearing on the shoulders.

Distribution.—Northern Colombia, from Golfo de Darién Antioquia, east to Rio San Jorge, department of Bolívar, thence north between the coast and the west bank of Rio Magdalena as far as Cartagena and at least the southern portion of the department of Atlantico, may also occur in the area between Rio San Jorge and Cauca (Herskovitz).

Subgenus *Marikina*

Marikina leucopus Günther.

1876. *Hapale leucopus*, Günther, *Proc. zool. Soc. Lond.* p. 743, pl. 72 (Near Medellin, Antioquia, Columbia).

Material—

3692 (I.M. 72a)	.	♂	.	Skin and skull	.	.	Antioquia, Colombia. Exchange (21-1-1879).
7693	.	Adol.	.	Do.	.	.	Exchange (21-1-1874).

Remarks.—The specimens agree well with the description given by Herskovitz (1949). The hands, the feet, and the outer sides of the arms and legs are whitish.

Distribution.—In Columbia from the confluence of Rio Magdalena and Cauca, department of Bolívar, north into the department of Antioquia; altitudinal range from near sea level to approximately 1,000 meters above. The species does not occur naturally east of Rio Magdalena and west of Rio Cauca (Herskovitz).

Subgenus *Callithrix*

Callithrix jacchus (Linnaeus)

1758. *Simia jacchus*, Linnaeus, *Syst. Nat.* I, p. 27 (America).

Material—

7675	.	.	♀	.	Skin and skull	.	.	Zool. Gardens, Calcutta (10-7-1899).
7676	.	.	.	.	Do.	.	.	? Tiretta Bayeer (10-7-1899).
7747	.	.	♂	.	Do.	.	.	Zool. Gardens, Calcutta (14-3-1902).
7773	.	.	.	.	Do.	.	.	W. Rutledge (14-3-1902).
7894, 7900, 7902	}	.	.	.	Do.	.	.	Zool. Gardens, Calcutta (23-12-1903).
8048	.	.	.	.	Skin	.	.	Isle of Marajo, Brazil. W. Rutledge (31-1-1906).
10914	.	.	♀	.	Do. (exhibited)	.	.	Zool. Gardens, Calcutta (17-3-1931).
11980 (I.M. 67j)	.	.	♀	.	Skin and skull (damaged)	.	.	W. Rutledge (9-9-1872).

Material—contd.

12310 (I.M. 67f)	. . ♂	. Skin and incomplete skeleton	W. Rutledge (5-10-1876).
12311	. . ♀	Skin and skull	. . . Do. (21-6-1898).
12313 (I.M. 67g)	} .	Juv. In spirit	E. Blyth (1851).
12314 (I.M. 67h).			
12315			
	. .	Skin (incomplete)	Zool. Gardens, Calcutta (28-10-1916).

Measurements of the skull No. 12310.—*l*, 46·8 ; *cb*, 38·7 ; *zw*, 30·9 ; *ow*, 23·6 ; *ms*, 12·6 ; *c¹-m²*, 11·5 ; *ml*, 31·5.

Remarks.—No. 7900 is the darkest of the lot. The top of the head, the neck, and the shoulders are dark brown and this colour extends on the sides of the trunk where it is almost black. No. 8048 is the palest specimen. On the crown and on the neck of this specimen the hairs have almost white bases with brownish tips. The hairs on the rest of the body are provided with nearly white tips. The rest of the specimens are intermediate between these two extremes.

In the juvenile the patch of hairs on the forehead is first to appear.

Distribution.—Island of Maragó, Brazil.

Callithrix penicillata (E. Geoffroy)

1812. *Jacchus penicillatus*, E. Geoffroy, *Ann. Mag. nat. Hist.* XIX, p. 119 (Brazil).

Material—

12308 (I.M. 68a)	. Adol. ♂	. Skin and viscera in spirit.	. H. Swaries (15-1-1869).
12309	. ♀	. Skin	. . . W. Rutledge (11-11-1884).

Remarks.—No. 12309 is darker on the head and the neck but slightly paler on the other parts than the other specimens. The hairs except on the head and the neck are banded with blackish brown or brown and orange or buff. The intensity of the colour and the extent of the bands are variable on different parts. The belly and the inside of the thighs are brownish.

Distribution.—Provinces of Goyaz, Minas Geraes, and Espirito Santo between 14 and 17 degrees S. lat. Rio Parama in South America (Natterer.)

Subgenus **Cebuella****Callithrix pygmaeus** (Spix)

1823. *Jacchus pygmaeus*, Spix, *Sim. Vespert. Bras.* pl. xxiv, fig. 2 (Tabatinga on the Rio Solimões, Brazil).

Material

10977	. .	Skin (exhibited)	. . Colombia. Purchased from Shibayama Natural Science Laboratory, Japan (5-8-1937).
12307 (I.M. 62a)	. Ad.	. Incomplete skin	. . By Exchange (21-1-1879).

Remarks.—In No. 12307 the hairs on the back are annulated with blackish brown and pale orange yellow. The intensity and the extent of the two kinds of annulations are variable on different parts. On the forehead and the sides of the face, the basal band is pale orange, and on the rest of the upper side, it is blackish brown. The belly and the inner side of the limbs are buffy but the hairs on the chest and the throat have an orange wash with black tips. No. 10977 is much paler. The tips of the hairs of the head, the neck and the throat are light brown. There is a long conspicuous white subterminal band in the hairs all over the rest of the upper surface giving general whitish colour to the pelage. The cheeks are whitish.

Lönnerberg (1940b) described *niveiventris* as a race of *C. pygmaeus*. For the want of locality, it is difficult to decide to which of the two races the specimen under notice should be referred to.

Distribution.—Forests along the Solimões and Ucayali rivers, Brazil, north into Mexico (Bates).

REFERENCES

- ANDERSON, J., 1881.—*Catalogue of Mammals in the Indian Museum*. Part I, pp. xv + 223. Calcutta : Government Printing Press.
- BLYTH, E. 1858.—Report of the Curator of the Zoological Department. *J. Asiat. Soc. Bengal*, XXVII, p. 274.
- 1863.—*Catalogue of Mammals in the Museum of Asiatic Society Bengal*. 187+xiii pp.—Calcutta : Savielle & Cranenburgh Ltd.
- BONEHOTE, J. L., 1907.—On a collection of mammals made by Dr. Vassel in Annam. *Proc. zool. Soc. Lond.* pp. 3-11.
- CHASEN, F. N. 1940.—A hand list of Malaysian Mammals *Bull. Raffles Mus.* xv, pp. xx+209, I map.
- ELLERMAN, J. R. and MORRISON-SCOTT, T. C. S., 1951.—*Checklist of Indian and Palearctic Mammals*, 809 pp.—London : Brit. Mus. nat. Hist.
- ELLIOT, D. G., 1913.—*A Review of Primates*, Vol. I, cxxvi+317 +xxxviii pp., 40 pls., Vol. II, xviii+382+ xxvi pp., 53 pls. New York : Amer. Mus. nat. Hist.
- EVANS F. G., 1942.—The osteology and relationships of elephant shrew (Macroscelididae). *Bull. Amer. Mus. nat. Hist.* LXXX, pp.85-125.
- FORBES, H., 1894.—Handbook to Primates. Vol. I, pp. xiv+283, 22 pls., Vol. II, pp. xv+296, 15 pls. London.
- *GADOW, H., 1898.—*A classification of vertebrates recent and extinct*. pp. xvii+82. London.
- GOLDMAN, E. A., 1914.—The status of *Cebus imitator* Thomas. *Proc. biol. Soc. Wash.* XXVII, p. 99.
- HERSHKOVITZ, P., 1949. Mammals of Northern Colombia. Preliminary Report No. 4. Monkeys (Primates) with taxonomic revision of some forms. *Proc. U. S. nat. Mus.* XCVIII, pp. 323-427, 3 pls.
- HILL, W. C. OSMAN., 1953-1955.—*Primates : Comparative Anatomy and Taxonomy*, Vol. I, pp. xxxiii+798, 34 pls. ; Vol. II, pp. XX+347, 14 pls. Edinburgh : University Press.

- HORA, S. L., 1944.—On the Malayan affinities of fresh water fish fauna of peninsular India and its bearing on the probable age of Garo-Rajmahal gap. *Proc. nat. Inst. Sci. India* X, pp. 423-439.
- KELLOGG, R. and GOLDMAN, E.A., 1944.—Review of spider monkeys. *Proc. U. S. nat. Mus.* XCVI, pp. 1-45.
- KHAJURIA, H., 1953.—Catalogue of Mammals in the Zoological Survey of India. I. Primates: Hominoidea. *Rec. Indian Mus.* L, pp. 129-145.
- 1955.—Catalogue of Mammals in the Indian Museum (Zool. Surv.). II. Primates: Cercopithecidae. *Ibid*, LII, pp. 101-127, 2 pls.
- 1956.—Catalogue of Mammals in the Indian Museum (Zool. Surv.). III. Primates: Colobidae. *Rec. Indian Mus.* LII, pp. 195-220, 1 pl.
- LÖNNBERG, E., 1940a.—Notes on some members of the genus *Saimiri*. *Ark. Zool.* No. 21, pp. 1-18.
- 1940b.—Notes on marmosets. *Ibid.* XXXIIA, No. 10, pp. 1-22.
- LYON, M. W., 1907.—Notes on slow lemurs. *Proc. U. S. nat. Mus.* XXXI, pp. 527-528, 1 pl.
- POCOCK, R. I., 1925.—Additional notes on the external characters of some Platyrrhine monkeys. *Proc. Zool. Soc. Lond.* pp. 27-47.
- 1939.—*Fauna of British India, Mammalia*, Vol. I. pp. xxxiii+463, 1 map. London: Taylor and Francis.
- RIBERIO, A. de M., 1941.—Commentaries on South American Primates. *Mem. Inst. Osw. Cruz. Rio de J.*, XXXV, 4, pp. 779-851, 18 pls.
- RIDGWAY, R., 1912.—*Colour standard and colour nomenclature*. pp. vii+44, 53 pls. (col.).—Washington, D. C.
- *ROMER, A. S., 1949.—*The vertebrate body*. 643 pp. Philadelphia: W. D. Saunders & Co.
- SCHWARZ, E., 1931a.—On the African long-tailed lemurs galagoes. *Ann. Mag. nat. Hist.* (10) VII, pp. 41-66.
- 1931b.—A revision of the genera and species of Madagascar Lemuridae. *Proc. zool. Soc. Lond.* pp. 399-428.
- SIMPSON, G. G., 1945.—The principles of classification and a classification of Mammalia. *Bull. Amer. Mus. nat. Hist.* LXXV, pp. xvi+350.
- STONE, W. and REHN, J. A. G., 1902. A collection of mammals from Sumatra with a revision of the genera *Nycticebus* and *Tragulus*. *Proc. Acad. nat. Sci. Philad.* LIV, pp. 127-142.
- TATE, G. H. H., 1939.—Mammals of Guiana region. *Bull. Amer. Mus. nat. Hist.* LXXXVI, pp. 151-229.
- THOMAS, O., 1922.—On the systematic arrangements of marmosets. *Ann. Mag. nat. Hist.* (9) IX, pp. 196-198.