

AN ANNOTATED CATALOGUE OF THE MAMMALS COLLECTED BY
DR. W. L. ABBOTT IN THE KILIMA-NJARO REGION, EAST AFRICA.

BY

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(With Plates LXXV-LXXX.)

Among the many African collections which Dr. Abbott has, with a generosity and an enlightened patriotism worthy of the emulation of other American travelers, presented to the National Museum, none are of more interest than the collection of mammals. This is the first collection of African mammals of any magnitude with which the Museum has been enriched, and it is greatly valued on that account; but it has in addition a high scientific value. The specimens have been prepared with much care, the skins being almost invariably accompanied by the skulls and furnished with labels giving the locality and date of capture, sex, and other data.

In determining the species I have found it necessary to depend almost exclusively on the literature, on account of the lack of specimens for comparison, but the identifications have been made with much care and may, I think, on the whole, be relied upon.

Several species apparently new are represented in the collection: *Dendrohyrax validus*, *Mus aquilus*, *Dendromys nigrifrons*, *Sciurus undulatus*, *Cephalophus spadix*.

On one who has studied the North American mammalian fauna in detail, the thought impresses itself that the condition of species, as regards variation, is different in the Ethiopian and Neartic regions. In North America individual variation seems far less extensive than in Africa, while geographical variation appears to be more extensive and constant. In Dr. Abbott's collection great individual variation is especially apparent in the genera *Galago*, *Genetta*, and *Canis*. It is true that the species of the last-named genus everywhere present much individual variation, but in North America its chief variations appear to be geographical in character.

The known range of several species is considerably extended by Dr. Abbott's labors. Among the species whose range extends farther north than has apparently hitherto been suspected, may be mentioned the following: *Mellivora capensis*, *Canis mesomelas*, *Otocyon megalotis*, *Eliomys murinus*, *Otomys irrorata*, *Aulacodus swinderianus*, *Megaderma*

cor. The discovery of a new species of *Dendromys*, *D. nigrifrons*, extends the range of that genus from South Africa to East Africa.

The mammalian fauna of the Kilima-Njaro region, as indicated by Dr. Abbott's collection, and the lists published by Mr. Thomas and Capt. Willoughby, includes the following species, seventy-one to seventy-three in number:*

<i>Colobus caudatus.</i>	<i>Aulacodus swinderianus.</i>
<i>Cercopithecus albogularis.</i>	<i>Lepus capensis.</i>
<i>Cercopithecus pygerythrus</i> (T.-J.).	<i>Megaderma frons.</i>
<i>Cercopithecus sabæus.</i>	<i>Megaderma cor.</i>
<i>Galago crassicaudatus.</i>	<i>Vesperugo nanus</i> (T.-J.).
<i>Felis leo</i> (T.-J.; W.).	<i>Nycteris thebaica.</i>
<i>Felis pardus</i> (T.-J.; W.).	<i>Erinaceus albiventris.</i>
<i>Felis serral</i> (W.).	<i>Crocidura</i> sp. ?
<i>Cynelurus jubatus</i> (W.).	<i>Connochaetes taurinus albojubatus.</i>
<i>Helogale undulata.</i>	<i>Oryx callotis.</i>
<i>Herpestes gracilis.</i>	<i>Alcelaphus cokii.</i>
<i>Herpestes caffer.</i>	<i>Kobus ellipsiprymnus.</i>
<i>Herpestes galera robustus.</i>	<i>Strepsiceros kudu</i> (T.-J.; W).
<i>Crossarchus caninus.</i>	<i>Strepsiceros imberbis</i> (W.).
<i>Genetta pardina.</i>	<i>Tragelaphus scriptus roualeynii.</i>
<i>Genetta tigrina</i> (T.-J.; W.).	<i>Æpyceros melampus.</i>
<i>Viverra civetta</i> (W.).	<i>Eleotragus ? arundinaceus.</i>
<i>Mellivora capensis.</i>	<i>Gazella grantii.</i>
<i>Hyæna crocuta</i> (W.).	<i>Gazella thomsonii.</i>
<i>Hyæna striata</i> (W.).	<i>Gazella wallerii</i> (W.).
<i>Canis mesomelas.</i>	<i>Cephalophus spadix.</i>
<i>Canis lateralis</i> (T.-J.; W.).	<i>Cephalophus mergens</i> (W.).
<i>Canis</i> sp. ? (W.).	<i>Cephalophus nigrifrons.</i>
<i>Otocyon megalotis.</i>	<i>Damalis hunterii</i> (W.).
<i>Dendrohyrax validus.</i>	<i>Neotragus damarensis.</i> ¹
<i>Procavia brucei.</i>	<i>Neotragus kirkii</i> (W.). ¹
<i>Eliomys murinus.</i>	<i>Nanotragus moschatus.</i> ²
<i>Mus arborarius.</i>	<i>Nanotragus tragulus</i> (W.). ²
<i>Mus barbarus.</i>	<i>Oreas canna</i> (W.).
<i>Mus aquilus.</i>	<i>Giraffa camelopardatis</i> (W.).
<i>Mus ? minimus.</i>	<i>Bubalis caffer.</i>
<i>Mus</i> sp. ?	<i>Potamochoerus africanus.</i>
<i>Dendromys nigrifrons.</i>	<i>Phaechochærus elianii.</i>
<i>Otomys rroratus.</i>	<i>Equus burchellii</i> (T.-J.).
<i>Rhizomys splendens.</i>	<i>Hippopotamus amphibius</i> (W.).
<i>Sciurus undulatus.</i>	<i>Rhinoceros bicornis.</i>
<i>Sciurus poensis.</i>	<i>Elephas africanus</i> (T.-J.; W.).
<i>Xerus rutilus.</i>	

* Mr. Thomas's list of the mammals obtained or observed by Mr. H. H. Johnston is in the Proceedings of the Zoölogical Society of London, 1885, pp. 219-222. Capt. Willoughby's list is in his work on East Africa and its Big Game. The species mentioned in these lists, but not included in Dr. Abbott's collection, are in italics.

¹ Perhaps only one species is really found here.

² As in the preceding genus, I suspect that only one of these species belongs to the fauna.

CATALOGUE OF SPECIES COLLECTED BY DR. ABBOTT.

Colobus caudatus Thomas.

This remarkably handsome monkey is regarded by Mr. Thomas as a subspecies of *Colobus guereza*. So far as I know, however, no specimens showing external characters intermediate between those of the two forms have been found, and the skulls which Dr. Abbott brought home are different from that of *C. guereza*. On present evidence it may be affirmed that *Colobus caudatus* is a distinct species, peculiar to the region of Mount Kilima-Njaro.

The species would appear to be somewhat larger than *C. guereza*. The chief distinguishing character externally is the hairiness of the tail. The tail is clothed with long white hair from base to extremity, and resembles that of a horse, as is well shown in Mr. Thomas's figure.*

The differences between the skulls of the two species are many. The most striking relates to the form of the nasal bones, which are flat or even concave transversely in *C. caudatus*, so that they appear to lie in the same plane with the margin of the anterior nares when the skull is viewed in profile. In *C. guereza*, on the contrary, the nasals project strongly in the distal half. The interocular portion of the frontal is much narrower in *C. caudatus* than in *C. guereza*, the superior margin of the orbits is more arched and the forehead above them much more depressed. The facial portion of the skull in front of the eyes is broader and more convex in *C. caudatus* than in the allied species, and the external rim of the orbits narrower. The tympanic bones are much the largest in *C. caudatus*, and their form as well as the relative positions of the various foramina are different. The mandible is less deep and more shelving at the symphysis in *C. caudatus*.

Many of these differences are indicated in the accompanying table of measurements. They are sufficient, I am satisfied, to warrant the separation of *C. caudatus* from *C. guereza* as a distinct species, though the two forms are closely related.†

The largest skull of *C. caudatus* in the collection (No. 34680), which has a basilar length of 91.4 millimeters, has the suture between the occipital and sphenoid still open and the teeth very little worn.

* Proc. Zool. Soc., London, 1885, pl. 12.

† I may say, in confirmation of this opinion, that when a skull of *C. guereza* was placed in the midst of five or six skulls of *C. caudatus* it was immediately selected from the others by three persons to whom the question at issue was unknown.

Dimensions of four skulls of *Colobus caudatus* compared with those of one skull of *Colobus guereza*.

Measurements.	<i>C. guereza</i> , 21729 ♂ adult.	<i>C. caudatus</i> .								
		34789* ♂ young Kahé.	34790 ♀ ad. Kahé.	34788* ♀ young Kahé.	34791† quite young Kahé.	34680 ♂ ad. Kahé.	34679 ♂ ad. Kahé.	34676 ♀ ad. Kahé.	34678 ♀ Kahé.	34677 ♀ jr. Kahé.
Basilar length (Hensel)	mm. 82.0	mm. 86.4	mm. 78.4	mm. 78.0	mm. 55.2	mm. 91.4	mm. 87.0	mm. 81.5	mm. 74.5	mm. 74.5
Length from posterior edge of palate to posterior edge of incisive alveolæ	47.5	48.2	45.2	42.8	30.0	49.0	48.0	43.5	39.5	39.9
Greatest breadth across zygomatic arches	80.0	78.9	74.2	74.6	58.2	83.0	78.0	73.3	70.0	71.0
Least width between the orbits	14.4	10.0	9.8	9.6	7.4	11.0	10.0	9.0	8.0	8.0
Longest axis of orbits	26.2	27.4	27.6	27.8	22.6	26.5	26.5	26.5	25.0	26.0
Length of nasals in the median line	15.6	12.8	11.0	12.4	11.7	12.5	14.0	12.0	10.5	11.0
Vertical diameter of anterior nares	21.2	25.0	23.2	22.8	15.6	25.0	24.0	22.0	22.7	20.5
Transverse diameter of anterior nares	13.6	15.8	13.4	14.2	9.4	16.5	14.7	12.6	11.3	12.0
Length of upper molars and premolars taken together	33.0	35.6	33.8	32.4	18.6	34.5	34.0	33.8	31.5	33.0
Length of lower molars and premolars	39.6	40.0	39.4	37.6	19.4	42.0	41.0	39.5	35.0	38.0
Length of crown of superior canine	21.4	.....	12.6	.....	.....	21.5	23.3	.....	13.0	12.0
Length from posterior edge of lower incisive alveolæ to posterior margin of condyle of jaw	77.8	79.4	70.8	73.6	53.0	85.5	81.0	76.0	69.3	69.5
Depth of jaw below the coronoid process	46.8	48.0	43.0	45.8	31.0	52.3	50.0	49.0	44.5	46.5

* Suture between basi-occipital and basi-sphenoid open; permanent dentition. † Milk dentition.

Cercopithecus albogularis Sykes.

The three specimens collected by Dr. Abbott correspond to Sykes's and Fraser's description of *C. albogularis*, between which and the *C. monoides* of Is. St. Hilaire there seems to be no essential difference. St. Hilaire states that according to the English zoölogists the breast of *C. albogularis* is white. I do not find it so stated, however; the words in the original description are: "Chin and throat pure white."* Further, the quotation of the original description of the color of the species is not strictly accurate, and although St. Hilaire intimates that the thumb is longer in his *C. monoides*, his figure does not indicate that such is the case.

The largest specimen collected by Dr. Abbott is almost exactly of the same size as the type, if Sykes's measurements may be relied upon. The only discrepancy in color which I find relates to the hind legs (excluding the feet). Sykes states that they are "black, with a little of the dorsal color." In Dr. Abbott's specimens they are clear gray throughout, except at the knee, where there is a black area. This gray color arises from the fact that the hairs are black in the upper half, with two rings of white.

The young specimen (No. 18929) differs somewhat in coloration from the adults, which difference is doubtless due to immaturity. The white area on the throat is prolonged into a silvery gray area on the breast, and the general color of the belly is dusky gray rather than blackish, and the hairs are but little annulated with white. There is much whitish

* Sykes, Proc. Comm. Sci., Zoöl. Soc. London, 1831, p. 106.

color and brownish silvery gray between the hind legs. The exterior of the hind legs is blackish, but the annulations of white, though not prominent, are perceptible. In a small area on the under side of the base of the tail and about the anus the hair is cinnamon red. There is a tinge of this color in the same region in the adults, but it is not conspicuous.

The skull of the largest specimen, compared with a skull of *C. mona*, shows many differences. The nasal region is much higher and more prominent. The anterior nares are much larger. The nasal bones themselves are longer and broader. The orbits are higher than broad, which is not the case in *C. mona*. The palate is longer and narrower, and the posterior palatine foramina, in this specimen at least, are situated opposite the posterior margin of the last molar, and not that of the penultimate molar, as in *C. mona*. The dimensions of this skull are as follows:

Dimensions of skull No. 34681, male.

	mm.
Basi-cranial length (Hensel).....	71.5
Greatest length.....	104.0
Zygomatic breadth.....	68.0
Length of nasal bones.....	20.0
Breadth of nasal bones taken together anteriorly.....	10.0
Height of anterior nares.....	19.5
Breadth of anterior nares.....	10.5
Length of palate from alveolus of incisor to posterior emargination.....	36.5
Height of orbit.....	22.0
Breadth of orbit.....	20.0
Length of upper molar and premolar series.....	24.0
Length of lower molar and premolar series.....	30.0
Length of mandible, from right condyle to posterior margin of alveolus of incisor.....	69.0
Depth at the angle.....	37.0

This skull indicates that the individual to which it belongs is not young. The occipito-sphenoidal suture is closed and that between the squamosal and parietal bones is partially obliterated. The teeth are worn nearly to the roots in an irregular manner.

$\frac{189227}{34681}$. Male, adult. Taveta, March, 1888.

$\frac{189228}{34682}$. Female, nearly adult. Taveta.

18929. Male, young. Taveta.

Cercopithecus sabæus (Linn.).

The collection contains one young specimen from Taveta. It is apparently a male. It presents no peculiarities of coloration, except that the tail is dusky at the end rather than whitish, but it appears to have been injured during life, and has not its full length. The ears are clothed within with long whitish hairs, which extend beyond the margin of the ear.

The skull shows the milk dentition. All the sutures are open, except

the left half of the fronto-parietal, which, unlike its fellow, is nearly obliterated. The dimensions of the skull are as follows:

Dimensions of skull No. $\frac{34683}{18930}$, jr.

	mm.
Basi-cranial length (Hensel).....	44
Greatest length.....	80
Zygomatic breadth.....	49
Length of nasal bones.....	13
Breadth of nasal bones taken together, anteriorly.....	4.5
Height of anterior nares.....	11
Breadth of anterior nares.....	6
Length of palate.....	22.5
Height of orbit.....	19
Breadth of orbit.....	18
Length of mandible.....	43.5

$\frac{18930}{34683}$. Male (?), young. Taveta, March 8, 1888.

Galago crassicaudatus (Blainville).

The three specimens collected are nearly of equal size. The dimensions of two of them are as follows:

Measurements.	18931. ♂	18932. ♂
	<i>mm.</i>	<i>mm.</i>
Head and body.....	286	297
Tail, with the hairs.....	305	345

The skins differ considerably in color. In No. 18931 the upper surface of the head and body, the tail, and the limbs are strongly tinged with rusty brown, while in No. 18932 these parts are gray, only lightly tinged with pale yellowish brown. The extremity of the tail of the former specimen is chocolate brown, and of the latter yellowish white. As these two individuals were taken in the same locality at the same date, and are both of one sex, it would appear that the difference in color is merely an individual character. The third skin, No. 18933, represents the gray phase.

Dimensions of three skulls of Galago crassicaudatus.

Measurements.	35091 18931* Male.	35092 18932 Male.	35093 18933 Female.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
Basi-cranial length (Hensel).....		53.5	51.5
Greatest length.....		68	67
Zygomatic breadth.....		44.5	44
Length of nasal bones.....	22	23	19.5
Length of palate.....		25	25
Height of orbit.....		19	18.5
Breadth of orbit.....		17.5	18
Length of upper molar and premolar series.....	22	21	20.5
Length of lower molar and premolar series.....	21	21.5	21
Length of mandible.....	42	42.5	42

* Skull broken.

Dr. Abbott remarks on one of the labels that the species is common in the forest, and that the natives state that there are three other kinds in the same region, one larger and two smaller.

¹⁸⁹³¹/₃₅₀₉₁. Male. Taveta, July, 1888.

¹⁸⁹³²/₃₅₀₉₂. Male. Taveta, July 20, 1888.

¹⁸⁹³³/₃₅₀₉₃. Female. Arusha Wa-cini, October 22, 1888.

Helogale undulata (Peters).

The two skins collected agree perfectly with Peters's description and figure, though the latter is too highly colored. The dimensions of the younger skin (No. 18934), which is the only complete one, are as follows:

	mm.
Length of head and body.....	215
Length of tail, with hairs.....	125

The hairs of the under surface of the tail in the older skin are nearly uniform red throughout, but in the younger skin they are annulated throughout with black, except at the base of the tail.

The dimensions of the skulls are as follows:

Measurements.	18934, ♀, jr.	18935, ♀ adult.
	<i>mm.</i>	<i>mm.</i>
Length *.....	46.5	47
Breadth †.....	26	31
Palate length ‡.....	23	24
Palate breadth §.....	16.5	16.5
Incisors to cross line ||.....	16	15.5
Basio-cranial axis ¶.....		

* For convenience of comparison I use here and in *Herpestes* the measurements given by Mr. Oldfield Thomas in his paper on the African Mongooses. (Proc. Zool. Soc., London, 1882, p. 65.)

† "Length"—Distance from front of premaxilla to most posterior point of either occipital condyle.

‡ Greatest breadth across zygomata.

§ From front of premaxilla to end of bony palate.

¶ Between the points at which the last premolar and first molar touch each other at the outer edges.

|| From front of premaxilla to a point midway between those mentioned under last heading.

¶ From central point of post. edge of basi-occipital to anterior edge of lower surface of presphenoid.

The ratio between the breadth of the last premolar and last molar teeth, measured according to Mr. Thomas's system, is 72 per cent. for the adult skull (No. 35095), and 66 per cent. for the young skull (No. 35094). The difference is due to the wearing away of the last premolar in the older skull, which is here absolutely smaller than in the younger skull.

Dr. Abbott remarks that this species is common, living in holes in ant-hills.

¹⁸⁹³⁴/₃₅₀₉₄. Female, young. Plains east of Mount Kilima-Njaro, July, 1889.

¹⁸⁹³⁵/₃₅₀₉₅. Female, adult. Taveta.

Herpestes gracilis Rüppell.

The single specimen collected by Dr. Abbott appears unquestionably to belong to this species, although it agrees exactly with neither the descriptions nor the figures of the typical and other varieties. This is due probably to the indefiniteness of the terms used in the several

descriptions. The skin before me can scarcely be called gray, because the two colors apparent in the hairs do not mingle to form a tint. It is rather to be called grizzled. The grizzling is produced by the annulations of the longer hairs, which are alternately black and cream-colored, or pale buff. The hairs of the back have two or three light-colored rings, but about the base of the tail they have as many as five or six light rings. Besides these long hairs there is an underfur which is buff-colored in the upper half and dusky at the base. The tail is colored on both sides like the back, except in the terminal 3 inches, where it is black. The under surfaces of the body are buff-colored, with inconspicuous dusky annulations. The feet are like the back, but with more buff and less black.

The dimensions of the skull are as follows:

Dimensions of skull No. $\frac{34684}{12936}$ ♀ ad.

	mm.
Length*	64.5
Breadth	31.5
Palate, length.....	34.5
Palate, breadth	19.0
Incisors to cross-line	23.0
Basi-cranial axis.....	25.0

The ratio of the breadth of the last premolar to that of the last molar is 47.2 per cent.

$\frac{34684}{12936}$. Female, adult. Plains east of Mount Kilima-Njaro, June, 1889. (The mammae contained milk.)

Herpestes caffer (Gmelin).

One adult specimen was obtained on Mount Kilima-Njaro, at an elevation of 5,000 feet. It agrees with normal specimens, except that the subterminal light rings of the hairs are yellowish rather than pure white, which gives the general color a yellowish tinge.

$\frac{19728}{33246}$. Adult female. Mount Kilima-Njaro, September, 1889; 5,000 feet.

Herpestes galera (Erxl.); var. ***robustus***.

Two specimens were collected by Dr. Abbott on Mount Kilima-Njaro, an adult and a young individual. They are almost identical in color, except that the younger specimen has rather lighter underfur. The hairs are annulated throughout. There is no white to be seen on any part of the body, the annulations being light brown, of the same shade as the underfur, or paler, and the mark at the mouth also light brown.

The younger individual, which has the milk premolars in position, and the first true molar just appearing in the lower jaw, has a total length of 30 inches (752 millimeters), of which the tail is 10 inches (254 millimeters).

* These measurements are defined on p. 451, footnote to table.

Dimensions of the skulls.

Measurements.†	35251.	35252.
	♂ ad.	♀ jr.
Length.....	<i>mm.</i>	<i>mm.</i>
Breadth.....	104.9	.....
Palate-length.....	56.2	.....
Palate-breadth.....	60.8	48.0
Incisors to cross-line.....	34.4	26.8
	37.8	26.2

$\frac{1977}{33231}$. Male, adult. Mount Kilima-Njaro; November 8, 1889; 4,000 feet.

$\frac{1977}{33232}$. Female, young. Mount Kilima-Njaro; October, 1889; 5,000 feet.

Crossarchus mungo (Gmelin).

Dr. Abbott obtained a very large specimen of this striped mongoose. It is larger than any specimen thus far recorded, so far as I am aware. The head and body measure 18.5 inches (470 millimeters) along the curves, and the tail, with the hairs, 11.1 inches (282 millimeters.) These measurements are in the same proportion as those of the smaller specimens recorded by Mr. Thomas,* and probably, therefore, the greater size of the individual under consideration does not indicate specific distinctness. It is true that the relative size of superior premolar 4 and of molar 2 is not the same as in the specimens cited by Mr. Thomas, but the great range of variation in other species of *Crossarchus* in this particular, as shown by Mr. Thomas's measurements,† renders the character unreliable.

The teeth are very considerably worn in our specimen, which would appear to be past maturity. The coloration agrees with Mr. Thomas's description, except that the under surfaces of the body are tinged with yellow.

The dimensions of the skull is as follows:

Dimensions of skull No. $\frac{3468}{18937}$, ♀ ad.

Length †.....	<i>mm.</i>	74.5
Breadth.....		40.0
Palate, length.....		41.0
Palate, breadth.....		23.0
Incisors to cross-line.....		24.5
Basi-cranial axis.....		27.5
Length of premolar $\frac{4}{2}$		7.7
Length of molar $\frac{2}{2}$		5.9

$\frac{1893}{34685}$. Female, adult. Taveta.

*Proc. Zool. Soc., London, 1882, p. 90.

† L. C., p. 91.

‡ These measurements are defined on p. 451, footnote to table.

Genetta pardina I. Geoff.

Dr. Abbott collected the skins of six genets, which appear to belong to this species. Taken together they agree in nearly every particular with St. Hilaire's original description of this species and with F. Cuvier's figure.*

They present, however, certain extraordinary differences in coloration among themselves. No. 18939, from Taveta, and No. 19736, female, from Mount Kilima-Njaro (September, 1889, 5,000 feet), represent the two extremes. In the former the markings of the body and the dark rings of the tail are chestnut colored, and there is a tinge of this color over all the upper surfaces. The under surfaces of the body and of the light rings of the tail are nearly pure white. The lower legs and feet are isabelline, or pale buff, fading to white on the toes and the inside of the hind feet. Ten white rings can be counted on the lower side of the tail, the last being within half an inch of the tip.

In No. 19736 only the larger spots have chestnut centers, the rest being entirely black. The dark rings of the tail are also entirely black, and are joined together by narrow black lines, which extend across the light rings. The general color of the body is pale tawny, of about the same shade above and below. The outside of the lower legs and the feet, except the toes, are dusky brown, approaching black. Only seven light rings can be counted on the lower side of the tail and its terminal third is entirely black.

The remaining four skins present different intermediate conditions. Although the light-colored specimen described above is younger than the dark one, there is another light one quite as old as the latter, so that the difference does not appear to depend upon age. It is apparently a matter of individual variation.

The length of the six skins in their present dry condition is as follows:

Measurements.	18938, jr ¹ 2 Taveta.	18939. ¹ Taveta.	18940. ¹ Taveta.	19737 ♀ Mt. Kilima- Njaro. ♀	19736 ♀ Mt. Kilima- Njaro. ♀	19735 ♀ Mt. Kilima- Njaro. ♀
	mm.	mm.	mm.	mm.	mm.	mm.
Length of head and body	475	505	580	535	580	550
Length of tail	405	435	450	465	430	455

¹ Light colored.

² Third upper premolar and last molar not completely cut.

* St. Hilaire et F. Cuvier, Hist. Nat. des Mammifères. Plate: "*Genetta panthérine*." This great work is extremely defective from a bibliographical point of view. The plates are unnumbered and the pagination begins anew with every article.

The dimensions of three skulls, all from Taveta, are as follows:

Measurements.	35096	35097	35098
	18938 ^{ir.}	18939 [♀]	18940 [♂]
Total length from front of premaxilla to occipital condyle	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
Basi-aural length (Hensel).....	82.5	88.0	88.0
Zygomatic breadth	75.5	82.0	81.0
Length of the palate from its post. margin to post. margin of incisors..	42.0	44.0	45.5
Length of nasal bones in median line.....	36.0	38.0	39.0
Least breadth behind post-orbital processes.....	17.0	17.0	17.0
Length of superior molar and premolar series.....	13.0	11.5	12.0
Length of inferior molar and premolar series.....	28.0	28.0	28.0
Length of mandible from condylar extremity of ramus.....	31.0	30.5	30.5
Depth of mandible at coronoid process.....	56.0	57.5	59.5
	21.0	22.0	22.5

¹⁸⁹³⁸₃₅₀₉₆. Male, young. Taveta.

¹⁸⁹³⁹₃₅₀₉₇. Female. Taveta.

¹⁸⁹⁴⁰₃₅₀₉₈. Male. Taveta.

19735. Female. Mount Kilima-Njaro, September, 1889, 6,000 feet.

19736. Female. Mount Kilima-Njaro, September, 1889, 6,000 feet.

19737. Female. Mount Kilima-Njaro, September, 1889, 6,000 feet.

Mellivora capensis (Schreber).

Dr. Abbott collected a single specimen of this species, on Mount Kilima-Njaro, and remarks that "it is rare upon the mountain."

19000. Male: Mount Kilima-Njaro, September, 1889, 5,000 feet.

Canis mesomelas Schreber.

The two specimens of this species agree well with Schreber's original description and Wagner's additions to the same, except in the following particulars as regards No. 18941: The black-tipped hairs of the dorsal mantle are continued down in front of the shoulders and across the under surface of the neck, giving this region a somewhat grizzled appearance which, however, is not so strong as on the shoulders. All the hairs of the tail are conspicuously black tipped, except those of a small area at the base of the tail underneath. The tawny color of the legs and flanks, which is very bright, is partially due to earth-staining.

18941. Male (?). Taveta.

19723. Mt. Kilima-Njaro.

Otocyon megalotis (Desmarest).

Dr. Abbott obtained three specimens of this animal—one from Taveta, and two from Arusha Wa-cini, south of the mountain. They differ from each other in color to a marked degree. The principal differences are as follows:

Female: Arusha Wa-cini, October, 1889, 2,500 feet. Underfur of the middle of the back dusky at the base, cream-colored above. Outer side of the legs and the feet chestnut brown. Backs of ears (except at the tip), extremity and dorsum of tail light brown. The pelage appears worn and faded.

Male: Arusha Wa-cini, December 2, 1889, 2,500 feet. General color pale. Backs of ears dusky, with white hairs intermingled. Outer side of legs and feet, dusky brown. Dorsum of tail black, which color extends to the extremity, but does not surround it, leaving the under side of the tail uniform creamy white. Pelage fresh and glossy.

18942. Taveta. Extremities of the underfur in the middle of the back with a strong, rusty tinge; tail similar. Backs of ears and outside of limbs, dusky brown. Dorsum of tail black, which color completely surrounds the extremity. Pelage rather harsh.

These differences appear to be partly seasonal and partly individual. In all the specimens the forehead and cheeks are nearly pure white and the muzzle dusky brown, making a much stronger contrast than is represented in the figure recently published by Mr. Mivart.*

The following measurements of the skull are the same as those employed by Prof. Huxley in his essay upon the cranial and dental characters of the Canidae: †

Dimensions of a skull of Otocyon megalotis, No. 35999.

	mm.
Total length.....	112.0
Length of palate.....	56.0
Breadth of palate.....	27.5
Length of $\overline{pm.1}$	5.4
Breadth of $\overline{pm.4}$ in front.....	5.4
Length of $\overline{m.1}$	6.0
Breadth of $\overline{m.1}$	7.0
Length of $\overline{m.2}$	5.2
Breadth of $\overline{m.2}$	7.2
Length of $\overline{m.3}$	4.6
Breadth of $\overline{m.3}$	6.6
Length of $\overline{m.1}$	6.8
Length of $\overline{m.2}$	5.8
Length of $\overline{m.3}$	5.0
Length of $\overline{m.4}$	3.0
Basi-cranial length (Hensel).....	101.0
Zygomatic breadth.....	63.0
Length of nasal bones in the median line.....	40.0
Length of superior molar and premolar series.....	35.0
Length of lower molar and premolar series.....	40.0
Depth of mandible at coronoid process (at right angles with axis of ramus).....	38.0

The fourth superior molar is absent in this skull. In the proportions, shape, and position of the coronoid process, angle, and lobule of the mandible it differs from that figured by Prof. Huxley, and resembles more closely the skull figured by DeBlainville. These differences may be due to disparity in age.

The occurrence of this species in the Kilima-Njaro region is a matter

* Monogr. of the Canidae, Pl. 45.

† Proc. Zool. Soc., London, 1880, p. 259.

of considerable interest, since, so far as I am aware, it has hitherto been found only in South Africa.

Dr. Abbott states that the native Kichaga name is *Kipara*.

19725. Female. Arusha Wa-cini, October, 1889, 2,500 feet.

19724. Male. Arusha Wa-cini, December, 1889, 2,500 feet.

$\frac{1}{3} \frac{3}{3} \frac{4}{4} \frac{3}{3}$. Taveta.

Dendrohyrax validus Trne.*

PLATE LXXV.

Eight specimens appear to represent a distinct species of *Dendrohyrax*, which I have described for the first time in the place cited above. Dr. Abbott states that the native name of this animal is *Mha*.

The following is a repetition of the description:

Size large, form robust, muzzle hairy as far as the upper angle of the nostrils. The space between the nostrils, a narrow border external to them, and a line from them to the margin of the lip, are naked. The ears are of moderate size, rounded, and nearly concealed by the fur in the dry skins.

Fur dense, soft, and crenulate.

Color of the upper surfaces cinnamon-brown, strongly shaded with dusky brown or black, especially on the head. Feet dusky brown. Under surfaces pale, clear cinnamon. Dorsal spot russet-brown.

The majority of the hairs of the back are grayish chocolate-brown at the base, with a subterminal ring of bright cinnamon color, and tips dusky brown or black. Mingled with these are numerous longer, straight, shining hairs of a dusky brown or black color throughout. The subterminal rings of the hairs of the forehead and cheeks are paler than on the back, and these parts have therefore a grayish tint.

Around the nostrils and eye and on the feet the hairs are dusky brown. The ears are dusky brown externally, and have a tuft of yellowish white hairs on the upper part of the conch internally.

Hairs of the under surfaces grayish chocolate-brown in the basal half; terminal portion clear cinnamon-brown, varying to yellowish-white in some specimens, especially between the hind legs.

Skull depressed, muzzle elongate, nasal bones rectangular, slightly expanded posteriorly. Orbit completed behind by the union of the processes of the malar and frontal bones.

Coronoid process of the mandible rectangular, inclined forward, forming an angle of 45 degrees with the molars; its upper margin nearly in a line with the margin of the ramus posterior to the condyle.

Its nearest ally is *Dendrohyrax arboreus*, from which it differs in the color of the dorsal spot and of the under surfaces of the body. The skull appears to differ in many respects.

Compared with the skull of *D. arboreus* figured by Gray,† that of

* Proc. U. S. Nat. Mus., XIII, 1890, pp. 227-229.

† Gray. Hand-list of Edentate, Thick-skinned and Ruminant Mammals, 1873, Pl. 13, Fig. 2.

D. validus has the orbit more elongate. The postorbital processes, completing the orbit, are inclined forward rather than backward. The postero-external projection of the nasal nearly or quite separates the frontal from the maxillary, and thus usually touches the lachrymal. The portion of the malar forming the anterior rim of the orbit does not reach the lachrymal. The exoccipital process projects vertically downward and is hollowed out externally. In the younger skulls a large irregularly pentagonal interparietal bone is apparent.

The skins present almost no differences of color among themselves, except that some are a little paler throughout. The young individual has very soft wavy fur, of the appearance of underfur, pale yellowish brown except at the ends. A small number of long black hairs are intermingled. The dorsal spot is very pale yellow-brown, not very different from the general color of the fur.

*Dimensions of the body.**

Cat. No.	Locality.	Sex.	Head and body.	Fore foot.	Hind foot.	Ear from the occiput.
18986†	Mount Kilima-Njaro.....	♂	<i>mm.</i> 513	<i>mm.</i> 45	<i>mm.</i> 64	<i>mm.</i> 14.5
18987	Taveta.....		588	46	59	12.5
18989	Taveta.....		470	42	58	15.5
18988	Taveta.....		520	48	64	13.5
18990	Taveta.....		500	42	59	13.0

* Taken from the dry skins, and therefore only approximately correct. † Collected June 17, 1888.

Dimensions of skulls.

Measurements.	34721*	34972‡	34969.	34971.
	18986 Mt. K.	18987 Taveta.	18988' Taveta.	18990' Taveta.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
Greatest length from premaxilla to occipital crest.....	95.0	95.0	95.5	98.0
Basilar length, from premaxilla to occipital condyle.....	89.5	87.0	90.0	93.5
Premaxilla to posterior end of palate.....	49.0	47.5	50.0	50.5
Greatest breadth of skull.....	51.0	48.0	52.0	52.5
Greatest length of nasals.....	25.0	25.5	26.5	28.0
Breadth of nasals (taken together) at distal end.....	12.0	10.6	13.0	12.5
Breadth of nasals at proximal end.....	19.0	20.5	20.0	19.5
Distance between extremities of postorbital processes of frontal.....	42.0	39.2	44.7	42.0
Length of molars.....	34.0	33.0	34.0	34.0

* Last molar just in position.

† Last molar below the gum.

‡ Last molar in position and considerably worn.

18986
34721. Male adult. Mount Kilima-Njaro, June 17, 1888. (Type.)

18987
34972. Adult. Taveta.

18988
34969. Adult. Taveta.

18989. Adult. Taveta.

18990
34971. Adult. Taveta.

1926. Male, adult. Mount Kilima-Njaro, December 7, 1889. 6,000 feet.

1922. Female, adult. Mount Kilima-Njaro, December 7, 1889. 6,000 feet.

1927. Male, young. Mount Kilima-Njaro, December 23, 1889. 5,000 feet.

Procavia brucei Gray. (?)

A single skin of a true *Procavia*, collected by Dr. Abbott, appears to belong to this species. In the skull the elements of the occipital bone have not coalesced, but Dr. Abbott notes on the label that the uterus contains one nearly mature fetus.

The upper surfaces of the body are rather pale yellowish gray, and the under surfaces white. The hairs of the back are black at tip, below which is pale yellow ring, succeeded in turn by a second black ring. The remaining portion of the hairs is pale brownish gray. The hairs of the under surfaces are pure white to the roots. The feet are pale silvery brown. The ears are similar, but grayer, and have a tuft of yellowish white hairs near the upper margin within. There is a similar light area over the eye.

The skull, as already stated, indicates that the individual is young. The last molar, both above and below, has not pierced the gum.

"The uterus contained one fetus nearly at term. Placenta zonary. Stomach contained chewed leaves and bark, and had thick, muscular walls.

"The specimen was shot among the lava blocks of an ancient lava stream. Several others were seen."—Abbott.

$\frac{1\frac{3}{4} \times 2\frac{3}{4}}{3\frac{3}{4} \times 2\frac{1}{2}}$. Female. Foot of Kyalu Mountains, near Mount Kilima-Njaro, June 24, 1889.

Eliomys murinus (Desmarest).

Of this species three skins and four specimens in alcohol (Nos. 19761–64) were obtained. Dr. Abbott remarks on one of the labels: "Male and female taken from a nest containing four young ones. Nest globular, about 5 inches in diameter, with a hole in the inside. It was situated in a bush five feet from the ground. The nest was made of grass and strips of banana fronds, and lined with fine grass."

The following measurements are given by Dr. Abbott:

	Inches.	mm.
Length of body*	3 $\frac{7}{8}$	98.40
Length of tail to end of hairs*	4	101.60
Length of body†	3 $\frac{7}{8}$	98.40
Length of tail to end of hairs†	4 $\frac{1}{8}$	104.80
Length of body‡	3 $\frac{3}{4}$	95.25
Length of tail to end of hairs‡	3 $\frac{3}{4}$	95.25

Mus arborarius Peters.

Three skins and a number of alcoholics from Kilima-Njaro appear to represent this species. The under surfaces are entirely white, the upper surfaces tawny, and the ears rust-colored. The tawny-tipped hairs of the back are of two kinds, the one soft and fine, the other coarse and pre-

* 19730. Male. Mount Kilima-Njaro, Nov. 16, 1889, 5,000 feet.

† $\frac{3\frac{3}{4} \times 2\frac{3}{4}}{3\frac{3}{4} \times 2\frac{1}{2}}$. Female. Mount Kilima-Njaro, No. 16, 1889, 5,000 feet.

‡ 19731. Male. Mount Kilima-Njaro, Nov. 16, 1889, 5,000 feet.

sending the appearance of grooved bristles when examined with a lens. Mingled with these hairs are numerous longer on of a black color.

The extremity of the tail is sufficiently covered with hairs to hide the scales.

The skins agree in every respect with Peters's description,* except that the feet appear to be somewhat shorter, measuring about 21 millimeters.

19718. Female. Mount Kilima-Njaro, December 26, 1889, 5,000 feet.

$\frac{19719}{35243}$. Female. Mount Kilima-Njaro, November 14, 1889, 4,000 feet.

19717. Male. Mount Kilima-Njaro, November 7, 1889, 5,000 feet.

19756. Female. Mount Kilima-Njaro, 1889. (Alcoholic.)

19757. Male. Mount Kilima-Njaro, 1889. (Alcoholic.)

19758. Male, young. Mount Kilima-Njaro, 1889. (Alcoholic.)

19759. Male, young. Mount Kilima-Njaro, 1889. (Alcoholic.)

Mus barbarus Linné.

These specimens present a singular general resemblance to those of *M. arborarius*. The tail, feet, and ears are of the same color as in that species, and the fur is partly made up of fine channeled bristles. They are conspicuously different in the color of the back, which has the rows of light spots characteristic of *M. barbarus*. The median dark line is nearly or quite without the rusty-tipped hairs by which the color of the lateral dark bands is varied.

The thumb and fifth finger are rudimentary.

Dr. Abbott notes on one of the labels that the species is common.

Dimensions of a specimen preserved in alcohol. No. 18996. ♀

	mm.
Length of head and body	82.0
Length of tail	94.5
Length of hind foot (with claw)	27.0
Height of ear from crown of head	12.0

$\frac{18711}{33241}$. Male. Mount Kilima-Njaro, November 7, 1889, 5,000 feet.

19712. Male, young. Mount Kilima-Njaro, November 14, 1889, 5,000 feet.

18996. Female. Taveta. (Alcoholic.)

19738. Female. Mount Kilima-Njaro, 1889. (Alcoholic.)

19739. Male. Mount Kilima-Njaro, 1889. (Alcoholic.)

19740. Male, young. Mount Kilima-Njaro. (Alcoholic.)

Mus aquilus sp. nov.

The collection contains a single apparently adult specimen of a medium-sized mouse, with the dentition of the typical subgenus *Mus*, but of rather peculiar general appearance. According to the label, the mouse was procured on Mount Kilima-Njaro at an elevation of 8,000 feet. It had been killed by a hawk. I have been unable to associate it with any recognized species, and will therefore describe it under the name of *Mus aquilus*.

*Reise nach Mossambique, 1852, p. 152, Pl. 36, Fig. 2; Pl. 35, Fig. 7.

Description.

Size intermediate between *Mus musculus* and *Mus decumanus*. Ears moderate, broad; toes 5-5. Fore feet with long, slender, little-curved claws. The thumb is armed with a short, stout claw—not with a nail, as is usual in this genus. Palms with five large tubercles.

Hind feet moderate, with rather large, stout claws. Soles naked. Second, third, and fourth toes subequal and longest; first and fifth much shorter.

Tail shorter than the body,* not sufficiently well clothed with hairs to conceal the scales.

Naked portion of the muzzle confined to a small area between the nostrils; the two halves of the same divided by a line of hairs.

Fur of the throat and chin directed forward; in all other parts, backward.

The fur is moderately harsh. When examined with a lens it is seen to be composed almost exclusively of coarse, flat hairs, with a few fine ones intermingled.

General color above dusky brown and below cinnamon. Feet and tail dusky. All the hairs are pale sepia brown at the base.

Those of the upper surfaces are dusky at the tip, with a single sub-terminal ring of cinnamon, except on the rump and muzzle, where the sub-terminal ring is wanting.

Feet, ears, and tail dusky brown. Hairs of the under surfaces through-



FIG. 1.—*Mus aquilus* True. Skull, enlarged; U. S. Nat. Mus. No. 34723. Type.

out tipped with clear, pale cinnamon. There is a tinge of this color on the inner side of the hind feet proximally.

Skull slender (Fig. 1); muzzle depressed, elongate; zygomatic arch straight, not curved downward in the center. Infraorbital foramen large; the anterior margin of the root of the malar inclined outward. Incisive foramina long, expanded in the center. Palate ending in a projection, or tubercle, below the general level. Coronoid process of mandible moderate. Angle short and directed obliquely downward.

Dimensions of the dry skin. †

	mm.
Length of head and body	102.0
Length of tail	55.0
Length of hind foot and claw	23.0
Length of ear from the occiput.....	13.0
Length of longest fore claw	4.6
Length of longest hairs of the back	13.5

* From the uneven appearance of the extremity of the tail it is possible that a small portion is missing.

† These dimensions must, of course, be considered only approximately correct.

*Dimensions of the skull, No. 34723 ♂.**

Zygomatic breadth	mm. 15.0
Length from post. margin of alveolus of incisor to end of palate.....	12.6
Length of incisive foramina	6.6
Greatest breadth of incisive foramina taken together	2.6
Length of nasals	11.9
Breadth of nasals distally.....	2.6
Length of upper molars	4.8
Length of lower molars	4.4
Depth of mandible at coronoid process	7.8
$\frac{18997}{34723}$. Young. Mount Kilima-Njaro, April 11, 1888, 8,000 feet. (Type.)	

? *Mus minimus* Peters.

A single alcoholic specimen belonging to the subgenus *Nannomys* is in the collection. It appears to represent this species, although the dimensions of the body are not exactly the same. It is not in a good state of preservation. I have made the following measurements:

Length of head and body	mm. 55.6
Length of tail vertebrae	45.4
Length of hind foot (with claw)	12.6
Length of ear from the occiput.....	7.0
19750. Male, adult. Mount Kilima-Njaro, 1889. (Alcoholic.)	

***Mus* sp.**

There are specimens of two additional species of true rats in the collection which I have been unable to identify. One species resembles an overgrown house mouse, *M. musculus*. The other is smaller and is of a clear-gray color, with a pale yellow lateral line, and the tips of the hairs below pure white. The feet are also white and the tail dark and almost without hairs. The dimensions of an alcoholic specimen of this latter species are as follows:

Measurements, ♂, No. 19760.

Length of head and body	mm. 82.8
Length of tail (with hairs).....	103.♀
Length of hind foot (with claw)	24.0
Length of ear from the occiput.....	16.4
$\frac{19743}{19743}$. Female. Mount Kilima-Njaro, November 24, 1889, 5,000 feet. (Skin.)	
19714. Male. Mount Kilima-Njaro, November 24, 1889, 5,000 feet. (Skin.)	
19715. Male. Mount Kilima-Njaro, November 10, 1889, 5,000 feet. (Skin.)	
19760. Male. Mount Kilima-Njaro. (Alcoholic.)	

***Dendromys nigrifrons* sp. nov.**

The collection contains several specimens of a very small *Dendromys*, which does not appear to have been described hitherto. The most striking difference between this animal and the species described by Smith and Henslin consists in the presence of a large black spot on the forehead, and I have therefore chosen for it the name of *Dendromys nigrifrons*.

* The skull is defective below and the total length cannot, therefore, be given.

Description.

Form stout. Muzzle broad. Ears broad and rounded; more than half as long as the head. Tail longer than the head and body,* slender, scaly; sparsely clothed with short hairs, which are not sufficiently numerous to conceal the scales. Legs slender. Fore feet moderate; second, third, and fourth toes subequal, the third being the longest. Thumb and fifth finger rudimentary, reduced to mere tubercles and furnished with nails; the other toes furnished with moderate claws. Hind feet long and slender. Third and fourth toes equal and longest; second slightly shorter; first very short, reaching only to the base of the second; fifth reaching to the proximal end of the terminal phalange of the fourth; first and fifth toes furnished with nails, the others with moderate claws. Soles naked and smooth, except at the base of the toes, where they are granular. The under surface of the toes is also granular, especially that of the hallux. Mammaria: Two pairs inguinal; one pair pectoral.

Color above rusty brown, strongly shaded with black. A broad black spinal band from the nape to the root of the tail. A large black area on the forehead, not continuous with the spinal band. Under surfaces white, tinged with yellowish brown.

Hairs of the back dark plumbeous at the base, with a broad subterminal ring of yellowish brown, and black tips. Those of the spinal band and dark area of the forehead without the subterminal brown ring. Hairs of the under surfaces light plumbeous at the base, with long yellowish-white tips. Those of the throat and chin entirely white.

A white spot is situated at the base of the ears. A dusky ring encircles the eyes, and from thence a broad dusky band extends to the nose on each side.

Ears black, with a narrow fringe of white. Feet white. Tail dusky brown, unicolor, sparsely clothed with dusky brown hairs.

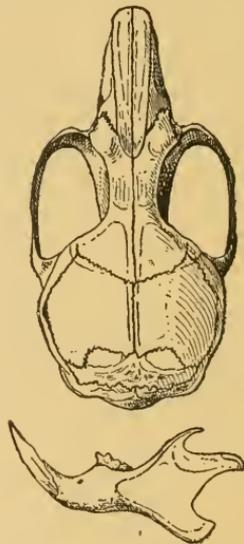


FIG. 2. *Dendromys nigrifrons* True. Skull, enlarged. Typical specimen.

Dimensions of two alcoholic specimens.

Measurements.	19783. ♀	19782. ♂
	<i>mm.</i>	<i>mm.</i>
Length of head and body.....	63.2	58.4
Length of tail.....	69.0	59.0
Length of hind foot and claw.....	16.8	17.1
Length of ear from the occiput.....	10.7	11.6

* It is a little shorter in one specimen. See measurements, p. 464.

Dr. Abbott gives measurements of two of the skins on the labels, as follows:

Measurements.	19778. ♂ Mt. Kilima-Njaro.	19779. ♀ Mt. Kilima-Njaro.
	<i>in. mm.</i>	<i>in. mm.</i>
Length of body.....	$\frac{23}{4}$ 70	$\frac{23}{4}$ 70
Length of tail.....	$\frac{28}{8}$ 67	$\frac{3}{4}$ 76

The dimensions of the skull of one of the alcoholic specimens, No. $\frac{35263}{19783}$, are as follows:

	<i>mm.</i>
Basi-cranial length (Hensel).....	14.6
Greatest zygomatic breadth.....	10.3
Length of nasals.....	7.4
Length of superior molars.....	3.2

19777. Male. Mt. Kilima-Njaro, November 15, 1889, 5,000 feet. (Skin.)

19778. Male. Mt. Kilima-Njaro, November 15, 1889, 5,000 feet. (Skin.)

19779. Female. Mt. Kilima-Njaro, November 16, 1889, 5,000 feet. (Skin.)

19782. Male. Mt. Kilima-Njaro, 1889 (?). (Alcoholic.)

$\frac{35263}{19783}$. Female. Mt. Kilima-Njaro, 1889 (?). (Alcoholic.)

Otomys irroratus (Brants).

A young specimen of this species, which has the teeth but very little worn, differs from the adults only in being a little browner and having more numerous long hairs.

The posterior upper molar has 7 laminae, including the posterior small triangular one.

Dimensions of two skulls.

Measurements.	$\frac{35265}{19721}$ ♂ adult.	$\frac{34724}{18568}$ young.
	<i>mm.</i>	<i>mm.</i>
Greatest length.....	40.0	29.2
Basi-cranial length (Hensel).....	32.2	23.6
Zygomatic breadth.....	20.2	.....
Length of nasals.....	18.0	10.0
Greatest breadth of nasals.....	8.4	5.4
Length of upper molars (alveoli).....	9.4	8.6
Length of lower molars.....	8.2	8.0

$\frac{18998}{34724}$. Young. Mount Kilima-Njaro, June 8, 1888, 5,000 feet.

19773. Male. Mount Kilima-Njaro, November 7, 1889, 5,000 feet.

19774. Male. Mount Kilima-Njaro, November 14, 1889, 4,000 feet.

$\frac{19721}{35265}$. Female. Mount Kilima-Njaro, November 7, 1889, 5,000 feet.

Rhizomys splendens Rüppell.

Six specimens, taken at the same time in one locality, exhibit great differences in color due to age. The young male, No. 19001, in the skull of which the last molar is barely in position and all the sutures are open, is black throughout, except for a slight tinge of pale cinnamon on the hinder part of the back. In the females, Nos. 19002 and 19003, which are adult but apparently not old, the head is entirely black, and there is a broad black band on the back reaching nearly to the tail. The adult males, Nos. 18999 and 19000, have dark heads, but not strongly

pronounced spinal stripe; while in No. 19004, which is the largest and apparently the oldest of the series, the head is dusky only between the eyes and nose, the rest of the head and the back and sides being bright cinnamon color.

Dimensions of six skulls.

Measurements.	34730	34729	34728	34725	34726	34729
	male.	female.	female.	male.	male.	♂ ju.
	mm.	mm.	mm.	mm.	mm.	mm.
Basi-cranial length (Hensel)	41.4	39.4	39.1	38.0	32.0	19.3
Length of palate	25.6	24.8	24.8	24.2	21.1	19.3
Breadth across zygomata	33.4	31.7	32.4	31.1	30.0	25.9
Length of nasals	18.2	16.4	15.8	17.0	15.2	13.2
Length of upper molars (alveoli)	9.1	9.0	9.0	9.2	8.8	8.6
Length of lower molars (alveoli)	10.6	11.0	10.0	10.6	10.0	9.9
Distance from end of coronoid process to posterior point of angle	16.6	16.0	16.4	15.5	13.4	

The face of each of the upper and lower incisors in this species is divided in the median line by a thread-like longitudinal ridge.

- 19004. Male. Mount Kilima-Njaro, June 3, 1888.
- 34730. Male. Mount Kilima-Njaro, June 1, 1888.
- 18999. Male. Mount Kilima-Njaro, June 1, 1888.
- 34725. Male. Mount Kilima-Njaro, June 1, 1888.
- 19000. Female. Mount Kilima-Njaro, June 3, 1888.
- 34726. Female. Mount Kilima-Njaro, June 3, 1888.
- 19003. Female. Mount Kilima-Njaro, June 3, 1888.
- 34729. Male, young. Mount Kilima-Njaro, June 1, 1888.
- 19001. Female. Mount Kilima-Njaro, September, 1889, 5,000 feet.
- 34727.

Sciurus undulatus, sp. nov.

Size moderate. Tail longer than the head and body. Feet large. Thumb with narrow, convex, pointed nail. Posterior third of soles of hind feet hairy; otherwise naked. Ears small, rounded; without tufts.

General color rusty gray above; bright rust color below and on the feet. Tail with alternate bars of black and pale rusty yellow, and broadly edged with pure white. Color of male taken June 12: Fur of the back of two kinds, a fine, wavy underfur, and a long fur of straight hairs. The underfur has five rings. The basal ring is black, the next tawny, the third black, the fourth tawny, and the fifth or terminal ring black. The long fur has usually six rings, three narrow pale tawny rings, the first of which is at base of the hair, alternating with three wide black ones, the last of which is at the tip of the hair. On the head, sides of the neck, flanks, and upper portion of the legs the subterminal light ring is much paler yellow, approaching white, so that these parts are considerably lighter in color than the back.

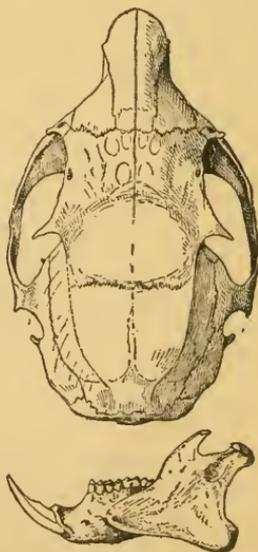


FIG. 3.—*Sciurus undulatus* True. Skull, natural size; U. S. Nat. Mus. No. 34731 ♂ type.

The feet are rust-colored, the hairs being black at the base.

All the under surfaces, including the inside of the legs, are bright rust-color. The hairs are gray at the extreme base, and many of them have a subterminal ring of black. Between the hind legs, however, the majority of the hairs are pale rust-color throughout. About the anus they are tipped with white.

The tail is alike on both sides and presents the appearance of alternate bars of pale yellow and black, and is bordered with pure white. The hairs have nine rings, of which four narrow ones, beginning at the base, are pale yellow. These alternate with four broader rings of black. The ninth, or terminal ring, is pure white.

The hairs at the extremity of the tail are black nearly throughout, but have two narrow rings of light yellow at the base and a terminal white ring. The latter is wanting in many instances.

The whiskers are black. The ears are clothed with short hairs of the same color as the surrounding parts. A tawny ring encircles the eye.

The female taken in September scarcely differs in any respect from the male, except that the fur is less dense.

*Measurements.**

Measurements.	♂, 19005.	♀, 19006.
	<i>mm.</i>	<i>mm.</i>
Length of head and body	203.0	253.0
Length of tail vertebræ.....	248.0	248.0
Length of tail with terminal hairs	292.0	315.0
Height of ear from the occiput	6.5	6.5
Length of fore foot and claw from the posterior tubercle.....	27.5	29.0
Length of hind foot and claw	52.0	47.0
Length of hairs of the tail	50.0	.....
Length of longest hairs of the back.....	28.0	.....

Dimensions of skull No. $\frac{34731}{19005}$ ♂.

	<i>mm.</i>
Greatest length	53.4
Basilar length (Hensel)	40.6
Length from posterior margin of alveolus of incisor to end of palate.....	21.5
Greatest zygomatic breadth.....	30.8
Length of upper molar series.....	10.8
Length of lower molar series	10.8
Depth of mandible at coronoid process	18.9
Length of nasals.....	15.4
Breadth of nasals at the distal extremity taken together.....	7.8

This skull has only the second superior premolar on one side, but on the other side there is a very slender, rudimentary first premolar. This tooth is not present in the skull of the female, and it may be considered that the species has normally but one premolar.

*As these are taken from the dry skins they are, of course, only approximately correct. The body has been somewhat elongated in No. 19006, and is crushed together in the type, so that the proper length is probably between the two measurements given.

This species appears to resemble *S. annulatus* and *S. punctatus*, as described in Dr. Jentink's monograph of the African squirrels,* but I am unable to associate it with either.

¹⁹⁰⁰⁵₃₄₇₃₁. Male. Mount Kilima-Njaro, June 12, 1888. 6,000 feet. (Type.)

19006. Female. Kahé, south of Mount Kilima-Njaro, September 6, 1888. (Type.)

Sciurus poensis A. Smith.

There are five specimens of a small squirrel in the collection which appear to represent this species. The greenish color of the back is not strongly marked, however, and all the under surfaces are clear fawn color, the hairs here being uniform from base to extremity. The feet are ocher-yellow. One specimen (No. 19008) is much clearer gray than the others, the ocher-yellow rings of the hairs being replaced by dull white. The long hairs at the extremity of the tail in this specimen are for the most part white, not black and ocher, as in the others. A young specimen (No. 19009) is intermediate in color between this gray individual and the normal adults.

The dimensions of four dry skins of adults are as follows:

Measurements.	19008. ♀	19719. ♀	19772. ♂	19007.
Length of head and body.....	165	167	169	141
Length of tail with hairs.....	182	191	185	187

The skulls are of the following dimensions:

Measurements.	34733 19008 ♀	34732 19007	35244 19719 ♀	35252 19772 ♂	35234 19009 jr.
	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>	<i>mm.</i>
Greatest length.....	39.0	39.3	40.7	39.9	37.2
Basilar length (Hensel).....	30.2	29.2	.....	30.6	28.8
Zygomatic breadth.....	.....	22.8	22.0	22.4	.....
Length of nasals.....	11.2	11.0	11.6	11.4	10.2
Breadth of nasals distally.....	5.2	5.5	5.0	5.0	5.2
Length from post. margin of alveolus of incisor to end of palate.....	15.6	14.6	.....	15.6	14.7
Length of upper molar series.....	7.2	7.2	.....	7.2	7.0
Length of lower molar series.....	7.2	7.2	.....	7.2	7.0
Depth of mandible at coronoid process.....	13.6	13.8	14.8	14.4	13.2

¹⁹⁰⁰⁸₃₄₇₃₃. Female. Taveta.

¹⁹⁰⁰⁷₃₄₇₃₂. Taveta. March, 1888.

¹⁹⁰⁰⁹₃₅₂₃₄. Young. Taveta.

19010. Taveta.

¹⁹⁷¹⁹₃₅₂₄₄. Female. Mount Kilima-Njaro, November 7, 1889. 5,000 feet.

¹⁹⁷⁷²₃₅₂₅₂. Male. Taveta.

Xerus rutilus Cretzschmar.

The collection contains a single female specimen of this species, from Taveta.

¹⁹⁰¹¹₃₅₁₀₀. Female. Taveta.

* Notes from the Leyden Museum, iv, 1882, pp. 21 and 23.

Aulacodus swinderianus Temminck.

A single specimen (No. $\frac{19012}{34734}$) from Taveta is included in the collection.*

? *Lepus capensis* Linn.

The collection contains two rabbits which I assign to this species with some hesitation. They agree very closely with Wagner's description of *Lepus ochropus*,† but this species is considered synonymous with *L. capensis* by Waterhouse, Trouessart, and other authors. They agree also with Waterhouse's‡ description of *L. capensis*, except in the following particulars: The sides of the body and the lower portions of the legs and the feet are bright ocher-yellow.

The light area on the nape is of exactly the same color.

It appears probable that these specimens represent a geographical race of *L. capensis*, but as I have not material with which to compare them I am unable to decide this point.

19014. Female. Plains east of Mount Kilima-Njaro. September 20, 1888.

$\frac{19013}{34733}$. Male. Usari River, Kilima-Njaro plains. August 27, 1888



FIG. 4.—*Megaderma cor*. Head: natural size.
U. S. Nat. Mus., No. 18994, ♂.

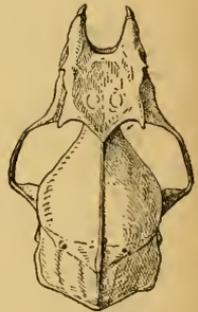


FIG. 5.—*Megaderma cor*.
Skull; $\frac{1}{3}$ times natural size. U. S. Nat. Mus.,
No. 35276.

Megaderma cor Peters.

The collection contains two male specimens of this rare species. They agree in every particular with Peters's description. The dimensions of the body of one of these specimens are as follows:

* This skin, after being immersed in water, shows extremely brilliant iridescent colors in reflected light.

† Wagner. Schreber's Säugethiere, Supplementband, 4te Abth., 1844, p. 96.

‡ Waterhouse. Natural History of Mammalia; Vol. II, 1848, p. 95.

Megaderma cor, ♂, 18994.

	mm.
Length of head and body.....	71.5
Length of head.....	28.4
Length of ear from occiput.....	30.0
Length of ear from base of outer margin.....	39.4
Length of tragus.....	18.4
Length of thumb and claw.....	15.6
Length of second finger.....	48.0
Length of third finger.....	94.0
Length of fourth finger.....	73.6
Length of fifth finger.....	75.8
Length of tibia.....	32.6
Length of hind foot and claw.....	21.0

$\frac{18994}{35276}$. Male. Taveta. (Alcoholic.)

19755. Male. Mount Kilima-Njaro, 1889. (Alcoholic.)

Megaderma frons Geoffroy St. Hilaire.

The color of the fur in the dry skin is plumbeous, washed with dull yellow. The latter color is especially strong on the breast, head, and ears, giving the fur a soiled appearance. The minor division of the tragus is not shaped as represented in Dr. Dobson's monograph of the Chiroptera,* but is broadest opposite the point of its attachment to the major division, and has an irregularly but conspicuously serrated anterior margin. This form of the tragus is represented Geoffroy St. Hilaire's figure of the species.† A specimen from Sierra Leone, presented to the Museum by Dr. Dobson, has the linear form of minor division without conspicuous serrations. The differences in this particular may be due to age.

18992. Taveta. (Skin.)

18993. Male. Taveta. (Alcoholic.)

Nycteris thebaica Geoffroy St. Hilaire.

The collection contains four specimens of this species, as follows:

19751. Male. Mount Kilima-Njaro, 1889. (Alcoholic.)

19752. Female. Mount Kilima-Njaro, 1889. (Alcoholic.)

19753. Young. Mount Kilima-Njaro, 1889. (Alcoholic.)

19754. Female. Mount Kilima-Njaro, 1889. (Alcoholic.)

Erinaceus albiventris Wagner.

The Hedgehogs are represented by a single immature individual, 75 millimeters long, from Taveta. It appears to belong to this species. The hallux is absent. The face and feet are brown. A broad frontal band, all the under surfaces, the legs, and the tail are pure white.

$\frac{18995}{34772}$. Young. Taveta.

* Plate x, Fig. 3

† Ann. du Museum, xx, Pl. 1.

Crocidura sp. ?

The collection contains several specimens of a small *Crocidura*, which I am unable to identify. In the present state of the literature, the determination of any but the commonest species in this genus is impossible without actual comparison with the types.

Connochætes taurinus albojubatus Thomas. Brindled Gnu.

Dr. Abbott collected one young individual. It is of a dull gray color, with a narrow black mane reaching to the middle of the back, where it stops abruptly and is succeeded by a dark line which reaches to the base of the tail. The mane of the neck is whitish and the tufts at the angles of the jaw entirely white. The long hairs of the tail are entirely black; the legs dirty brownish gray. No transverse dorsal stripes are visible. The backs of the ears are black.

The horns are $9\frac{1}{2}$ inches long, measured in a straight line; $12\frac{3}{4}$ inches around the longest curve. They are lyrate and straight at the points. The superior milk premolars and the first molar are in position.

$\frac{18243}{34636}$. Young. Taveta.

Oryx callotis Thomas. Pencil-eared Oryx.

PLATE LXXVI.

Two skins which I believe to belong to this species are in the collection—that of an adult female and that of a very young individual. These I regarded at first as representing *O. beisa*, though my attention was attracted to the long pencils at the tips of the ears, which I could not find mentioned in any description of that species.

I have recently received, through the kindness of Dr. Scater, an imperfect skin of *Oryx beisa* from Berbera, Somali, collected by Capt. Swayne. Compared with this the adult female of *O. callotis* is less tawny. The color is almost uniform, being only somewhat lighter (not white) on the belly and inside of the legs. The muzzle and the base and internal fringe of the ears, however, are soiled white. The mane begins a little behind the middle of the back (not near the tail as in *O. beisa*) and is of the same gray color as the back, though the hairs are black at the roots. There is no dark marking below the knee, but the false hoofs are surrounded by a narrow ring of black. The dark markings of the head and chest are well shown in the accompanying plate. The tip of the ear, the pencil, and the external margins half way to the base, are black.

The young specimen resembles the figure of a young *O. beisa* published by Dr. Scater,* but is a little paler in color.

The horns of the adult are $29\frac{3}{4}$ inches long, and $8\frac{1}{4}$ inches apart at the tips. Those of the young individual are but $3\frac{1}{4}$ inches long. The skull of this specimen has only the three milk premolars in position in the upper jaw.

$\frac{18244}{34637}$. Adult female. Taveta.

$\frac{18245}{34638}$. Young. Taveta.

* Proc. Zool. Soc. London, 1881, pl. 54.

Alcelaphus cokii Gunther. Coke's Hartebeest.

Four skins of this singular antelope were preserved. They are entirely of a dull tawny brown color. The tail is crested; pale brown in the proximal third and black distally, with some brown hairs intermingled. The ears are brown without, white within.

The horns of the female are smaller than those of the male, and differ in having the points directed backward exactly in the plane of the forehead, and slightly approximated. In the male the extremities of the horns are directed downward as well as backward and are parallel or slightly divergent.

The horns of four individuals are of the following dimensions:

Measurements.	34689	34690	34691	34692
	♂ ad.	♂ ad.	♂ juv.	♀ ad.
	Inches.	Inches.	Inches.	Inches.
Length in a straight line	10 $\frac{3}{4}$	11 $\frac{1}{2}$	10 $\frac{1}{2}$	9 $\frac{1}{2}$
Length around the curves in front	14 $\frac{3}{4}$	16 $\frac{1}{4}$	13 $\frac{3}{4}$	12
Distance between the extremities	14	12 $\frac{3}{4}$	17	10 $\frac{3}{4}$

All have the permanent dentition, except the young male (34691), which has the superior milk premolars and the three molars.

- $\frac{18946}{34689}$. Taveta. (Skin and skull.)
 34690. Taveta. (Skull.)
 34691. Taveta. (Skull.)
 34692. Taveta. (Skull.)
 18947. Taveta. (Skin.)
 18948. Taveta. (Skin.)
 19706. Mount Kilima-Njaro, 1889.

Kobus ellipsiprymnus (Ogilby). Water buck.

Three males—an adult, a half-grown and a young individual—make up the series of this species. The largest male has horns 19 $\frac{1}{2}$ inches long in a straight line, 22 $\frac{3}{4}$ inches around the posterior curve, and the tips are 8 inches apart. This individual has the entire permanent dentition, with the last molar unworn. The second male has horns 10 inches long, measured in a straight line; 11 inches, if measured around the posterior curve. The tips are 8 $\frac{3}{4}$ inches apart. In this case the last true molar has not appeared, and the premolars are those of the milk-dentition. The third specimen has only the milk premolars in position.

The youngish male is more dusky throughout than the adult.

- $\frac{18949}{34693}$. Male, adult. Taveta.
 $\frac{18950}{34694}$. Male, young. Taveta.
 $\frac{18951}{34695}$. Male, very young. Taveta.

Tragelaphus scriptus roualeynii (Gordon-Cumming). Bosch-bok.

Skins of a male and a female of this subspecies, according to Mr. Thomas's revision of the genus, were preserved. The male is much darker than the female. No transverse white lateral bands are visible

and the spots are about 25 in number on each side, irregularly placed.

The horns of the male are $11\frac{1}{2}$ inches long, measured in a straight line, and have the tips $4\frac{3}{4}$ inches apart.

$\frac{18955}{34896}$. Male, adult. Taveta.

$\frac{18956}{34897}$. Female, adult. Taveta

Æpyceros melampus (Lichtenstein). Pallah Antelope.

Five skins and five skulls of this graceful antelope, together with skins of two heads, are included in the collection. The upper third of the backs of the ears is black in all these specimens, a disposition of color which I have not noted in the figures that I have examined. The mammae are four in number—not two, as stated by Harris and Gray.

In the largest male the horns are 18 inches (457 millimeters) long in a straight line, and the tips are $10\frac{1}{4}$ inches (260 millimeters) apart; in a smaller male they are $15\frac{1}{2}$ inches (394 millimeters) long, with tips 7 inches (178 millimeters) apart. Both are thoroughly adult animals.

$\frac{18955}{34895}$. Male. Taveta. (Skin and skull.)

$\frac{18954}{34894}$. Female. Taveta. (Skin and skull.)

18957. Male. Taveta. (Skin.)

18956. (?) Taveta. (Skin.)

19707. (?) Mount Kilima-Njaro, 1889.

$\frac{19709}{35239}$. (?) Mount Kilima-Njaro, 1889. (Skin of head.)

$\frac{19710}{35240}$. (?) Mount Kilima-Njaro, 1889. (Skin of head.)

34777. Male. Taveta. (Skull.)

? *Eleotragus arundinaceus* Gray. Reedbuck.

Dr. Abbott collected two young male antelopes belonging to this genus, but whether they represent this or some other species I am unable to determine. An examination and comparison of the various nominal species would be necessary before a decision could be reached.

The general color of the back (in No. 18958) is ocher-yellow. The hairs are pale chocolate-brown at the base, with a subterminal ring of ocher-yellow and short, black tip. On the sides, the base of the hairs is paler and the black tips are less conspicuous. The upper surface of the tail and the legs externally are like the back. The front of the fore legs is dusky, owing to an increased amount of black at the extremity of the hairs. The face is like the back, but somewhat darker in the median line and paler on the cheeks. There is a white spot in front of the eye, and the hair between the eye and ear is short and of a yellowish-white color. There is a naked spot beneath the ear. The ears are white within, ocher-yellow without. The chin and throat, the inside of the legs, and the belly are white.

The naked muffle scarcely extends backward to a line joining the posterior angle of the nostrils.

The greatest length of the skull in this individual is 9 inches. The horns measured around the curve, posteriorly, 7.25 inches. The ears

are 5.4 inches long, and the tail, with the hairs, 8.5 inches. The first and second permanent premolars and the third milk premolar are in position in the upper jaw.

$\frac{18958}{34706}$. Male, young. Taveta
 $\frac{18959}{34701}$. Male, young. Taveta.

Gazella grantii. Grant's Gazelle.

This fine antelope is represented by the skins of three adult females and two adult males, together with the skin of the head of a male. The horns are as follows:

Measurements.	18960	18961	18962	18963
	34702	34703	34704	34705
	♂	♂	♀	♀
	Inches.	Inches.	Inches.	Inches.
Length of horns in straight line.....	19 $\frac{1}{2}$	19 $\frac{1}{2}$	12	13 $\frac{3}{4}$
Length of horns around the curves.....	21 $\frac{1}{2}$	20 $\frac{1}{2}$	12 $\frac{1}{2}$	14
Distance between tips.....	10 $\frac{3}{8}$	8 $\frac{1}{2}$	5	5 $\frac{3}{4}$

$\frac{18960}{34702}$. Male, adult. Taveta.
 $\frac{18961}{34703}$. Male, adult. Taveta.
 $\frac{18962}{34704}$. Female, adult. Taveta.
 $\frac{18963}{34705}$. Female, adult. Taveta.
 $\frac{19797}{35237}$. Female. Mount Kilima-Njaro, 1889. (?)
 $\frac{19798}{35238}$. Male. Mount Kilima-Njaro, 1889. (Skin of head.)

Gazella thomsonii Günther. Thomson's Gazelle.

Plate LXXVII.

A single adult male of this small but handsome species is in the collection. As the species is imperfectly known, a description of the skin may not be without value.

Back bright tawny brown. Sides abruptly paler. A broad black lateral band. Belly pure white. Face brown, with a broad white band on each side of the median line, which extends back to and encircles the eye. Front of upper lip and all the under parts pure white. Legs brown externally, white within. The tail is hairy and is dusky throughout, with some brown hairs intermingled. The ears are pale brown without and white within. The knees are conspicuously tufted.

The horns are 12 $\frac{1}{2}$ inches long, measured in a straight line, and the tips are 4 inches apart.

$\frac{18964}{34706}$. Male, adult. Taveta.

Cephalophus spadix True. Abbott's Antelope.

Plates LXXVIII and LXXIX.

This singular antelope is the central figure in Dr. Abbott's extensive collection. He obtained the unique type specimen high up in Mount Kilima-Njaro. No other specimens have been obtained before or since, unless the species described by Gray under the name of *Cephalophus*

niger is to be regarded as identical. To this question I shall refer again presently. I have already described Abbott's antelope in an earlier part of this journal,* but, for convenience of reference, will repeat the description in this place:

(Adult male, No. 18965.)—Size large. Naked rhinarium broadly triangular, rugose, completely encircling the nostrils. The portion external to the nostrils is broadest at their inferior external angle.

A narrow band bordering the lip is sparsely covered with hairs, which are not sufficiently numerous to conceal the rugose integument.

Ears moderate, broad, obtuse; naked within, except on the margin and along two or three narrow lines. Hoofs of the fore and hind feet equal. Each moiety less than twice as long as broad at the base. False hoofs moderate, slightly less than one-third as long as the true hoofs.

Tail short, well haired on both sides, except a small triangular area at the base, which is naked.

Hair short, dense, appressed, and shining.

Color throughout dusky chestnut-brown, without spots or bands, and not lighter on the belly. Face, chin, and throat pale grayish brown. Hairs of the frontal crest bright chestnut at the base and tipped with black. Mingled with them are some hairs which are dusky throughout and others pure white. Anterior surfaces of the legs somewhat lighter than the posterior surfaces. A few white hairs above the hoofs and also on the rump. Tail dusky, except at the tip, where the hairs are nearly pure white throughout.

Skull elongate. Muzzle slender. Premaxillæ directed backward, touching the nasals by their superior rather than their posterior margin. Nasals very long, much produced anteriorly. Frontal region strongly convex. Suborbital pit nearly circular, as large as the orbit.

Horns $4\frac{1}{2}$ inches (114.3 millimeters) long; slender, straight, not thickened at the base in front. They are directed backward and lie below the plane of the upper surface of the skull.

Lower incisors separated by a wide space in the median line. Crowns long, inclined outward. Outer incisor more than half as broad as the middle incisor.

HABITAT: High altitudes on Mount Kilima-Njaro, frequenting the highest points.—(Abbott.)

DIMENSIONS.†

	Inches.	mm.
Head and body	38	965.2
Tail, with hairs	$4\frac{1}{2}$	114.3
Fore leg, hoof to knee	$6\frac{1}{4}$	158.7
Hind leg, hoof to hock	$9\frac{1}{2}$	241.3
Height of ear from occiput	$4\frac{1}{4}$	107.9

* Proc. U. S. Nat. Mus., XIII, 1890, p. 227.

† From the dry skin.

Skull

	mm.
Greatest length	235.0
Basilar length, from occipital condyle to end of intermaxilla.....	216.0
Length of nasals.....	95.0
Length of molar teeth	67.0
Greatest breadth of skull	104.0
Length of orbit.....	40.0
Greatest length of mandible.....	184.0
Breadth of left lower incisors and canine.....	13.0
Length of horns	114.3
Circumference of horn at base.....	75.0

The specimen has been mounted since this description was first published, and is in a much better condition for study than it then was. I find no necessity, however, to materially alter the description. The hairs of the frontal crest should be described as chestnut red, rather than bright chestnut. The forehead is dusky brown, like the body, rather than pale grey brown, like the face.

The mounted skin was examined by Dr. Abbott while it was in the taxidermist's shop, and several corrections of the shape were made at his suggestion. He pronounced it when finished as conveying a good idea of the species in life.

The only species to which Abbott's antelope appears to be closely related is, as already stated, the *Cephalophus niger* of Gray. This was originally described in the *Annals and Magazine of Natural History* (18, 1846, pp. 165, 166). The description is as follows:

Black Bush Buck, *Cephalophus niger*. Antelope niger, Mus. Leyden.

Sooty black, grayer in the front half of the body; chin, throat, abdomen, and inside of thighs, gray; forehead, crown dark bay and black mixed; cheeks pale brown and black varied; tail end whitish.

Inhab. Guinea.

In the British Museum there is a male from the Leyden Museum nearly as large as the former. There is at Knowsley, a bush buck which is now shiny black with a reddish brown crest; when young it was red on the sides; it is perhaps the same as the above.*

In a general way this description is applicable to our specimen, but the latter cannot be called black: it is a dark brown. The abdomen and inside of thighs are also dark brown, not gray, as stated in Gray's description.

There is a spirited drawing of Gray's *C. niger* in the "Gleanings from the Knowsley Menagerie." It probably represents the individual mentioned in the second paragraph of the description quoted above. There is much more light color on the posterior part of the fore leg

*In the proceedings of the Zoölogical Society of London for 1871 (p. 598), the description is varied, as follows: "Hair of cheeks and neck very short, sooty black."

than in Abbott's antelope. The tail is represented as slender, with a large white tuft at the end, and apparently as being white underneath. In Abbott's antelope the tail is equally broad throughout and is dark brown on both sides, with only a few white hairs at the tip.

Considering the common inaccuracy of descriptions, it is possible, I presume, that the two species may be identical, but until a detailed description of *C. niger*, with measurements of the exterior and skulls, has been published, the question must remain open.

$\frac{18965}{34767}$. Male, adult. Mount Kilima-Njaro. Type.

Cephalophus nigrifrons Gray. Black-fronted antelope.

The collection contains a single male from Taveta. Gray's figure* of the species is in some respects inadequate, and in others does not agree exactly with the specimen under consideration. The size is not indicated. Compared with the figure, our specimen has shorter and thicker compressed horns. The horns are stout at the base and diminish abruptly from about the middle toward the tip. The muzzle is entirely dusky brown, not rufous, with a median dark band, as represented in the figure. The broad black frontal band continues with undiminished breadth to the base of the horns, and the slight crest between the horns, as well as the median line of the nape, are black. The fore legs, within and without, are entirely dusky, not rufous above the knee, as represented in the figure.

The specimen, as mounted, gives the following dimensions:

Dimensions of body.

	mm.
Length from tip of nose to base of tail (along the curves).....	856.0
Length of head	197.0
Length of tail, with hairs	127.0
Height at shoulder.....	442.0
Length of ears (from behind).....	65.0
Length of horns	85.0
Girth of horns at base.....	70.0

Skull.

	mm.
Greatest length.....	182.0
Basi-cranial length, from tip of premaxillæ to front of foramen magnum.	160.0
Length of palate.....	95.0
Length of nasals.....	57.0
Breadth between orbits.....	50.0
Depth (vertical) of orbits	31.0
Length of orbits	32.0
Length of superior molars.....	50.0
Length of horn-cores (from behind).....	56.0

$\frac{18966}{34768}$. Male adult. Taveta.

* Proc. Zool. Soc., London, 1871, pl. 46.

Neotragus damarensis Günther. Damara-land Pygmy Antelope.

Plate LXXX.

This beautiful little antelope is represented by four specimens, two males and two females. Dr. Günther's description of the species is very brief, but the most important statement is that it is almost identical in external appearance with *N. saltiana*, which is the case with these specimens*. The older male and female have a strong tinge of rusty yellow on the back, which is less apparent in the younger specimens. In one of the adult females the rust-red hairs of the crest are tipped with black, but in the others this does not occur. The rump is clear gray. The tail is extremely short and is of the same color as the adjacent parts.

An examination of the skulls of the two males indicates that *N. Kirkii*, described by Dr. Günther with *N. damarensis*, may be the young of the latter. The comparisons of cranial characters are unfortunately made between *N. Kirkii* and *N. saltianus*, which are much less closely allied than *N. Kirkii* and *N. damarensis*.

Of the five characters brought forward the first, second, and fifth are common to *N. Kirkii* and *N. damarensis*. The third relates to the shape and size of the nasal bones. In *N. Kirkii*, "their posterior margins form an almost straight transverse line," while in *N. damarensis* they form an acute angle as in *N. saltianus*. I find that in our younger skull the posterior angle is very obtuse, approximating, therefore, to the condition of *N. Kirkii*, while in the older skull the angle is very acute, as much so as represented in Dr. Günther's figure of *N. saltianus*. In this older skull the nasals extend backward to the line of the anterior margin of the orbits, while the younger skull represents an intermediate condition between this and that of *N. Kirkii*.

It would appear that the size and shape of the nasals are not to be relied upon, since they are so largely affected by age.

One character only remains. The angle of the mandible is represented as very prominent in *N. Kirkii*. It is much more so than in either of our skulls, which should not be the case if the skull figured by Dr. Günther were merely a younger individual of the same species as our specimens. It is possible that this character is of some value in distinguishing *N. Kirkii* from *N. damarensis*.

An examination of the subjoined measurements of the skulls will bring out the differences in the size and position of nasal bones and other characters dependent upon age:

* A skin of *N. saltiana* from Somali, which Dr. Selater has recently sent to the Museum, confirms this fact. The only differences which I can detect are that in *N. saltiana* the cheeks and back of the neck are clear gray instead of tawny, while the tawny color of the flanks is darker and stronger than in *N. damarensis*.

Dimensions.

Measurements.	34709 ♂.	34780 ♂.
	mm.	mm.
Greatest length.....	105.0	110.6
Basiscranial length from end of premaxillæ to front of foramen magnum.....	91.0	97.0
Extremity of premaxillæ to first premolar.....	22.6	25.7
Extremity to end of palate in median line.....	51.0	57.0
Length of nasals in median line.....	20.3	24.2
Greatest breadth of nasals.....	19.0	20.0
Posterior extremity of nasals to fronto-parietal suture.....	32.2	33.0
Breadth of premaxillæ at the extremity.....	7.5	7.7
Length of orbit.....	25.5	25.6
Depth of orbit (vertical).....	22.0	23.0
Length of molar series.....	36.5	37.5
Length of coronoid process of mandible from base of posterior margin.....	18.5	17.6
Length of horn cores.....	46.0	-----
Length of horns.....	64.5	60.5
Greatest diameter of horns at base.....	14.6	15.0

¹⁸⁹⁶⁷/₃₄₇₀₉. Malç. Taveta.

18968. Male. Taveta.

18969. Female. Taveta.

18970. Female. Taveta.

Nanotragus moschatus (Sundevall). Zanzibar Pygmy Antelope,

The collection includes the skin of a young male antelope of very small size, which may be this species. It agrees well with Sundevall's description. The length of the flat skin (head and body) is 20 inches. The individual is quite young, as is indicated by the entire absence of horns and by the condition of the teeth. Only four molars and premolars are in position in each side the mouth, above and below; the premolars belong to the milk dentition. Dr. Abbott remarks on the label: "Brought alive by natives, who say that the *adult* male is a little larger and has small horns." The native Kichaga name of the species is *Suni*.

¹⁸⁹⁷⁴/₃₄₇₁₃. Male, young. Mount Kilima-Njaro, December 9, 1889, about 6,000 feet.

Bubalis caffer (Sparrm.). Cape Buffalo.

The heads of two males and two females of this species were brought home by Dr. Abbott. The larger male is a remarkably fine specimen, with very large horns.

The dimensions of the skulls and horns are as follows:

Measurements.	34710, ♂.	34711, ♂.	34712, ♀.	34713, ♀.
	cm.	cm.	cm.	cm.
Basilar length of skull, from surface of occipital condyle to end of premaxillæ.....	* 48.0	50.0	45.2	49.5
Length of horn around the outer curve.....	63.5	61.5	63.5	62.5
Greatest breadth of horn at the base.....	23.0	21.0	11.5	10.5
Least distance between bases of horns.....	3.5	3.5	16.0	18.0
Distance between tips of horns.....	62.5	63.0	33.5	47.0

* The condyles are wanting; about 3 centimeters should be added to the length.

¹⁸⁹⁷¹/₃₄₇₁₀. Male, adult. Taveta. (Skull and skin of head.)

¹⁶⁹⁷²/₃₄₇₁₁. Male, adult. Taveta. (Skull and skin of head.)

¹⁸⁹⁷³/₃₄₇₁₂. Female, adult. Taveta. (Skull and skin of head.)

¹⁸⁹⁷⁴/₃₄₇₁₃. Female, adult. Taveta. (Skull and skin of head.)

Potamochoerus africanus (Schreber).

A single river-hog is included among the skins. It is from Mount Kilima-Njaro.

19704. Mount Kilima-Njaro, 1889 (?).

Phacochoerus ælianii (Rüppell).

Dr. Abbott collected three wart-hogs at Taveta, one of which is a fine male with very large tusks.

18975. Taveta.

18979. Taveta.

18980. Taveta.

Rhinoceros bicornis (Linné).

The two-horned rhinoceros is represented by four heads from Taveta in different stages of growth.

18981. Fœtal. Taveta.

18982. Young. Taveta.

18985. Female, young. Taveta.

18983. Female. Taveta.

18984. Female. Taveta.

The following list comprises all the species included in Dr. Abbott's collection:

Colobus caudatus. Kahé.

Cercopithecus albogularis. Taveta.

Cercopithecus sabæns. Taveta.

Galago crassicaudatus. Taveta; Arusha Wacini.

Helogale undulata. Plains east of Mount Kilima-Njaro; Taveta.

Herpestes gracilis. Plains east of Mount Kilima-Njaro.

Herpestes caffer. Mount Kilima-Njaro, 5,000 feet.

Herpestes galera robustus. Mount Kilima-Njaro, 4,000 and 5,000 feet.

Crossarchus mungo. Taveta.

Genetta pardina. Taveta; Mount Kilima-Njaro, 6,000 feet.

Mellivora capensis. Mount Kilima-Njaro, 5,000 feet.

Canis mesomelas. Taveta.

Otocyon megalotis. Arusha Wacini, 2,500 feet; Taveta.

Dendrohyrax validus. Mount Kilima-Njaro, 5,000–6,000 feet; Taveta.

Procaria brucei. Foot of Kyalu mountains, near Mount Kilima-Njaro.

Eliomys murinus. Mount Kilima-Njaro, 5,000 feet.

Mus arborarius. Mount Kilima-Njaro, 4,000–5,000 feet.

Mus barbarus. Mount Kilima-Njaro, 5,000 feet; Taveta.

Mus aquilus. Mount Kilima-Njaro, 8,000 feet (killed by a hawk).

Mus? minimus. Mount Kilima-Njaro.

Mus sp.? Mount Kilima-Njaro, 5,000 feet.

Dendromys nigrifrons. Mount Kilima-Njaro, 5,000 feet; Taveta.

Otomys irroratus. Mount Kilima-Njaro, 4,000–5,000 feet.

Rhizomys splendens. Mount Kilima-Njaro, 5,000 feet.

Sciurus undulatus. Mount Kilima-Njaro, 6,000 feet; Kahé.

Sciurus pœnsis. Mount Kilima-Njaro, 5,000 feet; Taveta.

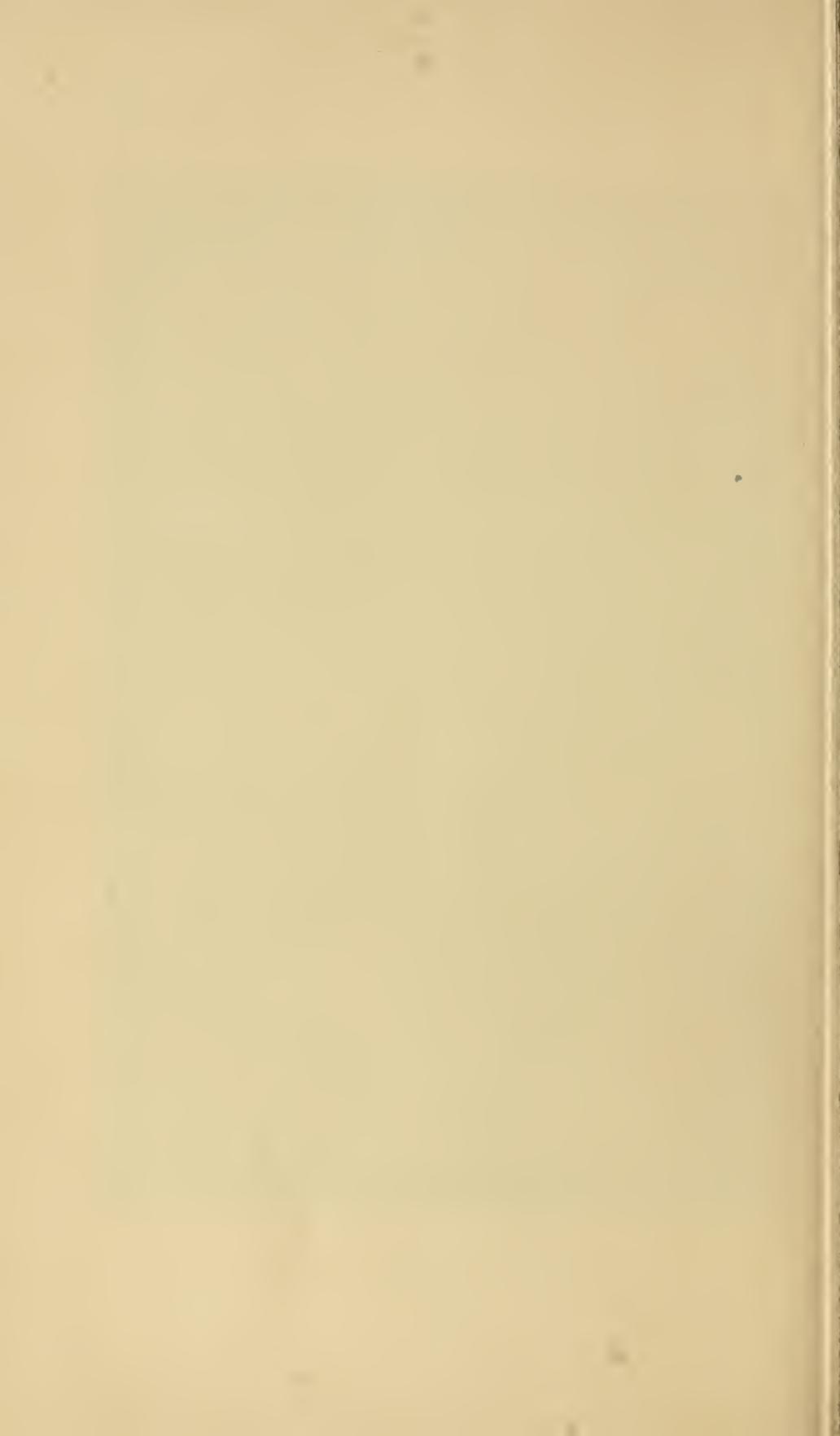
Xerus rutilus. Taveta.

Aulacodus swinderianus. Taveta.

- Lepus? capensis*. Plains east of Mount Kilima-Njaro; Usari River.
Megaderma frons. Taveta.
Megaderma cor. Taveta.
Nycteris thebaica. Mount Kilima-Njaro.
Erinaceus albiventris. Taveta.
Crocidura sp.
Connochates taurinus albojubatus. Taveta.
Oryx callotis. Taveta.
Alcelaphus cokii. Taveta.
Kobus ellipsiprymnus. Taveta.
Tragelaphus scriptus roualeynii. Taveta.
Æpyceros melampus. Taveta.
Eleotragus? arundinaceus. Taveta.
Gazella grantii. Taveta.
Gazella thomsonii. Taveta.
Cephalophus spadix. Mount Kilima-Njaro; high altitudes, 8,000 feet.
Cephalophus nigrifrons. Taveta.
Neotragus damarensis. Taveta.
Nanotragus moschatus. Mount Kilima-Njaro, about 6,000 feet.
Bubalus caffer. Taveta.
Potamocheerus africanus. Mount Kilima-Njaro.
Phococheerus alianii. Taveta.
Rhinoceros bicornis. Taveta.



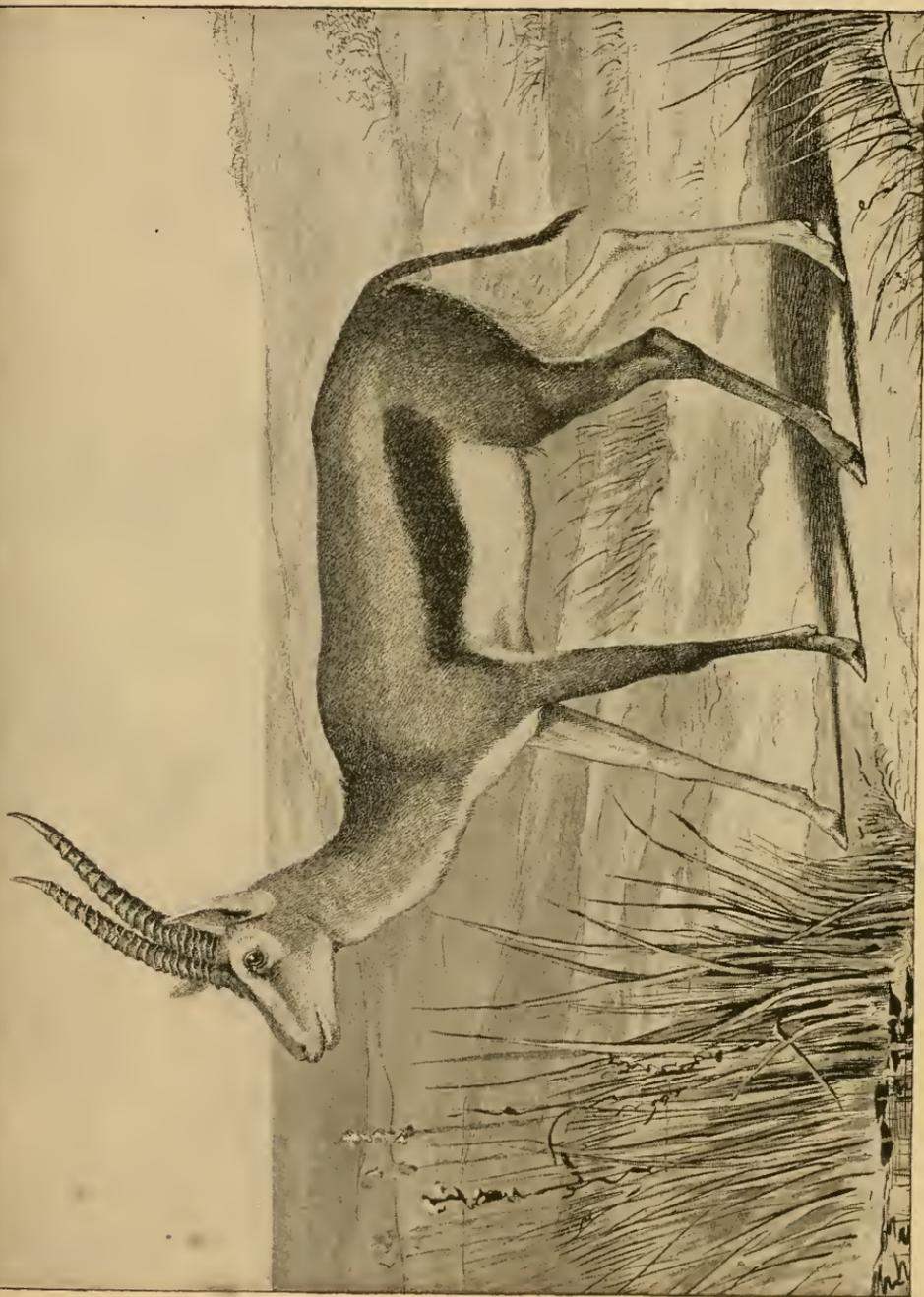
TREE DAMAN, *Dendrohyrax validus* True.
Skull; a little larger than life. U. S. National Museum, No. 34972.





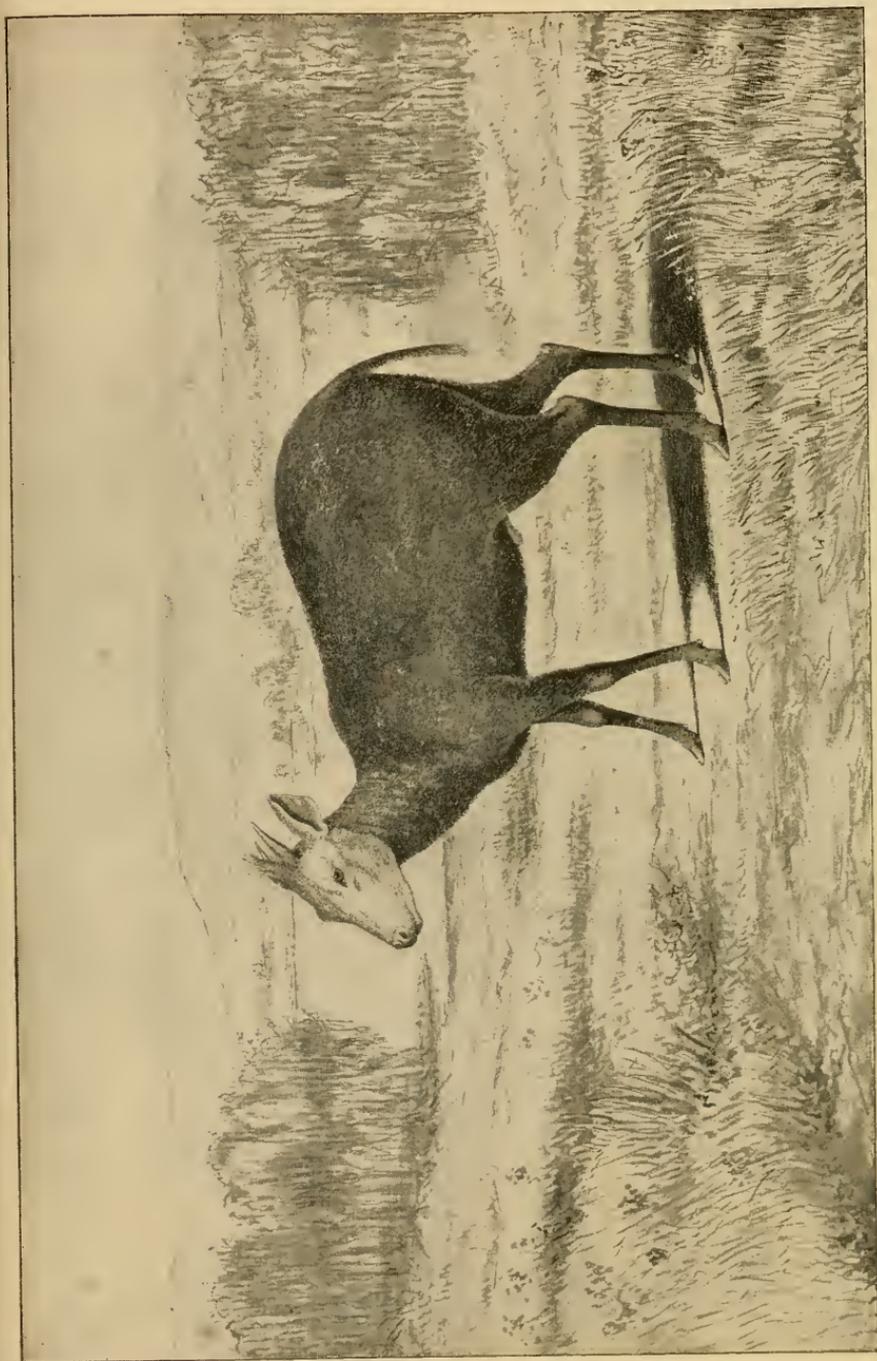
PENCIL-EARED ORYX, *Oryx callotis* Thomas.
U. S. National Museum, No. 18944.



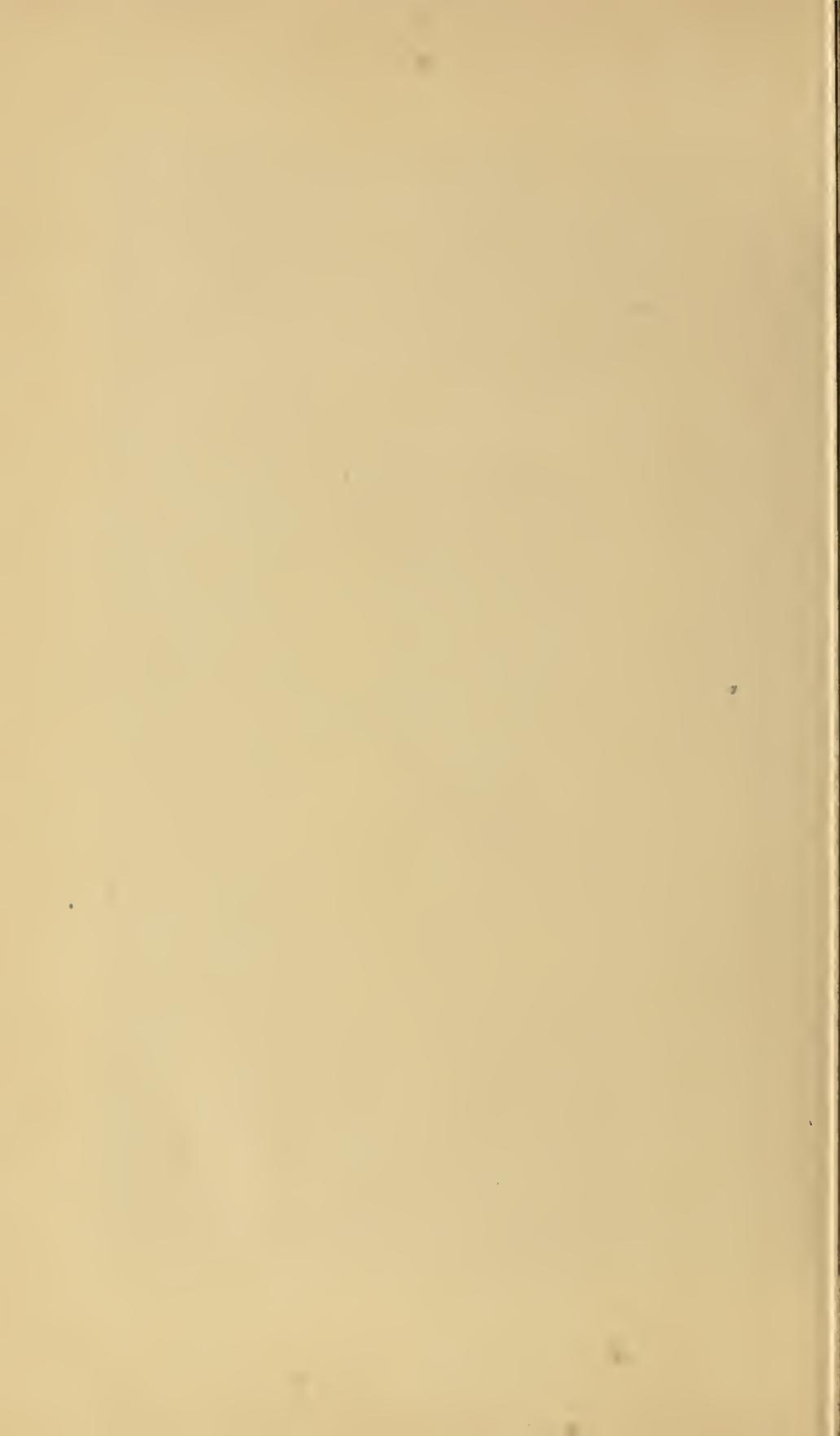


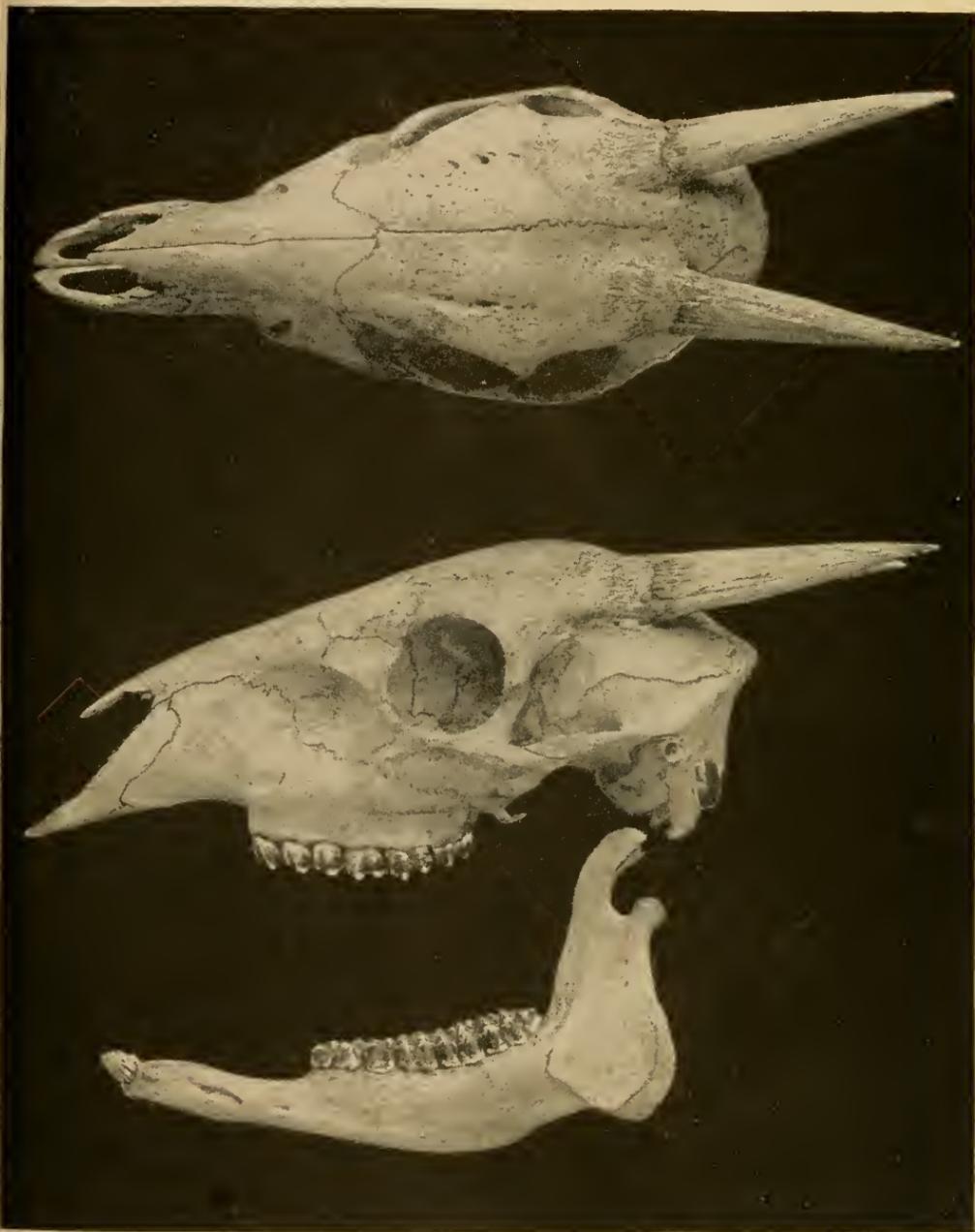
THOMSON'S GAZELLE, *Gazella thomsonii* Günther.
U. S. National Museum, No. 18964





ABBOTT'S ANTELOPE, *Cephalopterus spadicus*. True.
U. S. National Museum, No. 18965. Male. Type.

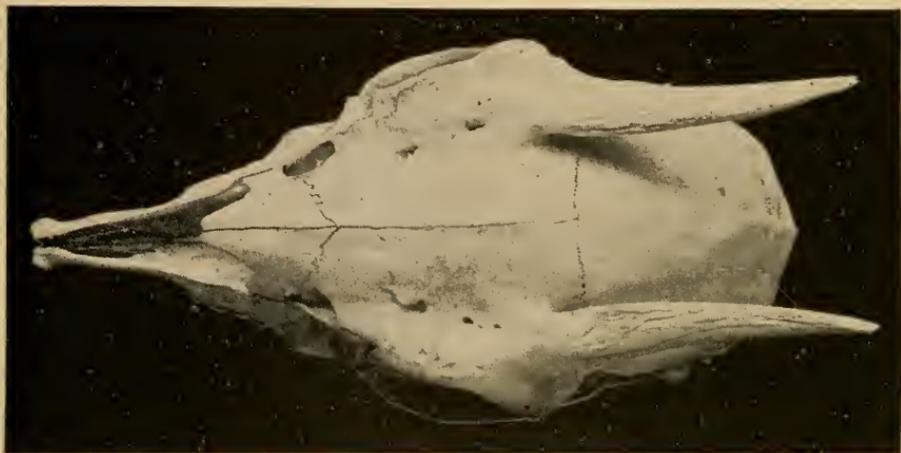




ABBOTT'S ANTELOPE, *Cephalophus spadix* True.

Skull; a little less than one-half natural size. U. S. National Museum, No. 34707. Type.





DAMARA-LAND PYGMY ANTELOPE, *Neotragus damarensis* Günther.
Skull ; slightly smaller than natural size. U. S. National Museum, No. 34700. Male.

