



Alpheus Fuller Williams.

THE
BOOK OF ANTELOPES.

BY

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AND

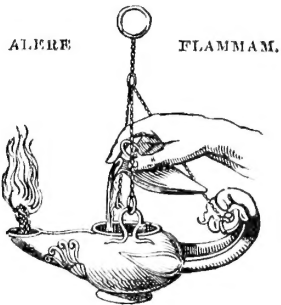
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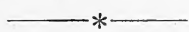
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CONTENTS.



VOL. III.

	Page
Subfamily V. ANTILOPINÆ	1
Genus I. ANTILOPE	3
76. THE BLACK-BUCK. <i>Antilope cervicapra</i> (Linn.). [Plate XLVII.]	5
Genus II. ÆPYCEROS	15
77. THE PALLAH. <i>Æpyceros melampus</i> (Licht.). [Plate XLVIII.]	17
78. THE ANGOLAN PALLAH. <i>Æ. petersi</i> , Bocage	25
Genus III. SAIGA	29
79. THE SAIGA. <i>Saiga tatarica</i> (Linn.). [Plate XLIX.]	31
Genus IV. PANTHOLOPS	43
80. THE CHIRU. <i>Pantholops hodgsoni</i> (Abel). [Plate L.]	45
Genus V. ANTIDORCAS	53
81. THE SPRINGBUCK. <i>Antidorcas euchore</i> (Zimm.). [Plate LI.]	55
Genus VI. GAZELLA	65
82. THE TIBETAN GAZELLE. <i>Gazella picticaudata</i> (Hodgs.). [Plate LII.]	71
83. PRZEWALSKI'S GAZELLE. <i>G. przewalskii</i> , Büchn. [Plate LIII.]	79
84. THE MONGOLIAN GAZELLE. <i>G. gutturosa</i> (Pall.). [Plate LIV.]	83
85. THE PERSIAN GAZELLE. <i>G. subgutturosa</i> (Güld.). [Plate LV.]	89
86. THE MARICA GAZELLE. <i>G. marica</i> , Thos. [Plate LVI.]	95
87. THE DORCAS GAZELLE. <i>G. dorcas</i> (Linn.). [Plate LVII.]	99
88. THE EDMI GAZELLE. <i>G. cuvieri</i> (Ogilby). [Plate LVIII.]	109
89. THE ARABIAN GAZELLE. <i>G. arabica</i> (Licht.). [Plate LIX.]	115
90. THE INDIAN GAZELLE. <i>G. bennetti</i> (Sykes). [Plate LX.]	119
91. SPEKE'S GAZELLE. <i>G. spekei</i> , Blyth. [Plate LXI.]	125
92. PELZELN'S GAZELLE. <i>G. pelzelni</i> , Kohl. [Plate LXII.]	133
93. LODER'S GAZELLE. <i>G. leptoceros</i> (F. Cuv.). [Plate LXIII.]	137
94. THE ISABELLA GAZELLE. <i>G. isabella</i> , Gray. [Plate LXIV.]	151
95. THE MUSCAT GAZELLE. <i>G. muscatensis</i> , Brooke. [Plate LXV.]	155
96. HEUGLIN'S GAZELLE. <i>G. tilonura</i> (Heugl.). [Plate LXVI.]	159
97. THE RED-FRONTED GAZELLE. <i>G. rufifrons</i> , Gray. [Plate LXVII.]	163
98. THE RUFOUS GAZELLE. <i>G. rufina</i> , Thos.	167
99. THOMSON'S GAZELLE. <i>G. thomsoni</i> , Günth. [Plate LXVIII.]	171

	Page
Subfamily V. ANTILOPINÆ (continued).	
Genus VI. GAZELLA (continued).	
100. GRANT'S GAZELLE. <i>Gazella granti</i> , Brooke. [Plate LXIX.]	179
101. PETERS'S GAZELLE. <i>G. petersi</i> , Günth.	187
102. THE BANDED GAZELLE. <i>G. notata</i> , Thos.	191
103. SOEMMERRING'S GAZELLE. <i>G. soemmerringi</i> (Cretzschm.). [Plate LXX.]	195
104. THE RED-NECKED GAZELLE. <i>G. ruficollis</i> (Ham. Smith). [Plate LXXI.]	205
105. THE DAMA GAZELLE. <i>G. dama</i> (Pall.)	209
106. THE MHORR GAZELLE. <i>G. mhorr</i> (Benn.). [Plate LXXII.]	213
Genus VII. AMMODORCAS	217
107. THE DIBATAG. <i>Ammodorcas clarkei</i> (Thos.). [Plate LXXIII.]	219
Genus VIII. LITHOCRANIUS	227
108. THE GERENUK. <i>Lithocranius walleri</i> (Brooke). [Plate LXXIV.]	229
Genus IX. DORCOTRAGUS	239
109. THE BEIRA. <i>Dorcotragus megalotis</i> (Menges). [Plate LXXV.]	241

LIST OF ILLUSTRATIONS
IN THE TEXT.

— * —

VOL. III.

Fig.	Page
45. Horns of Black-buck, ♂	13
46. Abnormal horns of female Indian Antelope	14
47. Head of Pallah, ♂, front view	23
48. Front view of head of Angolan Pallah	26
49. Group of Saigas	35
50. Frontlet and horns of Saiga (fossil), ♂	39
51. Head of male Saiga in its winter dress	40
52. Horns of Chiru	48
53. Horns of Springbuck, ♂ & ♀	61
54. Skull and horns of the Tibetan Gazelle	73
55. Goa Antelopes on the Donkia Pass	74
56. Skull and horns of Mongolian Gazelle	87
57. Head of Dorcas Gazelle, ♂	108
58. Head of Edmi Gazelle, ♂	113
59. Front view of head of Edmi Gazelle, ♀	114
60. Head of Arabian Gazelle	117
61. Head of <i>Gazella fuscifrons</i> , ♀	123
62. Head of adult male Speke's Gazelle	128
63. Head of adult female Speke's Gazelle	129
64. Head of young male Speke's Gazelle	131
65. Head of Pelzeln's Gazelle, ♂	135
65 a. Skull of Pelzeln's Gazelle, ♀	135
66. Diagram of horns of Rhime (a) and Admi (b)	143
67. Front view of head of a female Loder's Gazelle	147
68. Skull of <i>Gazella leptoceros loderi</i> , ♂	148
69, 69 a. Heads of Isabella Gazelle, ♂ & ♀	154
70, 70 a. Heads of Muscat Gazelle, ♂ & ♀	156
71, 72. Heads of Heuglin's Gazelle, ♂ & ♀	160
73. Skull of Rufous Gazelle	168
74. Horns of Thomson's Gazelle, ♂	172
75. Front view of head of Thomson's Gazelle, ♀	174
76. Grant's Gazelle, Ugogo	181
77, 78. Heads of Grant's Gazelle, ♂ & ♀	182
79. Skull and horns of Peters's Gazelle, ♂	188
80. Skin of the Banded Gazelle	192
81. Skull and horns of <i>Gazella soemmerringi typica</i> (male)	197
82 a, 82 b. Skull and horns of <i>Gazella soemmerringi berberana</i> , ♂ & ♀	198
83. Head of the Dibatag, ♂	222
84. Map of Somaliland (showing the localities of the Dibatag)	225
85. Skull of the Gerenuk	231
86. Sketch of Gerenuk, ♂ & ♀, in characteristic attitudes	232
87. Front view of the head of the Beira	245

THE BOOK OF ANTELOPES.

VOL. III.

SUBFAMILY V. *ANTILOPINÆ*.

General Characters.—Size medium or small. Muzzle hairy. Anteorbital glands variable, large in some genera, absent in others. Tail generally short. Mammæ 2 (4 in *Saiga*).

Skull usually with supraorbital pits, lachrymal vacuities, and anteorbital fossæ. Molars tall and narrow.

Horns present in the male only, except in *Antidorcas* and in most of the species of *Gazella*.

Range of Subfamily. South-eastern Europe, Western and Central Asia, Peninsula of India, and the whole of Africa.

The greater part of this subfamily consists of the Gazelles and their allies, the Saiga, Chiru, Springbuck, Gerenuk, and Dibatag; and with these, by common consent, are included the Black-buck, the typical form of the whole group of Antelopes, and the Pallahs. We have also thought that the anomalous little Antelope known as the Beira would best be placed in this subfamily, near the Gazelles, in spite of the superficial resemblance it bears to certain members of the subfamily *Neotraginæ*.

The present subfamily consists therefore of nine genera, which may be arranged as follows:—

- A. Horns spirally twisted 1. ANTILOPE.
- B. Horns curved or straight, not twisted.
 - a. False hoofs absent 2. ÆPYCEROS.
 - b. False hoofs present.
 - a¹. Horns medium or long, curved.
 - a². Muzzle swollen or elongated.
 - a³. Horns medium, lyrate, whitish 3. SAIGA.
 - b³. Horns long, slightly curved, black 4. PANTHOLOPS.
 - b². Muzzle slender, normal.
 - a³. Neck normal.
 - a⁴. Horns convex forwards for three-fourths their length.
 - a⁵. Back with a central white streak. Lower premolars 2.
 - 5. °ANTIDORCAS.
 - b⁵. Back normal. Lower premolars 3 6. GAZELLA.
 - b⁴. Horns concave forwards, except just at their base.
 - 7. AMMODORCAS.
 - b³. Neck much elongated. Horns as in *Gazella*. 8. LITHOCRANIUS.
 - b¹. Horns short, quite straight 9. DORCOTRAGUS.

DSI

GENUS I. ANTILOPE.

Type.

Antilope, Pall. Misc. Zool. p. 1 (1766) A. CERVICAPRA*.

Size medium. Muzzle hairy. A large anteorbital gland present. Tail short, compressed. Mammæ 2. Accessory hoofs present. Glands in all the feet and in the groin.

Skull with deep pits between the orbits, very small or no lachrymal vacuities, and large anteorbital fossæ. Molars tall and narrow.

Horns long, placed close together, widely divergent, cylindrical, spirally twisted, closely ringed throughout. Female normally hornless.

Range of the Genus. Peninsula of India.

One species only is known.

* This species, although mentioned last in Pallas's List, may be taken as the type of the genus, because the term "*Antilope*" is clearly based on Ray's and Buffon's name for the Black-buck (The Antelope; *l'Antilope*), quoted and identified by Pallas, and only used up to this date for this particular species. The ordinary justification for the same course, based on de Blainville's revision of 1816, is, as in so many other cases, invalidated by the earlier work of Lichtenstein, by whom the Black-buck was placed among the "*Gazellæ*," and not among the "*Antilopæ genuinæ*."



J. Smit, del & lith

The Black-buck .
ANTILOPE CERVICAPRA

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76. THE BLACK-BUCK.

ANTILOPE CERVICAPRA (LINN.).

[PLATE XLVII.]

Gazella africana—*The Antelope*, Ray, Quadr. p. 79 (1693).

Capra cervicapra, Linn. Syst. Nat. (10) i. p. 69 (1758), (12) i. p. 96 (1766).

Antilope cervicapra, Pall. Misc. Zool. p. 9 (1766); id. Spic. Zool. i. p. 18 (1767), xii. p. 19 (1777); Erxl. Syst. R. A. p. 283 (1777); Zimm. Spec. Zool. Geog. p. 542 (1779); id. Geogr. Gesch. ii. p. 116 (1780); Gatt. Brev. Zool. i. p. 81 (1780); Schreb. Säug. pl. cclxviii. (1785); Bodd. Elench. Anim. p. 142 (1785); Gmel. Linn. S. N. i. p. 192 (1788); Kerr, Linn. An. K. p. 319 (1792); Donnd. Zool. Beitr. i. p. 644 (1792); Lath. & Dav. Faunula Indica, p. 4 (1795); Link, Beytr. Nat. ii. p. 90 (1795); G. Cuv. Tabl. Élém. p. 164 (1798); Bechst. Syst. Uebers. vierf. Th. ii. p. 644 (1800); Shaw, Gen. Zool. ii. pt. 2, p. 336 (1801); Turt. Linn. Syst. Nat. i. p. 116 (1802); Desm. N. Dict. d'H. N. (1) xxiv. Tabl. p. 33 (1804); G. Cuv. Dict. Sci. Nat. ii. p. 235 (1804); Tied. Zool. i. p. 410 (1808); Licht. Mag. nat. Freund. vi. p. 172 (1814); G. Fisch. Zoogn. iii. p. 437 (1814); Afz. N. Act. Ups. vii. p. 220 (1815); Desm. N. Dict. d'H. N. (2) ii. p. 180 (1816); G. Cuv. R. A. i. p. 261 (1817); Goldf. Schr. Säug. v. p. 1214 (1818); Schinz, Cuv. Thierr. i. p. 389 (1821); Desm. Mamm. ii. p. 451 (1822); Desmoul. Dict. Class. d'H. N. i. p. 443 (1822); H. Sm. Griff. An. K. iv. p. 231, v. p. 337 (1827); Less. Man. Mamm. p. 370 (1827); J. B. Fisch. Syn. Mamm. p. 457 (1829); Gray & Hardw. Ill. Ind. Zool. i. pls. xii. & xiii. (1832); Benn. P. Z. S. 1836, p. 34; Og. P. Z. S. 1836, p. 137; Less. Compl. Buff. x. p. 289 (1836); Oken, Allg. Nat. vii. p. 1377 (1838); Elliot, Madr. Journ. x. p. 222 (1839); Laurill. Dict. Univ. d'H. N. i. p. 620 (1839); Gerv. Dict. Sci. Nat. i. p. 260 (1840); Hodgs. J. A. S. B. x. p. 913 (1841); Less. N. Tabl. R. A., Mamm. p. 175 (1842); Forst. Descr. Anim. p. 379 (1844); Wagn. Schr. Säug. Suppl. iv. p. 416 (1844), v.

- p. 409 (1855); **Schinz**, Syn. Mamm. ii. p. 408 (1845); **Hutton**, J. A. S. B. xv. p. 150 (1846); **Sund. Pecora**, K. Vet.-Ak. Handl. 1845, p. 270 (1847); **id.** Hornsch. Transl. Arch. Skand. Beitr. ii. p. 266; Reprint, p. 86 (1848); **Schinz**, Mon. Ant. p. 10, pl. ix. (1848); **Temm.** Esq. Zool. Guin. p. 190 (1853); **Gieb.** Säug. p. 312 (1853); **Kinloch**, Large Game Shooting in Tibet, p. 59 (1869) (pl., head); **Blanf.** J. A. S. B. xlv. pt. 2, p. 19 (1875); **Ball**, P. A. S. B. 1877, p. 171; **Brehm**, Thierl. iii. p. 198 (1880); **Scl. List Anim. Z. S.** (8) p. 144 (1883), (9) p. 158 (1896); **Flow. & Gars.** Cat. Coll. Surg. ii. p. 266 (1884); **Kinloch**, Large Game Shooting, 1885, p. 112, 1892, p. 153, pl. (head); **Jent.** Cat. Ost. Leyd. Mus. (M. P.-B. ix.) p. 137 (1889); **W. Scl. Cat. Mamm. Calc. Mus.** ii. p. 162 (1891); **Blanf.** Mamm. Brit. Ind. p. 521 (1891); **Flow. & Lyd.** Mamm. p. 340 (1891); **Ward**, Horn Meas. (1) p. 95 (1892), (2) p. 139 (1896); **Jent. Cat. Mamm. Leyd. Mus.** (M. P.-B. xi.) p. 169 (1892); **Lyd.** Horns and Hoofs, p. 152 (1893).
- Cerophorus (Antilope) cervicapra*, **Blainv.** Bull. Soc. Philom. 1816, p. 75.
- Strepsiceros cervicapra*, **Rüpp.** Verz. Senck. Mus. p. 39 (1842).
- Antilope rupicapra*, **Müll.** Natursyst. Supp. p. 56 (1776) (ex *l'Antilope*, **Buff.** Hist. Nat. xii. p. 273, pls. xxxv. & xxxvi. 1764).
- Cemas strepsiceros*, **Oken**, Lehrb. Nat. p. 732 (1816).
- Antilope*, **F. Cuv.** H. N. Mamm. (fol.) iii. livr. xliii. (♂) & xlv. (♀) (1824).
- "*Antilope bilineata*, **Linn. MS.**," **Gray & Hardw.** Ill. Ind. Zool., lettering to pl. xii. (1832) (juv.).
- Cervicapra bezoartica*, **Gray**, List Mamm. B. M. p. 159 (1843); **id.** Ann. Mag. N. H. (1) xviii. p. 231 (1846); **id.** Cat. Mamm. Nepal, Hodgson Coll. (1) p. 26 (1846), (2) p. 13 (1863); **id.** List Ost. B. M. p. 56 (1847); **id.** Knowsl. Men. p. 6 (1850); **Horsf.** Cat. Mamm. E. I. C. p. 167 (1851); **Gerr.** Cat. Bones Mamm. B. M. p. 234 (1862); **Fitz. SB.** Wien, lix. 1, p. 162 (1869).
- Antilope bezoartica*, **Gray**, P. Z. S. 1850, p. 117; **id.** Cat. Ung. B. M. p. 66 (1852); **Blyth**, Cat. Mamm. As. Soc. p. 171 (1863); **Jerdon**, Mamm. Ind. p. 275 (1867); **Blanf.** J. A. S. B. xxxvi. pt. 2, p. 196 (1867); **Macmaster**, Notes on Jerdon, pp. 134 & 258 (1870); **Stol.** J. A. S. B. xli. pt. 2, p. 229 (1872); **Gray**, Cat. Rum. B. M. p. 40 (1872); **id.** Hand-l. Rum. B. M. p. 109 (1873); **Pollok**, Sport in Brit. Burmah, p. 50 (1879); **Sterndale**, Mamm. Ind. p. 472 (1884); **Percy**, Badminton Big Game Shooting, ii. p. 345 (1894).
- VERNACULAR NAMES:—*Ena* ♂, *Harina* and *Mirga*, in Sanscrit; *Haran*, *Harna* ♂, *Harni* ♀, *Kalwit* ♀, *Mrig*, in Hindostani; *Kala* ♂, *Goria* ♀, in Tirhoot; *Kalsar* ♂, *Baoti* ♀, in Behar; *Eureta* in Bhagalpur; *Barant* or *Sasin* in Nepal; *Alali* ♂, *Gandoli* ♀, in Baori; *Badu* in Ho Kol; *Bamani-haran* in Uria and Mahratta; *Phandayat* in Mahratta; *Kutsar* in Korku; *Veli-man* in Tamil; *Irri* ♂, *Ledi* and *Jinka* in Telugu; *Chigri* and *Hulé-kara* in Canarese (*Blanford*).

Height of male at withers about 30 inches. General colour in the same sex brown, gradually darkening with age to deep shining black. Muzzle and chin, an area round the eyes, and the whole of ears white. Back of neck, especially in the black individuals, yellowish. Upper part of flanks with an indistinct narrow whitish line running along them, most conspicuous in the young. Chest, belly, and inner sides of limbs pure white; outer sides of the latter brown. Tail short, its upperside fawn or brown, beneath white; its end with an indistinct blackish tuft.

Female brownish fawn wherever the male is black, and with the colour-contrasts nowhere so conspicuous. Back of ears and nape of neck also fawn. Horns absent, except in abnormal cases (see p. 14).

Skull as described above. The dimensions of a skull of a male are:—Basal length 8·3 inches, greatest breadth 4·0, muzzle to orbit 4·9.

Hab. India, from the base of the Himalayas to Cape Comorin, and from the Punjab to Lower Assam; but not found in Ceylon or to the east of the Bay of Bengal.

The Indian Antelope or Black-buck, as the male is universally called by sportsmen, is usually associated with the Gazelles, and we retain it in this position, although it deviates from all the other members of the subfamily in having its horns spirally twisted somewhat after the manner of the *Tragelaphinæ*. It likewise differs from the rest of the group as regards the strong contrast of colour between the sexes, although this is of course a comparatively trifling character.

This Antelope, although strictly confined to India south of the Himalayas, has been more or less known in Europe for a long period, probably since the invasion of India by Alexander the Great. It has been even conjectured that the twisted horn of the fabled Unicorn of mediæval writers may have been originally based upon single horns of the present animal, though other authorities are inclined to refer the Unicorn's horn to the Narwhal. This, however, is rather an antiquarian than a zoological question.

In the two last and most complete editions of the 'Systema Naturæ' Linnæus based his *Capra cervicapra* upon the descriptions of several of his predecessors (Gesner, Aldrovandus, Ray, and Brisson), which certainly refer to the present species, and we may therefore safely adopt *cervicapra* for it as its specific term. The name *bezoartica* of Linnæus, which has been employed

in its place by some authorities, refers to quite a different animal, probably to one of the wild goats, but certainly not to the Indian Antelope.

As regards the generic appellation of the present animal, we have already explained our reasons for following the general practice of the best modern authors in considering the *Capra cervicapra* of Linnæus to be the type of the genus *Antilope*, although Pallas, who founded the genus, did not give it precedence in his list of species. But the fact is that Pallas in his day never realized the importance attached in modern times to the exact designation of the types of genera, and had probably no intentions in the matter. The correct scientific name of the Black-buck is therefore, in our opinion, *Antilope cervicapra*.

The authors immediately subsequent to Linnæus, whose numerous references we quote in our synonymy, added little or nothing to our knowledge of the Indian Antelope. Shaw and other writers of the same date continued the story (which originally arose from its being confounded with the Addax) of its being met with in Africa as well as India—a fallacy which appears to have been first exposed by Lichtenstein in his excellent article on the genus *Antilope*, published in 1814. But accurate information on this Antelope and its exact range and habits was only obtained when the fauna of the Indian Peninsula came to be investigated by those whom the increase of English influence caused to be resident in that country.

After General Hardwicke, the late Sir Walter Elliot was among the first of the British residents in India who turned his special attention to the zoology of British India. In 1839 he published an excellent article upon the mammals of the Southern Mahratta country. Here, he tells us, the Indian Antelope “frequents the plains in herds of from twenty to thirty, each of which contains only one buck of mature age, the others being young ones.” In some cases the herds are so large that one buck has fifty or sixty does in its company, while the younger bucks, driven away by the old ones, wander about in separate herds, which sometimes contain as many as thirty individuals of different ages.

Jerdon, in his ‘Mammals of India,’ published in 1867, following Gray, calls the Indian Antelope *Antilope bezoartica*, but gives us a good account of it. It is found, he says, throughout India in suitable localities, but is not met with elsewhere. “It is rare in Bengal, a few only extending into Purneah and Dinagapore, north of the Ganges; and it does not occur in the richly

wooded Malabar coast. It is abundant in the Deccan, in parts of the Doab between the Jumna and Ganges, also in Hurriana, Rajpootana, and the neighbouring districts. It is found in the Punjab, but does not cross the Indus."

McMaster, in his 'Notes on Jerdon's Mammals,' and Sterndale, in his 'Natural History of the Mammalia of India and Ceylon,' besides numerous other writers in the 'Bengal Sporting Magazine' and other periodicals, have published good field-notes upon the Black-buck, which is perhaps the most favourite object of pursuit of the sportsman in the plains of India. But one of the best summaries of all these observations is that put together by General Kinloch in his excellent work on 'Large Game Shooting in Thibet, the Himalayas, Northern and Central India,' from the third edition of which, published in 1892, we venture to quote the following extracts:—

"The Indian Antelope, the male of which is universally known among sportsmen as the 'Black Buck,' is generally distributed throughout India, being found from the foot of the Himalayas to the extreme south of the mainland, and from Eastern Bengal to the River Jhílám. There are, however, large tracts of country where it is not found, and it is essentially an inhabitant of the open cultivated plains, avoiding equally hills and dense jungles. The localities in which I know it to be most abundant are the desert near Ferózpúr, in the Hissár District, and in the neighbourhood of Álígarh. The male is one of the most graceful and beautiful animals in creation, combining symmetry of form and brilliancy of coloring with marvellous speed and elasticity of movement. He stands about thirty-two inches at the shoulder, and when arrived at maturity the upper parts are of a deep glossy black, with the exception of a light chestnut-colored patch at the back of the neck, and some markings of the same color about the face. The lower parts and the inside of the limbs are snowy white, and the line between the black and white is most clearly defined. The hair is short and glossy, and the skin makes a very pretty mat. The horns are remarkably handsome, being spiral and annulated nearly to their tips. They vary considerably in length, in degree of spirality, in the number and prominence of rings, and in the angle at which they diverge. In Southern India they are said rarely to attain a greater length than twenty inches, but in the Panjáb they have been found very much longer. I have *seen* two pairs of twenty-seven inches, and have *heard* of horns over twenty-eight in length. Young bucks are of a light fawn color, their coats gradually becoming darker with age, although I have seen full-grown buck with long horns which had hardly a black hair. The doe is of a light fawn above and white beneath, with a light-colored line along the side; she is not furnished with horns, except in very rare instances. When horns do appear they are slender and much curved, bearing no resemblance to those of the buck. Antelopes delight in extensive open plains where there are alternate wide tracts of cultivation and

waste land, repairing as a rule to the fields for food, and resting when they can on bare and sandy soil. During the rainy season, however, they are fond of concealing themselves among high-standing crops, and only come out in the mornings and evenings. Black Buck are very pugnacious, and sometimes fight so desperately that they will allow a person to walk close up to them without observing him. Many have their horns broken in their combats, and I have seen one both of whose horns were broken off within three inches of the head. Antelopes are usually found in considerable herds, varying in numbers from ten or a dozen to a couple of hundred. A buck and one doe, or a buck and a couple of does, may, however, be frequently met with; and vast herds of many thousands have occasionally been seen. When in large numbers they of course do much damage to the crops, and it is with difficulty that the natives drive them away. It is a beautiful sight when a herd of Antelopes are first alarmed; as soon as they have made up their minds that safety is only to be found in flight, first one, then another bounds into the air to a surprising height, just touching the earth, and again springing upwards, until the whole herd are in motion. So light are their movements that they seem as if they were suspended on wires. These bounds are only continued for a few strides, after which the Antelopes generally settle down into a regular gallop. The speed of the Black Buck is wonderful, and it is seldom that greyhounds can pull down an unwounded one; but I knew one dog that caught several, both bucks and does, on fair ground. Antelopes will go away when very hard hit, and a wounded one will often give a capital run, if ridden after with spear or knife; the latter is nearly as good as the former, for the buck runs so game, that he will not, as a rule, give a chance of spearing him until he is so completely exhausted that he drops with fatigue, when one may dismount and cut his throat. The sportsman can choose between riding down or coursing his wounded Antelope; but either a good horse or a brace of greyhounds should always be in readiness, or the best shot will have the mortification of seeing maimed animals escape to die a lingering death."

The chase of the Black-buck by the Cheetah (*Cynælurus jubatus*) is a favourite sport of the native Princes and Nobles of India. General Kinloch, in the work we have just quoted, describes one of these chases, in which he took part, as follows:—

"Early one morning at the beginning of June, M. (a brother Officer) and I rode out with the Chítá cart, and had not proceeded very far across the fields, which were then almost destitute of vegetation, when some Black Buck were discovered in the distance. M. then took his seat beside the keeper of the cart, while I rode alongside, taking care to keep the cart between me and the Antelope. The herd had evidently been hunted before, and in spite of careful manœuvring would never allow us to approach within a hundred and fifty yards, which the keeper considered too great a distance for a successful slip. Several other antelope were followed with a similar result, but at last a herd that were grazing in a very rough field permitted the bullocks to trot up to within a hundred yards. The Chítá was now unhooded, and on catching sight of the game he sprang

lightly from the cart, but instead of at once giving chase, he walked quietly towards the Antelope, which, being now alarmed, were rapidly increasing their distance. I began to think that he had no intention of pursuing, and the Antelope were nearly two hundred yards off, when he gradually increased his speed, and after a few strides bounded after them with such amazing velocity that in a few seconds he was in the middle of the now flying herd. Passing several small ones, he singled out one of the finest buck, and in less time than it takes to describe it buck and Chítá rolled over in a cloud of dust. The chase had not extended much over three hundred yards. Galloping to the spot, I found the buck lying on his back, while the Chítá crouched quietly by him with his fangs buried in the throat. The keeper quickly came up, terminated the buck's existence with his knife, and catching the blood in a wooden ladle, presented it to the Chítá, who lapped it up with relish. A haunch was then cut off, and the Chítá seizing it bounded back into his cart, where he proceeded to devour it at his leisure. The buck was a fine one, with twenty-three inch horns."

Excellent accounts of the distribution and habits of the Indian Antelope have also been lately published in Dr. Blanford's 'Mammals of British India,' and in the second volume of 'Big Game Shooting' in the Badminton Library. In the latter we find described the following curious method of getting within close range of the Black-buck as practised in Central India :—

"A trained Black-buck and doe are taken out, each having a light cord about ten yards long attached to it, and the pair are led by an attendant, a light screen about three feet square made of grass and leaves with a small hole in the centre being carried by the shikari. The whole party moves under cover of a third man on horseback to within about three hundred yards of a herd of antelopes. The screen is then planted on a spot commanding a good view; the men on foot crouch behind it, and the horseman rides slowly off on the flank. The two tame Antelopes are then let out to the full extent of their lines on one side of the screen, and begin playing round one another. The master buck of the herd, seeing an impertinent intruder on his ground, trots out at once to do battle for the doe, but the screen puzzles him, so before coming close he generally circles round to try and see behind it. As he moves, the screen is shifted round, the men scrambling round on hands and knees behind it, and if there are two Englishmen bursting with suppressed laughter in addition to the two natives, all scuffling round as the screen moves and trying to keep their legs out of sight, the business is most comical. Directly the wild buck stops, the screen and the men behind it must remain motionless. Having failed to discover what is behind the screen, the buck, though he is still suspicious, feels that he must try to capture that enticing doe, but decides on having a look on the other side of the screen first, so back he gallops to the other flank, and the scrambling process is repeated. Gradually he comes within range, the rifle is poked through the hole in the screen and he gets his quietus. After this the tame Antelopes are given a handful of corn, and the party sets out to look for another herd. The tame

buck employed in this manœuvre should be a brown one, as if an old powerful-looking black one is used the wild buck will often decline the contest."

The Indian Antelope bears captivity easily, and specimens of it are to be seen in all the Zoological Gardens of Europe, in some of which it has bred and multiplied very successfully. In other places it has not done so well, apparently requiring a light soil and a considerable amount of protection from the inclemencies of a northern climate.

In the celebrated Menagerie at Knowsley fifty years ago this Antelope is stated by Gray to have bred but once at the time he was writing of it (1846). But shortly afterwards the herd of this animal in Lord Derby's possession appears to have increased very rapidly. When the Menagerie was dispersed by auction after the Earl's death in 1851 we find that four males and four females of this Antelope were entered in the sale-list, all described as having been bred at Knowsley. These passed into the possession of the late Viscount Hill, of Hawkstone, who at that epoch shared Lord Derby's tastes in his love for keeping living animals.

So far as we can tell from an inspection of the Zoological Society's records, the first specimens of the Black-buck received by the Society were brought home by Col. Sykes (a well-known authority on Indian zoology) from Bombay in 1831. In the 'Proceedings' of the Society for 1836 Mr. E. T. Bennett, then Secretary of the Society, published some interesting remarks on this herd, especially referring to the vexed question of the use of the lachrymal sinus in Antelopes, which, from consideration of the relative development of it in the several specimens then in the Society's Gardens, he showed was in all probability subservient to sexual purposes.

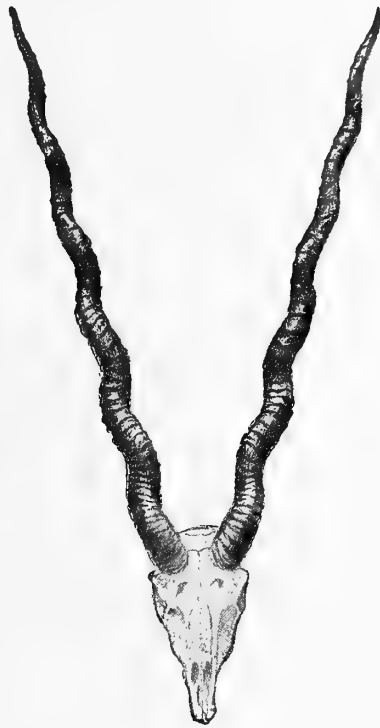
As will be seen by reference to the nine published editions of the 'Lists of Animals in the Society's Collection,' numerous specimens of the Black-buck have been acquired by the Society since that date, but, probably on account of the small free space assigned to them, little or no success has been met with in breeding this beautiful species in the Regent's Park. On the other hand, at the Jardin d'Acclimatation at Paris and in other places under a climate more genial than our own, where large paddocks can be assigned to it, the Black-buck frequently reproduces in captivity and flourishes exceedingly.

No figures of the Black-buck having been drawn under the late Sir Victor Brooke's directions, our illustrations of this beautiful Antelope (Plate XLVII.)

have been taken by Mr. Smit from two mounted specimens in the British Museum of Natural History, the male of which, from Gwalior, was presented by Mr. C. Maries, of the Gwalior Museum.

The National Collection possesses other examples of this Antelope, besides a fine series of heads and horns, mostly from Rajpootana and the Punjâb,

Fig. 45.



Horns of Black-buck, ♂.

(In the Collection of Mr. A. O. Hume.)

belonging to the splendid collection of these objects presented to the British Museum by Mr. A. O. Hume, C.B. In order to show the large dimensions to which the horns of the adult male Black-buck attain in Rajpootana and Hurriana we give a drawing (fig. 45) of a beautiful pair still in the possession of Mr. Hume, which attained a length of no less than $28\frac{1}{4}$ inches measured in a straight line. On referring to the long list of the dimensions of the horns of

this Antelope published in Mr. Rowland Ward's 'Records of Big Game,' it will be found that only one pair of greater length than the horns which we

Fig 46.



Abnormal horns of female Indian Antelope.
(In the collection of Mr. A. O. Hume.)

now figure have been hitherto recorded. We also give (fig. 46) a figure of the skull and abnormal horns of a female of this Antelope in Mr. Hume's Collection.

August, 1897.

GENUS II. ÆPYCEROS.

Type.

Æpyceros, Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 271 (1847) . . . Æ. MELAMPUS.

Size large. No anteorbital glands. Tail fairly long. False hoofs absent. Hind feet with glandular tufts of hair placed shortly above the hoofs.

Skull without supraorbital pits or anteorbital fossæ; lachrymal vacuities small.

Horns of male medium or rather long, broadly lyrate, half-ringed, slightly compressed. Female hornless.

Range of the Genus. Southern Africa, northwards to Angola on the west, and to the Southern Soudan on the east.

Of this genus we are at present prepared to recognize only two species—the Common Pallah of Southern and Eastern Africa (*Æ. melampus*) and that of Angola (*Æ. petersi*). The latter may be readily distinguished from the ordinary form by having a prominent blackish mark running down the upper surface of the muzzle.



Walt del., J. Smit lith.

The Pallah.
ÆPYCEROS MELAMPUS.

Published by R.H. Porter.

Hanhart imp.

77. THE PALLAH.

ÆPYCEROS MELAMPUS (LICHT.).

[PLATE XLVIII.]

- Pallah*, Daniell, African Scenery, no. 9 (1812).
Antilope melampus, Licht. Reise, ii. p. 544, pl. iv. (1812); id. Mag. nat. Freund. vi. p. 167 (1814); Goldf. Schr. Säug. v. p. 1224, pl. cclxxiv. (1818); Schinz, Cuv. Thierr. i. p. 388 (1821); Desm. Mamm. ii. p. 456 (1822); Burch. Trav. ii. p. 301 (1824); id. List Mamm. pres. to B. M. p. 5 (1825) (Latakoo); H. Sm. Griff. An. K. iv. p. 219, v. p. 334 (1827); Less. Man. Mamm. p. 374 (1827); J. B. Fisch. Syn. Mamm. p. 462 (1829); Smuts, En. Mamm. Cap. p. 74 (1832); A. Sm. S. Afr. Quart. J. ii. p. 209 (1834); Laurill. Dict. Univ. d'H. N. i. p. 616 (1839); Harr. Wild Anim. S. Afr. p. 78, pl. xv. (1840); Gerv. Dict. Sci. Nat. i. p. 261 (1840); Jard. Nat. Misc. vi. p. 217, pl. xxix. (1842); Less. N. Tabl. R. A., Mamm. p. 176 (1842); Gray, List Mamm. B. M. p. 162 (1843); Wagn. Schr. Säug. Suppl. iv. p. 417 (1844), v. p. 409 (1855); Schinz, Syn. Mamm. ii. p. 405 (1845); Gray, Ann. Mag. N. H. (1) xviii. p. 231 (1846); id. List Ost. B. M. p. 56 (1847); Schinz, Mon. Antil. p. 7, pl. vi. (1848); Gray, Knowsl. Men. p. 6 (1850); Peters, Säug. Mossamb. p. 190 (1852) (Zambezi); Temm. Esq. Zool. Guin. p. 190 (1853); Gieb. Säug. p. 313 (1853); Drumm. Large Game S. Afr. p. 426 (1875); Brehm, Thierl. iii. p. 203 (1880); Huet, Bull. Soc. Acclim. (4) iv. p. 477 (1887).
Æpyceros melampus, Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 271 (1847); id. Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 267; Reprint, p. 87 (1848); Gray, P. Z. S. 1850, p. 116; id. Cat. Ung. B. M. p. 65 (1852); Gerr. Cat. Bones Mamm. B. M. p. 234 (1862); Blyth, Cat. Mamm. Mus. As. Soc. p. 171 (1863); Scl. P. Z. S. 1864, p. 101 (Uzaramo); Kirk, P. Z. S. 1864, p. 656 (Zambesia); Heugl. & Fitz. SB. Ak. Wien, liv. pt. 1, p. 590 (1866); Fitz. SB. Ak. Wien, lix. pt. 1, p. 157 (1869); Gray, Cat. P. um. B. M. p. 42 (1872); id. Hand-l. Rum. B. M. p. 112 (1873); Buckl. P. Z. S. 1876, pp. 283 & 291; id. op. cit. 1877, p. 454; Heugl. N.O.-Afr. ii. p. 103 (1877) (S. Kordofan); Selous, P. Z. S. 1881,

p. 757; *id.* Hunter's Wanderings S. Afr. p. 216 (1881); **Pagenst.** JB. Mus. Hamb. ii. p. 40 (1884); **Flow. & Gars.** Cat. Coll. Surg. ii. p. 272 (1884); **Johnston**, Kilimanjaro, pp. 218 & 394, fig. 47 (1886); **Noack**, Zool. JB. ii. p. 206 (1887); **Jent.** Notes Leyd. Mus. ix. p. 173 (1887); *id.* Cat. Ost. Leyd. Mus. (Mus. Pays-Bas, ix.) p. 138 (1889); *id.* Cat. Mamm. Leyd. Mus. (op. cit. xi.) p. 170 (1892); **Hunter**, in Willoughby's E. Afr. p. 288 (1889); **Crawshay**, P. Z. S. 1890, p. 654 (Nyasa); **W. Sci.** Cat. Mamm. Calc. Mus. ii. p. 169 (1891); **Flow. & Lyd.** Mamm. p. 341 (1891); **Ward**, Horn. Meas. (1) p. 99 (1892), (2) p. 142 (1896); **Nicolls & Egl.** Sportsm. S. Afr. p. 41, pl. i. fig. 3 (1892); **True**, Pr. U. S. Nat. Mus. xv. p. 472 (1892); **Lyd.** Horns and Hoofs, p. 229 (1893); **Lugard**, E. Afr. i. p. 537 (1893); **Sci.** P. Z. S. 1893, p. 728 (L. Mweru); **Barkley**, P. Z. S. 1894, p. 132 (Pungwue Valley); **Thos.** P. Z. S. 1894, p. 145 (Nyasa); **Jackson**, in Badm. Big Game Shooting, i. pp. 285 & 306 (1894); **Lorenz**, Ann. Mus. Wien, ix., Notizen, p. 61 (1894) (Upper Limpopo); **Rendall**, P. Z. S. 1895, p. 359 (Transvaal).

"*Antilope pallah*, **Cuv.**," **Gerv.** Dict. Sci. Nat. i. p. 261 (1840).

Strepsiceros suara, **Matsch.** SB. Ges. nat. Freund. 1892, p. 135 (skin, not horns).

Æpyceros suara, **Matsch.** Thierw. O.-Afr., Säug. p. 129 (1895).

Æpyceros melampus johnstoni, **Thos.** P. Z. S. 1892, p. 553 (Nyasa).

Æpyceros melampus typicus, **Thos.** l. c.

Æpyceros melampus holubi, **Lorenz**, Ann. Mus. Wien, ix., Notizen, p. 62 (1894) ("N. of Zambezi").

VERNACULAR NAMES:—*Pallah* of English; *Roodebok* or *Roibok* of Dutch; *Pala* of Bechuanas; *Napala* of Matabili; *Ee-pala* of Makalakas; *Inzero* of Masubias; *Umpara* of Makubas; *Lubondwee* of Batongas; *Kug-ar* of Masaras (*Selous*); *Impaya* of Transvaal Shangaans (*Rendall*); *Suare* in Tette (*Peters*); *Nswala* of Nyasa tribes (*Crawshay*) and of East-African *Swahilis* (*Jackson*); *Kulungu* and *Nosi* near Kilimanjaro (*Johnston*); *Om-gaba* in Arabic (*Heuglin*).

Size comparatively large; height at the withers about 36 inches. General colour bright reddish brown, paler along the lower part of the sides. In southern specimens the colour is rather duller and browner than in northern ones, but the difference is very slight. Head dark fawn; a mark over the anterior half of the eye, chin, interramia, and upper part of throat white. Belly pure white. In front of the eye, on the side of the face, there is generally, though not always, in southern specimens an indistinct darker patch, but this is never present in northern ones. A black patch occasionally present on the crown. Ears of medium length, their outer sides fawn, with the terminal third black. Limbs like the back, a lighter ring round the

pasterns just above the hoofs; a pair of prominent black tufts of longer hairs on the distal extremity of the hind cannon-bones (whence the name of the species). Tail fairly long, its upperside with a narrow black line along it, extending more or less on to the back, its sides fawn basally, white terminally.

Skull as above described. The dimensions of a male skull are:—Basal length 10·3 inches, greatest breadth 4·4, muzzle to orbit 6·1.

The horns are particularly graceful, lyrate, convex forwards below, concave above, evenly spreading. In length, in the south, good specimens may attain about 18 or 20 inches in a direct line, and in the north more, up to about 21 or 22 inches, the largest recorded being 23. But in the intermediate districts, Nyasa, Zambesia, and Gazaland, they are much shorter, fully adult horns being often only 14 inches in length.

Female similar to the male, but without horns.

Hab. Southern and Eastern Africa, from Bechuanaland to Southern Kordofan.

The first account of the Pallah seems to have appeared in one of the early numbers of a work called Daniell's 'Illustrations of African Animated Nature and Scenery,' published in London in 1812. The author of the letterpress, however, did not give it a scientific name, believing that it might be the "Kob" of Buffon, or an allied species. At about the same date Prof. Lichtenstein, who had met with this animal during his journeyings in Southern Africa from 1803 to 1806, published a description and figure of it in his 'Reise nach südlichen Afrika' under the name *Antilope melampus*. This description, with additional particulars, was repeated in the same author's classical monograph of the genus *Antilope*, published in 1814, and his name, taken from the black tufts of short hair at the back of the hind legs just above the foot (which are clearly shown in our figures), has been employed, almost universally, for this species by subsequent writers. Lichtenstein met with his specimens near Klip Fontein in Namaqualand, where it was found to occur in small herds of five or six individuals. In 1812 the celebrated African traveller Burchell likewise met with the Pallah in Bechuanaland, and secured the first specimens which arrived at the British Museum.

Little more was added to our knowledge of this beautiful Antelope until

the publication of Harris's 'Portraits of the Game and Wild Animals of Southern Africa' in 1840. Harris devotes his fifteenth plate mainly to the illustration of the "rare and graceful Pallah," which he states "first gladdens the sight of the traveller in Southern Africa upon the elevated districts north of Latakoo." Here in the wooded slopes and valleys that environ the mountain-ranges of Kurrichane and Cashan it was met with in families of from twelve to twenty individuals of both sexes.

Harris, with all his experience, could recall to his memory "few objects more picturesque than the graceful figures of a wandering herd of these Antelopes dancing and bounding through the thousand stems of the acacia-groves in all the poetry of motion." To these wooded districts Harris considered the Pallah to be restricted, not a single specimen having been observed in the open country. The flesh of the Pallah he characterizes as "tender and palatable," although "rather dry," like that of most Antelopes.

In these days, however, as we are informed by Messrs. Nicolls and Eglington, it is only on rare occasions that the Pallah is met with in the Bechuanaland Protectorate, and its present distribution is described by them as follows:—"A few herds still linger in the Transvaal along the Crocodile River. Almost exterminated in the regions through which the north-west tributaries of that river flow, it is only when the Zambesi is reached that the Palla is again to be frequently met with in any number. On the Chobe River it is still fairly common, being unknown on the Botletle, but it is only after passing the shores of Lake 'Ngami, and reaching the densely wooded banks of the Tonke, that the species again makes its appearance in a westerly direction. In those parts of Mashonaland and Matabeleland where it is not subject to continual persecution it is still fairly numerous. The Palla is highly gregarious, and frequents the thick, forest-clad banks of rivers, from which it never strays, except after periods of heavy rains, and then only when the pans and vleys (which are always dry during the greater portion of the year) are for a time filled with water. In remote parts, not very much frequented by man, the herds often exceed a hundred in number. Where not continually disturbed, this Antelope, so elegant and graceful of motion, is not by any means shy when approached, generally running but a short distance, and then standing and looking back again, a habit which easily permits of its being stalked."

In the Transvaal, Mr. Barber kindly informs us, the Pallah was plentiful

in the Waterburg and Lydenburg districts up to 1880. Now, however, it has been driven away many miles east, into the valleys that intersect the Lebombo range.

On the north-west of the Cape Colony the Pallah, as we shall see presently, is represented by a nearly allied, though probably distinct, form. But on the eastern side of Africa the Pallah has a wide range, and extends north certainly into British East Africa, and probably still farther into Kordofan. We will endeavour to trace its range throughout this wide area.

Mr. Selous found the Pallah on the tributaries of the Limpopo, and thence northwards on the banks of every river and stream which he has explored in Matabeleland and Mashonaland. The Impalas of the Limpopo he considers to be larger than those of the Chobe.

Peters records the Pallah as met with in the mountainous parts of the Portuguese province of Mozambique, near Tette, Chidima, and Sena, and gives its native names as here 'Psuara' or 'Suara.' Passing into British Central Africa we find this Antelope recorded by Mr. Crawshay as not common anywhere in Nyasaland, but where met with, as a rule, found in even larger numbers than the Waterbuck. Mr. Crawshay has seen it in companies of one hundred or more, and gives a number of localities around Lake Nyasa in which he has come across herds of it. No Antelope, Mr. Crawshay tells us, can compare with the Pallah in fleetness of foot, and certainly "no other can display such wonderful leaping powers. They go off like the proverbial arrow from the bow, and with most beautiful gliding bounds, cover the ground without apparently the least effort." In Northern Nyasaland, Mr. J. B. Yule tells us, the Pallah is found only along the stony ridges between Deep Bay and Karonga.

In the highlands of Zomba and the adjacent districts of Nyasaland a local race of the Common Pallah is found, distinguished by its slenderer skull and much shorter horns; but as regards the colour of its fur it is precisely similar to the South-African form. Thomas was at one time of opinion that this highland form should constitute a separate subspecies, and proposed to name it after its discoverer, Sir Harry Johnston, who has done so much in investigating the fauna of British Central Africa, *Æpyceros melampus johnstoni*. Thomas, however, since the examination of further specimens is not disposed to insist upon the necessity of recognizing this subspecies as distinct.

In the low, dry, thicket-covered hills to the north of Lake Mweru both

Mr. Crawshay and Mr. Sharpe have obtained specimens of this Antelope, which, according to the latter, is often confounded by the natives with the Lechee and Vardon's Antelope under the common name "*msala*."

In German East Africa, according to Dr. Matschie's excellent Handbook, the Pallah occurs in many localities all over the country. At first misled by the association of the horns of a Lesser Koodoo and a skin of a Pallah, Dr. Matschie proposed to found a new species of Koodoo upon this animal, and to call it *Strepsiceros suara*. Afterwards recognizing his mistake he proposed to retain the term *suara* for the East-African Pallah, and to separate it specifically from the South-African animal as *Æpyceros suara*, on the ground of certain small discrepancies in colour. But after examining many specimens of the Pallah from East Africa we have come to the conclusion that the differences pointed out by Dr. Matschie are not confined to individuals from the same locality, and we cannot therefore regard *Æ. suara* as a distinct species.

The late Mr. F. Holmwood, formerly H.B.M. Consul-General at Zanzibar, wrote to us, "I have met with the Pallah in the countries of Usagara and Uzeguha, about 150 miles straight inland from Zanzibar, where they were very plentiful. The country has an elevation of 500 feet and is well watered. The Pallah go in troops of from 15 to 120. I once saw a pack of wild dogs hunt and run down one of these Antelopes which they first separated from a large herd."

In British East Africa the Pallah is well known, and has been obtained by all the great sportsmen that have visited that territory. Mr. H. C. V. Hunter, in his appendix to Sir John Willoughby's 'East Africa,' speaks of this Antelope as "common everywhere in thin bush and on the plains." Dr. Abbott, as recorded by Mr. True, sent to Washington a good series of specimens obtained in 1889 from Taveta and Mount Kilimanjaro, where it had likewise been met with by Sir Harry Johnston during the Kilimanjaro Expedition of 1884. Mr. F. J. Jackson, in his notes on Antelopes published in the first volume of 'Big Game Shooting' of the Badminton Library, tells us that the Pallah is not met with in the coast-district of British East Africa. "But it occurs in small herds about 60 miles inland, and is plentiful at Adda and in the Teita country, and is found as far north as Turkwel in suitable localities, that is, in park-like open bush and thinly-wooded country, not far from water." "The best heads," Mr. Jackson says, "are obtained between

Lakes Navaisha and Baringo, particularly in the vicinity of the small salt-lake Elmatita, where these beautiful beasts inhabit the open woods of juniper-trees." In his paper on the Antelopes of the Mau district, recently read before the Zoological Society, Mr. Jackson likewise speaks of this Antelope, and again mentions the large size of the horns of the bucks in that part of British East Africa, which he gives as 22 and 23 inches from base to tip.

Fig. 47.



Head of Pallah, ♂, front view.

Whether the Pallah ranges further north than British East Africa and the neighbouring district of Turkwel is perhaps not quite certain, though it may possibly be the case. Our only authority on the subject is Heuglin, who states that the Pallah occurs on the White Nile at Scherk-el-Akaba, and is "very common" on the Djur River, where it is known by the Arabic name of 'Om-gàba,' or 'Om-sàba.' But Heuglin's observations on this point, so

far as we know, have not been confirmed, and we have never seen specimens from this locality.

On the whole, therefore, we consider *Æpyceros melampus* to be a wide-ranging species, extending from Bechuanaland in the south throughout the eastern side of Africa to British East Africa on the north, and perhaps reaching even to the White Nile. But over all these districts there is a certain amount of variety amongst the specimens, and we are not, therefore, at present inclined to recognize, even as subspecies, what have been designated as *suara*, *johnstoni*, and *holubi*, although future researches may lead us to a different conclusion.

So far as we know, the Pallah has been brought to Europe alive on two occasions only, and in both instances the animals were imported by Mr. C. Reiche, of Alfeld, from the northern part of the Transvaal. The first specimen (in 1890) went to the Zoological Garden of Berlin and the second (in 1893) to the Zoological Garden of Vienna. Both were young males, and generally of a reddish colour, with the horns slightly developed. They did not live long after their arrival in the Gardens.

The Pallah is represented in our National Collection by a mounted male from Kilimanjaro shot by Mr. F. J. Jackson and by a mounted head from Lake Elmetaita presented by Captain Lugard, the horns of which are amongst the longest of known specimens. There is likewise a mounted head from the Zomba highlands presented by Sir Harry Johnston and representing the short-horned race which inhabits the mountain-districts south of Lake Nyasa. Besides these there are skulls, skins, and horns from various districts in South and East Africa.

Our illustration of the Pallah (Plate XLVIII.) has been put upon the stone by Mr. Smit from a water-colour drawing by Wolf prepared for the late Sir Victor Brooke and now belonging to Sir Douglas Brooke. The drawing is noted on the back as having been taken from a head belonging to Mr. Selous and a loose skin. It represents an adult male in two positions. The female, as already stated, is absolutely hornless.

The woodcut (fig. 47, p. 23), which gives a front view of a good head of the Pallah, was drawn by Mr. Smit under Sir Victor Brooke's directions.

August, 1897.

78. THE ANGOLAN PALLAH.

ÆPYCEROS PETERSI, BOCAGE.

Æpyceros petersi, Boc. P. Z. S. 1878, p. 741; Huet, Bull. Soc. Acclim. (4) iv. p. 479 (1887); Scl. P. Z. S. 1890, p. 460 (woodcut of head); Flow. & Lyd. Mamm. p. 341 (1891); Lyd. Horns and Hoofs, p. 231 (1893).

Æpyceros melampus, Jent. Notes Leyd. Mus. ix. p. 173 (1887) (?) (Mossamedes).

Similar, so far as is yet known, to *Æ. melampus* in all respects except that on the face, as is shown in our woodcut (p. 26), there is a prominent brown patch running along the top of the muzzle. This character is said to be perfectly constant, and we therefore admit for the present the validity of the Angolan form as a distinct species.

The Angolan Pallah was first recognized as a distinct species by Prof. J. V. Barboza du Bocage, a distinguished naturalist of Portugal, in a list of Angolan Antelopes published in the Zoological Society's 'Proceedings' for 1878. M. du Bocage based his description upon two specimens forwarded to the Lisbon Museum by the well-known explorer d'Anchieta. Of these the male was stated to have come from Capangombe, the female from Humbe—two places both in the province of Mossamedes north of the Cunene River. M. Bocage distinguished the new species from *Æ. melampus* principally by its black face, and dedicated it to the late Professor Peters, of Berlin, whose opinion agreed with his that it was distinct. It is probable that the skull from the Cunene River, obtained by Heer Van der Kellen in October 1885, and referred by Dr. Jentink, in his paper on Mammals from Mossamedes, to *Æ. melampus*, may belong properly to *Æ. petersi*.

In 1889 Capt. F. Cookson, during a sporting excursion into Hasholand or

Kaokoland, in the neighbourhood of the Cunene River met with some twenty or more specimens of this Antelope, and brought back a single head to England. This head, mounted by Mr. Rowland Ward, was exhibited by Sclater at a meeting of the Zoological Society on June 17th, 1890, as an example of

Fig. 48.



Front view of head of Angolan Pallah.
(P. Z. S. 1890, p. 460.)

Apyceros petersi. The notice of Sclater's exhibition published in the Zoological Society's 'Proceedings' was accompanied by an illustration, which, by the kindness of the Council of the Zoological Society, we are enabled to reproduce (fig. 48). The dimensions of these horns are given by Mr. Rowland

Ward, in his 'Records of Big Game' (1896), as $18\frac{3}{4}$ inches in a straight line and $22\frac{3}{4}$ on front curve, and the distance between the tips as $12\frac{1}{4}$ inches.

So far as we know, this is all the evidence to be offered as to the existence of this species, concerning which further particulars would be very desirable. There is no example of it in the British Museum.

August, 1897.

GENUS III. SAIGA.

	Type.
<i>Saiga</i> , Gray, List Mamm. B. M. p. xxvi (1843)	S. TATARICA.
<i>Colus</i> , Wagner, Schreber's Säugeth. Suppl. iv. p. 419 (1844)	S. TATARICA.

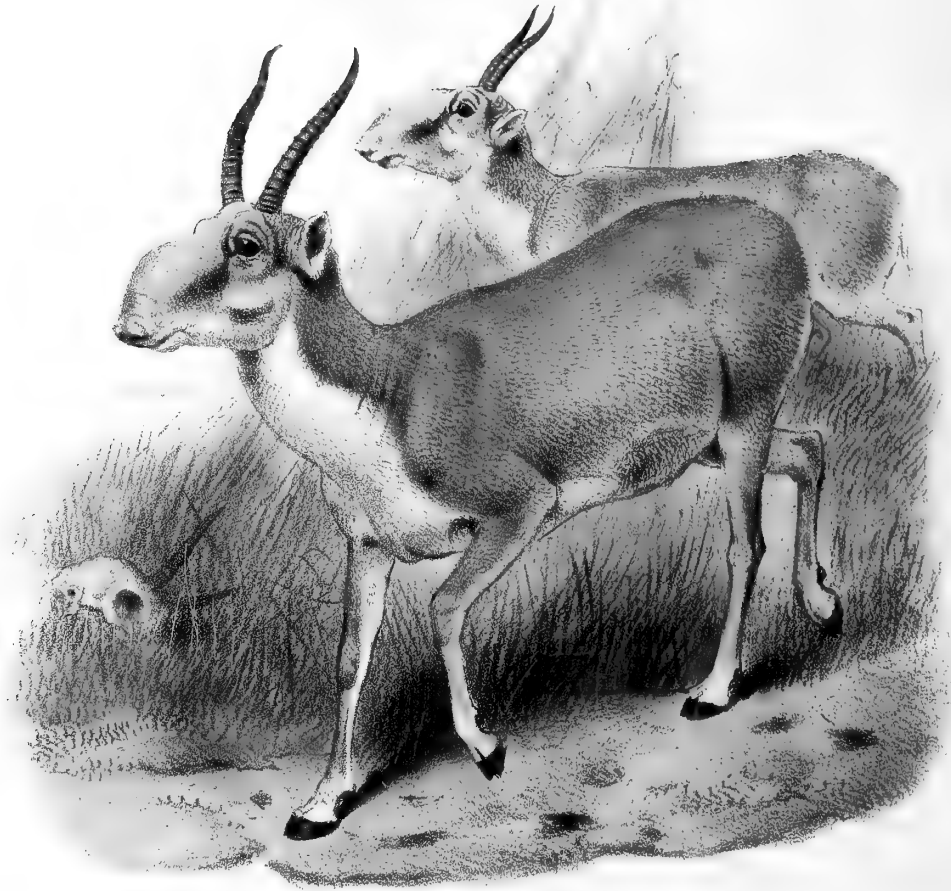
Size medium. Nose large, elongate, bent downwards, and inflated; the nostrils opening downwards. Tail short. Mammæ 4. Accessory hoofs present.

Skull with short nasals and premaxillaries, and an exceedingly large and high nasal opening; small supraorbital pits; no lachrymal vacuities; ante-orbital fossæ shallow. Lower premolars two, at least in the recent species.

Horns of medium length, cylindrical, rather irregularly lyrate, strongly ringed, pale whitish or amber-coloured. Female hornless.

Range of the Genus. Steppes of S.E. Europe and Western Asia.

One species only.



Wolf del. J. Smit lith.

The Saiga
SAIGA TATARICA .

Published by R.H. Porter.

Hanhart imp.

79. THE SAIGA.

SAIGA TATARICA (LINN.).

[PLATE XLIX.]

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- Ibex imberbis*, Gmel. N. Comm. Ac. Petrop. v. p. 345 (1760) & vii. p. 39, pl. xix. (♂ ♀) (1761). (Not binomial.)
- Le Saiga*, Buff. Hist. Nat. xii. p. 198, pl. xxii. fig. 2 (horn) (1764).
- Capra tatarica*, Linn. Syst. Nat. (12) i. p. 97 (1766) (*ex* Gmel.); Müll. Natursyst. i. p. 417 (1773).
- Saiga tatarica*, Gray, List Mamm. B. M. p. 160 (1843); *id.* List Ost. B. M. p. 55 (1847); *id.* Knowsl. Men. p. 3 (1850); *id.* P. Z. S. 1850, p. 112; *id.* Cat. Ung. B. M. p. 51, pl. vi. figs. 1 & 2 (skull) (1852); Temm. Esq. Zool. Guin. p. 189 (1853); Gerr. Cat. Bones Mamm. B. M. p. 231 (1862); Glitsch, Bull. Soc. Moscow, 1865, p. 207; Sclat. P. Z. S. 1867, p. 240, pl. xvii.; Murie, P. Z. S. 1870, p. 451 (anatomy & position); Gray, Cat. Rum. B. M. p. 33 (1872); *id.* Hand-l. Rum. B. M. p. 102 (1873); Sci. List An. Z. S. (8) p. 143 (1883), (9) p. 157 (1896); Flow. & Gars. Cat. Coll. Surg. ii. p. 265 (1884); Sterndale, Mamm. Ind. p. 468 (1884); Flow. & Lyd. Mamm. p. 341 (1891); Ward, Horn Meas. (1) p. 101 (1892), (2) p. 145 (1896); Lyd. Horns and Hoofs, p. 163 (1893).
- Antilope tatarica*, Forst. Descr. Anim. p. 390 (1844); Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 270 (1847); *id.* Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 266; Reprint, p. 86 (1848).
- Colus tataricus*, Brehm, Thierl. iii. p. 283 (1880).
- Antilope saiga*, Pall. Misc. Zool. p. 6 (1766); *id.* Spic. Zool. xii. pp. 14 & 21 (1777); Zimm. Geogr. Gesch. ii. p. 121 (1780); Bodd. Elench. Anim. p. 143 (1785); Schr. Säug. pl. cclxxvi. (1787); Gmel. Linn. S. N. i. p. 185 (1788); Kerr, Linn. An. K. p. 309 (1792); Donnd. Zool. Beytr. i. p. 626 (1792); Link, Beytr. Nat. ii. p. 99 (1795); G. Cuv. Tabl. Élém. p. 163 (1798); Bechst. Syst. Uebers. vierf. Thierr. ii. p. 645 (1800); Shaw, Gen. Zool. ii. pt. 2, p. 339 (1801); Turt. Linn. Syst. Nat. i. p. 112 (1802); G. Cuv. Dict. Sci. Nat. ii. p. 229 (1804); Desm.

N. Dict. d'H. N. (1) xxiv. Tabl. p. 33 (1804); Tiedem. Zool. i. p. 409 (1808); Pall. Zoogr. Ross.-As. i. p. 252 (1811); G. Fisch. Zoogn. iii. p. 428 (1814); Afz. N. Act. Ups. vii. p. 220 (1815); Desm. N. Dict. d'H. N. (2) ii. p. 181 (1816); G. Cuv. R. A. i. p. 261 (1817); Goldf. Schr. Säug. v. p. 1216 (1818); Schinz, Cuv. Thierr. i. p. 389 (1821); Desmoul. Dict. Class. d'H. N. i. p. 442. (1822); Desm. Mamm. ii. p. 452 (1822); Less. Man. Mamm. p. 391 (1827); J. B. Fisch. Syn. Mamm. p. 458 (1829); Less. Compl. Buff. x. p. 289 (1836); Laurill. Dict. Univ. d'H. N. i. p. 616 (1839); Gerv. Dict. Sci. Nat. i. p. 260 (1840); Less. N. Tabl. R. A., Mamm. p. 176 (1842); Wagn. Schr. Säug. Suppl. iv. p. 420 (1844), v. p. 402 (1855); Schinz, Syn. Mamm. ii. p. 408 (1845); id. Mon. Antil. p. 12 (1848); Gieb. Säug. p. 313 (1853); Nehring, Z. Ges. Erdkunde Berl. xxvi. pp. 327 & 338 (1891) (distribution); id. Zool. Gart. 1891, p. 328.

Capra sayga, Forst. Phil. Trans. lvii. p. 344 (1767).

Antilope (Gazella) saiga, Licht. Mag. nat. Freund. vi. p. 171 (1814).

Cerophorus (Antilope) saiga, Blainv. Bull. Soc. Philom. 1816, p. 75.

Colus saiga, Fitz. SB. Wien, lix. pt. 1, p. 161 (1869).

Saiga saiga, Jent. Cat. Ost. Leyd. Mus. (Mus. Pays-Bas, ix.) p. 134 (1887); id. Cat. Mamm. Leyd. Mus. (op. cit. xi.) p. 165 (1892).

Antilope scythica, Pall. Spic. Zool. fasc. i. p. 9 (1767); Müll. Natursyst. Suppl. p. 53 (1776); Erxl. Syst. R. A. p. 289 (1777); Zimm. Spec. Zool. Geog. p. 544 (1777); Gatt. Brev. Zool. i. p. 83 (1780); Oken, Allg. Naturg. vii. p. 1365 (1838).

Cemas colus, Oken, Lehrb. Nat. p. 736 (1816).

Antilope colus, H. Sm. Griff. An. K. iv. p. 226, v. p. 335 (1827); Less. N. Tabl. R. A., Mamm. p. 176 (1842).

Saiga colus, Gray, Ann. Mag. N. H. (1) xviii. p. 231 (1846).

Gazella colus, Turner, P. Z. S. 1850, p. 168.

VERNACULAR NAMES:—*Saigàk* in Russian; *Suhak* or *Baran polnii* in Polish; *Ak-kirk* of the Tartars; *Sogak* of the Caucasians; *Gorossuun*, the male *Ohna*, the female *Scharcholdsi*, of the Calmucks; *Jaban-choin* of the Turks; *Beschen-Chusch* of Circassians; *Linjodsha* of Chinese.—PALLAS.

Height at withers about 30 inches. General colour in summer dull yellowish, with a whitish throat and indistinct facial markings; in winter nearly uniform whitish all over, without markings anywhere. Ears very short, thickly haired. Tail short, uniform in colour with the body.

Skull and horns of male as above described (p. 29). The dimensions of an old male skull are:—Basal length 9·5 inches, greatest breadth 5·1, muzzle to orbit 6·3.

The horns attain a length of about 13 or 14 inches, and are of a peculiar waxy or pale amber-colour.

Female similar, but without horns.

Hab. Steppes of Southern Russia, and South-eastern Siberia.

The Saiga, although closely allied to the Gazelles in structure, is, as will be seen from our figure, very different in external appearance, especially as regards the bloated form of the nose in the adult male, which gives it a most ungainly look and renders it easily distinguishable from all its allies of this group.

The Saiga was known to many of the ancient writers, and is described and figured by Gesner, in his 'History of Quadrupeds,' as an inhabitant of Scythia and Sarmatia, under the name "Colus," which is said to have been formed by transposition from the native name "Sulac." The earliest good account of it, however, is that of the well-known naturalist J. G. Gmelin, who met with it during his travels in Siberia between 1733 and 1743, and described it at full length, in an article on new quadrupeds published at St. Petersburg in 1760, under the name of "*Ibex imberbis*." Upon Gmelin's *Ibex imberbis* Linnæus, in his 'Systema Naturæ,' based his *Capra tatarica*. Of the two generic names proposed for this Antelope, *Saiga* by Gray in 1843, and *Colus* by Wagner in the following year, we naturally prefer the oldest, and adopt as the proper name of this Antelope, which is the sole representative of its genus, *Saiga tatarica*.

Buffon, in his 'Histoire Naturelle,' also employed Saiga as the name of this animal and based his account of it mainly upon Gmelin's description, stating, however, that there were specimens of its horns in the Royal Cabinet at Paris. Following the prior authorities, he describes the Saiga as a kind of wild goat found at that epoch in Hungary, Poland, Tartary, and Southern Siberia in herds on the plains, very fleet and active, and difficult of capture. We shall see, however, that the range of this animal in Europe has become very much more restricted in recent times.

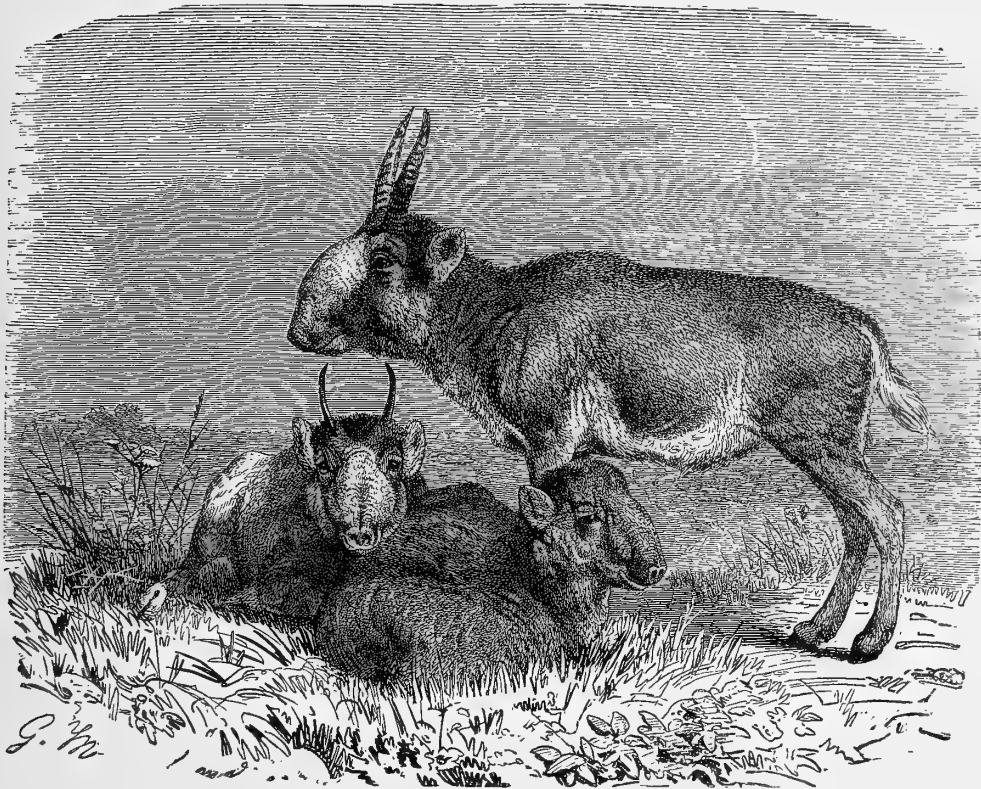
The best modern account of the Saiga is that given in 1865, in the Bulletin of the Imperial Society of Naturalists of Moscow, by Herr Constantin Glitsch, of Sarepta on the Lower Volga, who was employed for two years by the Imperial Russian Society of Acclimatisation to obtain living examples of this Antelope for the Zoological Garden of Moscow.

In the days of Pallas, Herr Glitsch tells us, the Saiga had a wide distribution in Europe, extending from the borders of Poland, all across the Dnieper and the great flat southern portion of Russia to the Caucasus and the Caspian. The European herds of this animal were also often reinforced by large accessions from the steppes of Western Asia, which, driven by stress of famine from their native haunts, crossed the Ural and the Volga by the ice in winter. A hundred years later we find a great change in the range of the Saiga, caused by the increase of cultivation and population in the European portion of its range, which has driven this animal back into the East. On the Dnieper, Herr Glitsch tells us, the Saiga has altogether disappeared, in the Ukraine it is no longer to be found, and even on the Don, where it was formerly so plentiful, it is quite a scarce animal. Nowadays, in fact, in Europe the Saiga is confined to the Kalmuk Steppes between the Don and the Volga, and is found only within the triangle lying between these two rivers, of which Tzaritzyn on the Volga forms the northern point.

On the flat and treeless plains which lie within these limits the Saiga still exists in tolerable abundance, though diminishing in numbers yearly as population increases. In the summer months it is distributed over the whole of this area; in winter, beginning from November, it is driven by the snow and cold from its northern resorts towards the south, where it finds shelter in the rich grassy valleys of the Sal and the Manitsch. Here the Saiga passes the winter on ground generally free from snow. Here it breeds in the spring, and as soon as the snow is melted in the more northern plains it begins its migration to the North. At this season the Saigas go northwards in considerable herds, the bucks first, followed by the does, and by the end of May they have all reached the most northern boundaries of their range. But there are many circumstances which interfere with the regularity of this migration, and at Sarepta, near the north end of their area, there are remarkable variations in their numbers. In some summers only a few scattered individuals are to be met with, in other years large herds are to be found in this district throughout the summer. But in very severe winters, when even the most southern districts inhabited by this Antelope are invaded by excessive cold and deep snow, the hungry beasts are driven all over the country in search of food, and stray even as far north as the vicinity of Sarepta. On these occasions whole herds are often entombed in the snow-drifts and fall an easy prey to the natives, who follow them on horseback and slaughter

them by hundreds. Under these circumstances it can easily be understood that the Saiga is a gradually vanishing animal in Europe. One thing, however, is in their favour, that the males, whose presence is betrayed by their horns, fall more easy victims to the hunter than the hornless females, which are more readily concealed in the herbage and thus escape notice.

Fig. 49.



Group of Saigas ($\frac{1}{12}$ nat. size).
(From the 'Royal Natural History,' vol. ii. p. 298.)

Herr Glitsch gives us detailed and excellent descriptions of the form and colouring of the Saiga, and of the other peculiarities of the animal of both sexes and in all ages. In the winter coat the hairs on the upper part of the body are from two to three inches long, rather shorter on the underparts, and a long beard extends from the chin down the middle line of the neck to the breast. The older the animal is the brighter is its winter dress.

The voice of the Saiga is stated by Glitsch to be a deep loud bleat, which is frequently uttered by the young animals, but by the older animals only in the pairing-season and when they are wounded. The hearing, the sight, and the smell of the Saiga are all highly developed, and combine to render it a very difficult animal for the hunter to approach.

The Saigas are said to begin breeding about the middle of December (new style), and at this season commonly assemble in large herds in the warm side-valleys of the Sal and Manitsch, which are mostly free from snow. At this time the young are said to be driven away from the parents in flocks into the thickets, while the males fight fiercely one with another for the possession of the females. The female is stated to go five months with young, and to bring forth about the middle of May amongst the higher vegetation of the steppe. As a rule, she produces two young ones, seldom only one. The mother is sometimes seen followed by three young ones, but in such a case the third is, probably, an adopted animal. In the morning, after suckling her young ones, the mother leaves them concealed in the herbage, and goes far off to feed, returning to them only in the evening and staying with them all night. In about four weeks' time the young Saigas learn to feed themselves, and the young horns begin to appear in the bucks. They suck, however, till the end of October, and follow after the mother up to the winter. The food of the Saiga consists not so much of the true grasses as of the leafy shrubs of the steppes, such as *Artemisia*, *Atriplex*, and *Glycirhiza*, as well as *Inula dysenterica* and other saline plants.

Besides mankind, Herr Glitsch tells us, the Saiga Antelope in the Volga district has no special enemy. The wolves and foxes, the only large beasts of prey of these steppes, can only attack quite young animals, the older ones easily making their escape. They have one great plague in the steppes, however, in the insects, especially a species of *Æstrus*, by which at times they seem to be driven nearly crazy, and with the eggs and larvæ of which their skins seem to be almost always infested.

The flesh of the Saiga is said to be particularly tender and well-flavoured, and more like good mutton than anything else.

The favourite mode of chase of the Saiga is to drive out on to the steppes at early dawn with a cart containing provisions, and, after hiding the cart in some ravine, to stalk them with a rifle in the same manner as other large game-animals. But they are also occasionally taken in steel traps which are

set upon their favourite runs. The Kalmuks use leather slings for the same purpose.

Beyond the Ural River the Saiga extends widely over the Kirghiz Steppes of Central Asia north of the Aral. Mr. William Bateson, F.R.S., has kindly favoured us with the following notes of what he heard and saw of the Saiga when in this district in 1896-7:—

“The Saiga is fairly common in the Kirghiz Steppes, inhabiting the dry tracts covered with various species of *Artemisia* (Kirghiz, *Jusun*), upon which no doubt it feeds. It is not found in the sandy regions of the Kara-kum. I believe also that it does not live in the moister steppes, which bear a meadow vegetation. Its northern distribution in West Central Asia must therefore be bounded by the valley of the Irtish and its tributaries, which is all meadow-land. I met with Saigas first at the end of July 1896, in the neighbourhood of Lake Tschalkar, in the Turgai district. In this region we came upon their tracks constantly, and occasionally saw herds of various sizes from ten or a dozen to about a hundred. When we appeared they made off. In doing so I noticed that they generally travelled at right angles to our line of approach, though this may have been due to some accident in the lie of the ground. The Kirghiz catch them in traps set in their runs. A young one so caught was brought to me on July 27, 1896. Its horns and horn-cores were only slightly developed.

“In the following year I travelled from Kozalinsk, on the Aral Sea, to Lake Balkhash, following the Shu River. In this journey we saw Saigas from time to time on the edge of the Bek Pak Dala, or Hungry Steppe, in April, but no large herds were seen. The Kirghiz spoke of them as common in the Bek Pak. Both this district and the Tschalkar Steppes, except for wells on the caravan-roads, are almost waterless after the snow has disappeared, so probably the Saiga can subsist without more water than the dew and its food-plants provide.

“The Kirghiz name of the Saiga is ‘*Kiik*,’ and the word Saiga is only known to them as Russian, in which language, however, the word is not really ‘Saiga,’ but ‘Säigak.’”

As regards the range of the Saiga at the present time, Herr E. Büchner, Director of the Zoological Museum of the Imperial Academy of Sciences of St. Petersburg, has kindly favoured us with the following particulars:—

The Saiga is still met with, although very unfrequently, in the country of the Ural Cossacks between the Wolga and the Ural, and extends occasionally into the Government of Samara. East of the river Ural its range extends over the Kirghiz Steppes and the steppe district of all West Siberia—Turgai, Akmolinsk, and Semipalatinsk. South of this the Saiga is also found in the steppes of Russian Turkestan and in the Dsungarian steppes of Western Mongolia, but not in Transcaspia.

Such is the range of the Saiga at present. As already shown, it was much wider than now even within the period of history. But when we go back into the Pleistocene times we have good evidence that the Saiga had a very much more extensive range, its fossil remains having been obtained from the caverns and superficial deposits of Hungary, Belgium, and Southern France. In the last-named country the researches of French palæontologists have proved that its bones and teeth occur in considerable numbers in certain of the cave deposits in the Departments of Vienne, Dordogne, Tarn-et-Garonne, and Haute-Garonne. Moreover, as shown by Mons. Gervais, at least one recognizable sketch of the head of the Saiga has been found on an artificially incised bone of the character so often met with in caverns where relics of human handiwork occur. It appears, therefore, that the Saiga inhabited Western Europe as late as the era of Palæolithic man, and was, moreover, in all probability one of the objects of his chase.

Still more interesting, however, is it to find that, as shown by Mr. A. Smith Woodward in a paper read before the Zoological Society in 1890, the Saiga was also found in former days in Great Britain. During excavations made in that year in the Pleistocene deposits near Twickenham, a fine example of the frontlet and horn-cores of an adult male *Saiga tatarica* was discovered. By the kindness of the Zoological Society we are enabled to reproduce the figure of this interesting specimen (fig. 50, p. 39), which was exhibited by Mr. A. Smith Woodward on the occasion in question, and is now in the gallery of the British Museum.

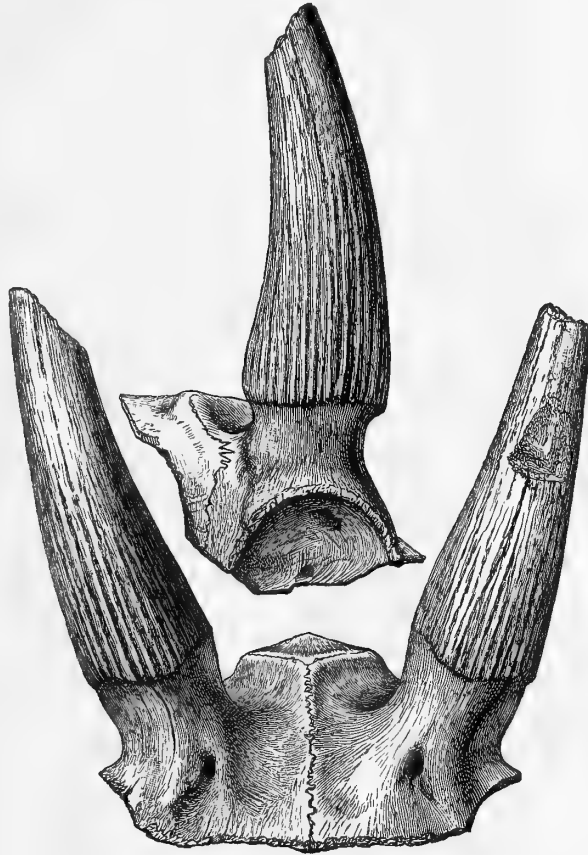
Finally we may mention that, as has been recorded by Prof. Nehring, there have been discovered in Moravia remains of a Saiga differing from the living species in having three, in place of two, lower premolars*. From the occurrence of these remains, and those of other mammals now characteristic of the steppes in Western Europe, it has been argued by geologists that steppe-like conditions and climate must formerly have prevailed over large districts that have now quite changed their character.

The Saiga has occasionally, but not often, been brought alive to the menageries of Western Europe. In 1864 and 1865 young male specimens of this Antelope were first received from Moscow by the Zoological Society of London. In November 1866 a pair of Saigas was deposited in the

* *Saiga prisca*, Nehring, N. Jahrb. f. Min., Geol. u. Pal. ii. p. 131 (1891).

Zoological Society's Gardens, and subsequently purchased, after living for several months in the Regent's Park Gardens. An excellent coloured figure

Fig. 50.



Frontlet and horns of Saiga (fossil), ♂. $\frac{1}{2}$ nat. size.
(P. Z. S. 1890, p. 614.)

of these strange animals was made by Mr. J. Wolf in 1867, and published in the Society's 'Proceedings,' and after their death Dr. Murie, then Prosector to the Society, based upon them an elaborate account of their structure and anatomy, which will be found in the volume of the same publication for the year 1870. By the kindness of the Zoological Society we are enabled to reproduce here an excellent figure of the head of the adult male Saiga in its winter coat, taken from a drawing made by Mr. Berjeau under Dr. Murie's

supervision. We cannot do better than refer those who are interested in the structure and anatomy of the Saiga to Dr. Murie's excellent article, from

Fig. 51.



Head of male Saiga in its winter dress.
(P. Z. S. 1870, p. 495.)

which, however, we venture to borrow his account of the cutaneous glands of this curious form, which appear to be not less than ten in number.

“In the Saiga there are two small suborbital glandular sacs, the so-called crumen, lachrymal sinus, or tearpit of some authors, which yield a thick whitish or pale yellow exudation. These are situated in front of the orbit, and slightly below the median transverse line of the eye. In the younger female the small external openings of these

were placed $\frac{3}{4}$ of an inch, and in the male $1\frac{1}{2}$ inch, in advance of the orbital ring; but the sinuses or sacs themselves lay in the broadish and moderately excavated infraorbital fossæ.

“Each foot, as in the sheep, possesses an interdigital sac about $1\frac{1}{2}$ inch in depth, and opening by a narrow constricted aperture at its front and upper part. The orifice is hidden by very short closely placed yellowish hairs, whilst below these the sac is superficially covered by a tuft of much stronger and longer hairs. The secretion derived from these interdigital bags is yellow and of a hardish ceruminous character.

“On the anterior aspect, but slightly to the inner side, of each fore knee is a small dermal gland, or a thickening of the cutaneous tissues, covered by a brownish patch of firm hairs.

“In the inguinal regions of both sexes bare oblong or lozenge-shaped spaces exist; each of these is 5 inches or more in extreme long diameter. Upon these inner edges in the female the imperfectly developed udders and four teats are situated.” (P. Z. S. 1870, p. 500.)

The Saiga is represented in the British Museum by a mounted pair from Sarepta on the Volga, and by other skins and skeletons from the same locality. There are also some horns obtained by Dr. O. Finsch on the steppe near Saisan, on the Russo-Chinese frontier, in 1876 (see Finsch, ‘Reise nach West-Sibirien im Jahre 1876,’ p. 193).

Our figure of the Saiga (Plate XLIX.) has been put upon the stone by Mr. Smit from a black-and-white sketch prepared by Mr. Wolf for the late Sir Victor Brooke. The original sketch, which belongs to Sir Douglas Brooke, has been kindly lent to us for examination. We regret to say, however, that we have no particulars as to the individual from which Mr. Wolf’s drawing was taken.

August, 1897.

GENUS IV. PANTHOLOPS.

	Type.
<i>Pantholops</i> , Hodgs. P. Z. S. 1834, p. 81	P. HODGSONI.
<i>Kemas</i> , Gray, List Mamm. B. M. p. 157 (1843)	P. HODGSONI.

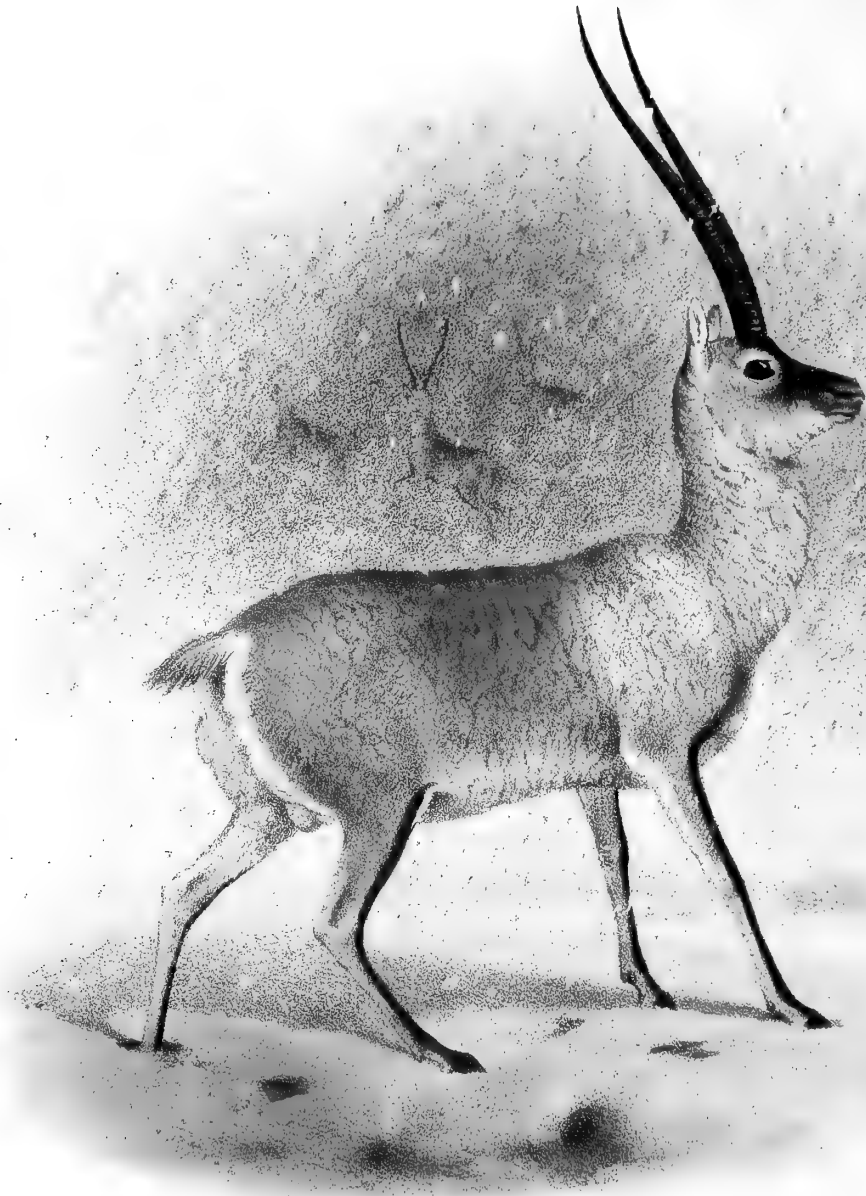
Size medium. Nose less bent downwards than in *Saiga*, but more swollen laterally, at least in the male. No suborbital glands. Tail short. Mammæ 2. Large glands in feet and groin.

Skull without distinct pits between the eyes, or lachrymal vacuities, or anteorbital fossæ. Nasal opening ample, but not so large as that of *Saiga*.

Horns long, erect, compressed, slightly diverging, nearly straight below, evenly curving forwards above; ringed in front. Female hornless.

Range of Genus. Plateau of Tibet.

One species only.



Wolf del., J. Smit lith.

The Chiru.
PANTHOLOPS HODGSONI.

Hanhart imp.

Published by R.H. Porter.

80. THE CHIRU.

PANTHOLOPS HODGSONI (ABEL).

[PLATE L.]

- Antilope hodgsoni*, Abel, Calc. Gov. Gazette, *cf.* Phil. Mag. lxxviii. p. 234 (1826); Edin. Journ. Sc. vii. p. 164 (1827); 'Editor,' Glean. in Sc. i. p. 144 (1829); J. B. Fisch. Syn. Mamm. p. 462 (1829); Hodgs. Gleanings in Sci. ii. p. 348, pls. iii., v. (1830); *id.* P. Z. S. 1831, p. 52, 1832, p. 14, 1833, p. 110; Laurill. Dict. Univ. d'H. N. i. p. 617 (1839) Gerv. Dict. Sci. Nat. i. p. 264 (1840); Wagn. Schr. Säug. Supp. iv. p. 420 (1844), v. p. 402 (1855); Schinz, Syn. Mamm. ii. p. 415 (1845); Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 270 (1847); *id.* Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 266; Reprint, p. 86 (1848); Gieb. Säug. p. 314 (1853); Hooker, Himalayan Journal, ii. pp. 132 & 158 (1854); Przewalski, Mongolia (Russian ed.), ii. pl. iii. ♂, pl. iv. fig. 2 ♀; Morgan's Transl. ii. pp. 204 & 223 (1876).
- Pantholops hodgsoni*, Hodgs. P. Z. S. 1834, p. 80; *id.* J. A. S. B. xi. p. 282 (1842); *id.* Calc. Journ. iv. p. 291 (1844); Gray, Cat. Ung. B. M. p. 53, pl. vi. figs. 3, 4 (skull) (1852); Adams, P. Z. S. 1858, p. 521; Gerr. Cat. Bones Mamm. B. M. p. 232 (1862); Fitz. SB. Wien, lix. 1, p. 162 (1869); Gray, Cat. Rum. B. M. p. 33 (1872); *id.* Hand-l. Rum. B. M. p. 102 (1873); Blanf. Yark. Miss., Mamm. p. 89, pl. xvi. (1879); Sterndale, Mamm. Ind. p. 469 (1884); Kinloch, Large Game Shooting, p. 106, plate of head (1885); Jent. Cat. Ost. Leyd. Mus. (Mus. Pays-Bas, ix.) p. 134 (1889); *id.* Cat. Mamm. Leyd. Mus. (op. cit. xi.) p. 166 (1892); W. ScI. Cat. Mamm. Calc. Mus. ii. p. 163 (1891); Blanf. Mamm. Brit. Ind. p. 524 (1891); Flow. & Lyd. Mamm. p. 341 (1891); Ward, Horn Meas. (1) p. 102 (1892), (2) p. 146 (1896); Lyd. Horns and Hoofs, p. 157 (1892); Percy, Badm. Big Game Shooting, ii. p. 335 (1894).
- Kemas hodgsoni*, Gray, List Mamm. B. M. p. 157 (1843); *id.* Ann. Mag. N. H. (1) xviii. p. 231 (1846); *id.* Cat. Mamm. Nepal (Hodgson Coll.) (1) p. 26 (1846), (2) p. 13 (1863); *id.* List Ost. B. M. p. 55 (1874); *id.* Knowsl. Men. p. 3 (1850);

id. P. Z. S. 1850, p. 112; Horsf. Cat. Mamm. Mus. E.I. Co. p. 166 (1851); Temm. Esq. Zool. Guin. p. 189 (1853); Blanf. J. A. S. B. xli. pt. 2, p. 39 (1872). *Antelope kemas*, H. Sm. Griff. An. K. iv. p. 196, v. p. 328 (1827); Less. Compl. Buff. x. p. 285 (1836).
 “*The Chiru*,” Quart. Orient. Mag. ii. p. 160 (1824), *undè*
Antelope chiru, Less. Man. Mamm. p. 371 (1827) (*ex* Quart. Orient. Mag. 1824, p. 260); Oken, Allg. Naturg. vii. p. 1369 (1838); Less. N. Tabl. R. A., Mamm. p. 179 (1842).

VERNACULAR NAMES:—*Chiru* of Southern Tibetans and of sportsmen generally; *Tsus* ♂, *Chus* ♀, Chiru and Chuhu (*Blanford*); *Orongo* of Northern Tibetans (*Przewalski*).

Height at withers about 31 or 32 inches. Hair very close, thick, and crisp. Colour pale fawn, with a peculiar fulvous or pinkish suffusion, especially on the flanks. Belly whitish, not sharply separated from the colour of the sides. Face of male black, crown and neck whitish. Sides of muzzle in male markedly swollen. Ears short, but pointed, whitish. Limbs pale greyish white, a black line running down their anterior faces in the male; female without blacker markings. Tail short, coloured like the rump.

Skull dimensions of a male:—Basal length 10·2 inches, greatest breadth 5, muzzle to orbit 6·4.

Horns long, very graceful, nearly straight, only slightly curved backwards below and forwards above, remarkably uniform in length and curvature, generally from 23 to 26 inches in length, the largest recorded being just under 28 inches.

Female similar to male, but without horns.

Hab. Plateau of Tibet.

The Chiru, or Tibetan Antelope as it is often called, although known by the vague reports of the natives as long ago, perhaps, as 1816, was first introduced to science by Abel in 1826, from information and specimens furnished to him by the great naturalist and collector Hodgson, whose name it worthily bears. As we learn from Hodgson's article published in 'Gleanings in Science' for 1830, it was in 1824 or 1825 that a live Chiru was sent to him in Nepal, where he was British Resident at the Court of Catmandu. Hodgson, as was his custom, drew up an elaborate description of the animal, and, after its death, sent the notes along with the skin to

Dr. C. Abel, who was at that time one of the Secretaries of the Asiatic Society at Calcutta. Dr. Abel, after making a few additions to the description, and proposing to name the animal *Antilope hodgsoni*, read his paper at one of the Meetings of the Asiatic Society, and, as it appears from notices in the 'Philosophical Magazine' of 1826 and 'Brewster's Journal of Science' of 1827, had it published in the Calcutta Government Gazette or Journal.

But Hodgson, probably owing to the death of Dr. Abel shortly afterwards, was unaware of this fact, and believing that Dr. Abel had lost or neglected his communication, redescribed the species in 1830 under the name *Antilope hodgsoni*, which he was told that Dr. Abel had applied to it. At that date (1830) Hodgson states that the living specimen already referred to was the only example he had ever seen of this animal, and that up to that time he had never been able to get another example of it alive or dead. It is clear, however, that Hodgson shortly after this date was enabled to obtain further specimens of this Antelope. In one of his letters published in the 'Proceedings of the Zoological Society' for 1832 it is stated that three individuals had been examined, and in a subsequent communication (dated from Nepal in February 1834) skins of the Chiru of both sexes are referred to as being amongst other skins of mammals and birds which had been recently despatched to the Society. In the latter communication also Mr. Hodgson suggests the propriety of regarding the Chiru as representing "a new subgenus to be termed *Pantholops*, the vulgar old name for the Unicorn." Naturalists have generally acquiesced in Hodgson's suggestion on this point, and we follow the usual practice in denominating the present species *Pantholops hodgsoni*.

Other names, however, have been proposed. In 1827 Lesson, in his 'Manuel de Mammalogie,' called this Antelope *Antilope chiru*, quoting as his reference an article in the 'Quarterly Oriental Magazine' for 1824 (p. 260), which is, however, merely another version of Abel's paper.

About the same date also Hamilton Smith, in one of the volumes of Griffith's edition of Cuvier's 'Animal Kingdom,' proposed, with a note of interrogation, to give the name *Antilope kemas* to the Chiru, quoting its description from one of the above-mentioned reports of Abel's original paper.

We are quite satisfied, however, that it is best to employ the specific name *hodgsoni* for this species as that which was first applied to it.

Since the days when Hodgson was Resident in Nepal many British travellers and sportsmen have penetrated into the snowy ranges of the Himalaya, and

have met with the Tibetan Antelope. Sir Joseph Hooker, in the second volume of his 'Himalayan Journal,' tells us that he saw Chirus on the Cholamoo lakes near the Donkia Pass in Sikim in October 1849. They were feeding in company with "Gaur" (*Gazella picticaudata*) upon the short grass about the lake, which lies at an elevation of some 17,000 feet above the sea-level. Sir Joseph Hooker gives an excellent figure of the remarkable horns of this Antelope, which by his kindness we are enabled to reproduce,

Fig. 52.



Horns of Chiru.

(From Hooker's 'Himalayan Journal,' vol. ii. p. 158.)

and alludes to the ideas of Hodgson (which were shared in by Huc and Gabet) of the profile view of these horns having given rise to the belief of the existence of a Unicorn in Tibet. We should mention that Blanford when he visited Sikim in 1871 was told by the Tibetans that the Chiru is not now found within a long distance of the frontier, but only beyond it in Tibet proper. He admits, however, that it is not probable that there could have been any mistake about so fine and conspicuous an animal.

But by far the most complete account of the Chiru yet published is that given by General Kinloch in his excellent volume on the 'Large Game of Tibet and Northern India,' from the second edition of which, published in 1885, we venture to extract the following particulars:—

“So far as we know, Thibetan Antelopes are never found near the habitations of man, but frequent the plains and elevated valleys far above the limits of cultivation, where few human beings, save occasional wandering shepherds, ever disturb them. The most accessible country to sportsmen where the Thibetan Antelope is to be found is Chung Chenmo, a desolate valley to the north of the Pangong lakes. In this valley, and in those of the streams which flow down to it from the spurs of the Kára Koram mountains, Antelope are usually plentiful; and they are also to be met with all over the lofty plateau which has to be crossed on the road to Yarkand. A few have been shot in the neighbourhood of the Mánsarovára lake near the north-western frontier of Nepál, but there are great difficulties in the way of getting there, the Thibetans jealously excluding all foreigners.

“The Thibetan Antelope is considerably larger than the Indian Antelope, and somewhat more heavily made; its remarkable thick coat of closely set brittle hairs also tending to increase its apparent bulk. The color is a light fawn, varying in shade on different parts of the body, and tending almost to white in old buck. The legs are dark-colored, and the faces of very old males are nearly black. The muzzle is very curious; instead of being fine and compressed, as is the case with most deer and antelope, it is considerably enlarged and puffy-looking; so much so, that properly stuffed heads are generally supposed by persons unacquainted with the animal to be failures of the taxidermist.

“The horns are, perhaps, the most graceful of those of any antelope: set close together at the base, they diverge in an easy curve for about two-thirds of their length, and then converging more abruptly, approach each other, in some specimens, within three or four inches at the tips. Out of twenty-five that I have shot I have never seen a pair above twenty-four and a half inches, but considerably longer specimens are to be obtained, and I have recently heard of a pair twenty-eight and a half inches. The horns are jet-black, of very fine grain, with a small central core, and being deeply notched on their anterior surface, they form perfect knife-handles and sword-hilts. When seen in profile, the forward inclination of the horns has a curious effect, the two appearing like a single horn; which has given rise to the belief that the Thibetan Antelope is the Tchirou or Unicorn Antelope mentioned by the Abbé Huc.

“Although living in such remote and sequestered regions, the Thibetan Antelope is wary in its habits. In the mornings and evenings it frequents the grassy margins of glacial streams, which frequently flow between steep banks gradually scarped out by the floods of centuries and now remote from the ordinary water's edge. The ravines have, for the most part, been cut through gently sloping valleys; and on ascending their steep sides, slightly undulating plains will be found to stretch away, until they merge in the easy slopes of the rounded hills which bound the valley. To these plains the Antelope betake themselves during the day, and there they excavate

hollows deep enough to conceal their bodies, from which, themselves unperceived, they can detect any threatening danger at a great distance. In addition to the concealment afforded by their 'shelter pits,' they have an additional safeguard against surprise in the constant *mirage* which prevails on these stony wastes during the bright hours of the day. This *mirage* not only distorts all visible objects in an extraordinary manner, but, like rippling water, refracts the rays of light to such a degree as to render objects altogether invisible at very short distances. It is, of course, worst near the surface of the ground, but on very hot days it attains a level of several feet; and I well remember, on one occasion, observing the slender horns of an Antelope gliding past me within three hundred yards, apparently borne on the surface of a glassy stream, in which the wearer of the horns was submerged and completely hidden from view! When Antelope are feeding on the grassy flats by the streams is the time when they may be easily approached; and then a knowledge of the ground, and of the habits of the animal, renders success in stalking them tolerably certain."

How far the Chiru extends into the high plateau of Northern Asia beyond the Himalayas it is yet a little uncertain. Dr. Blanford, in his account of the mammals collected by Stoliczka during the Second Yarkand Mission (where excellent coloured figures of both sexes of this Antelope are given), tells us that it has been found in the Kuen-lun range, but has not been met with further north-west or west. It is also, as we are told by the great Russian traveller and naturalist Przewalski, a characteristic animal of the highlands of Northern Tibet. The "Orongo," as it is here called by the Monguls and Tanguts, was first met with by the great traveller after crossing the Burkhan Buddha range, beyond which it was found distributed to the south as far as the Tang-la mountains. In Mr. Delmar Morgan's translation of Przewalski's travels will be found the following passages relating to the habits of this animal, of which, in the original Russian edition of the work, both sexes are figured:—

"The Orongo is found in small herds from five to twenty or forty head, rarely collecting in large troops of several hundred, and this only where the pasturage is good and plentiful. Though a few of the old bucks, usually accompanying every herd, are more cautious and experienced, the Orongos generally are not so wary in their habits. In their flight the males follow the herd as though to prevent straggling; whilst with the Dzerens and Kara-sultas this order is reversed. When in motion, either leisurely or at full speed, the Orongo holds its horns erect, which adds greatly to its appearance. When trotting—its usual pace—the legs move so quickly that at a distance they are invisible, and dogs or wolves are soon left behind. We arrived in Tibet during the breeding-season of these animals, which begins late in November and lasts a month.

"At this time the full-grown males are in a most excited state, taking little food and soon losing the fat which they had gained during summer. The buck soon forms his

harem of ten to twenty wives, and these he jealously guards lest any of them should fall into the power of a rival. No sooner does he see an adversary approaching than he, the lawful lord of the herd, rushes to the encounter with head lowered, uttering short deep bleats. The combat is fierce, and the long sharp horns inflict terrible wounds, often causing the death of both antagonists. Should one feel his strength ebbing, he takes to flight pursued by his enemy, then suddenly wheeling round receives the latter on his horns. As a proof of the fury with which they fight, I remember shooting one of the combatants, who, to my surprise, continued the fight for several minutes after he had received his death-wound, and then suddenly expired. If a doe chance to stray from the herd, the buck immediately gives chase, and, bleating as he goes, tries to drive her back again. While his attention is thus engaged the others give him the slip, and pursuing first one, then another, he often loses his whole harem. At last, deserted by all, he gives vent to his fury and disgust by striking the ground with his hoofs, curving his tail, lowering his horns, and bleating defiance at his compeers. From morning until evening these scenes are constantly occurring, and there appears to be no bond of union between the male antelope and his does; to-day they consort with one buck, to-morrow with another.

“The rutting-season over, the Orongos again live peaceably with one another, the males and females often collecting in separate herds. We saw a troop of about 300 does in February in the valley of the Shuga; the young are dropped in July. The Orongo is fearless and will let the hunter openly approach within 300 yards, or even nearer. The report of firearms or the whistle of a bullet does not alarm it; it only shows surprise by walking quietly away, frequently stopping to look at the hunter. Like other antelopes it is extremely tenacious of life and will run a long way although wounded. They are not difficult to shoot, for besides showing no fear, they haunt rocky defiles in the mountains, where they may be easily stalked. I have fired as many as from one to two hundred shots at them in the course of the day, my bag, of course, varying a good deal with my luck in the long shots. The Orongo is held sacred by the Mongols and Tangutans, and lamas will not touch the meat, which, by the way, is excellent, particularly in autumn when the animal is fat. The blood is said to possess medicinal virtues, and the horns are used in charlatanism: Mongols tell fortunes and predict future events by the rings on these, and they also serve to mark out the burial-places, or more commonly the circles within which the bodies of deceased lamas are exposed; these horns are carried away in large numbers by pilgrims returning from Tibet, and are sold at high prices. Mongols tell you that a whip-handle made from one will in the hands of the rider prevent his steed from tiring.”

It is almost unnecessary to say that living specimens of the Chiru have never, as yet, been brought to Europe.

The British Museum contains a mounted specimen of an adult male of the Chiru, obtained by Mr. Mandelli in Sikim and presented by Dr. W. T. Blandford; also some specimens presented by Hodgson, and a number of very fine skulls and horns from Ladakh and Kumaon from the Hume Collection.

Our illustration (Plate L.), which represents a male of this animal in a snowstorm, has been put upon the stone by Mr. Smit from a coloured drawing prepared by Mr. Wolf under the directions of the late Sir Victor Brooke.

August, 1897.

GENUS V. ANTIDORCAS.

Type.

Antidorcas, Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 271 (1847). . A. EUCHORE.

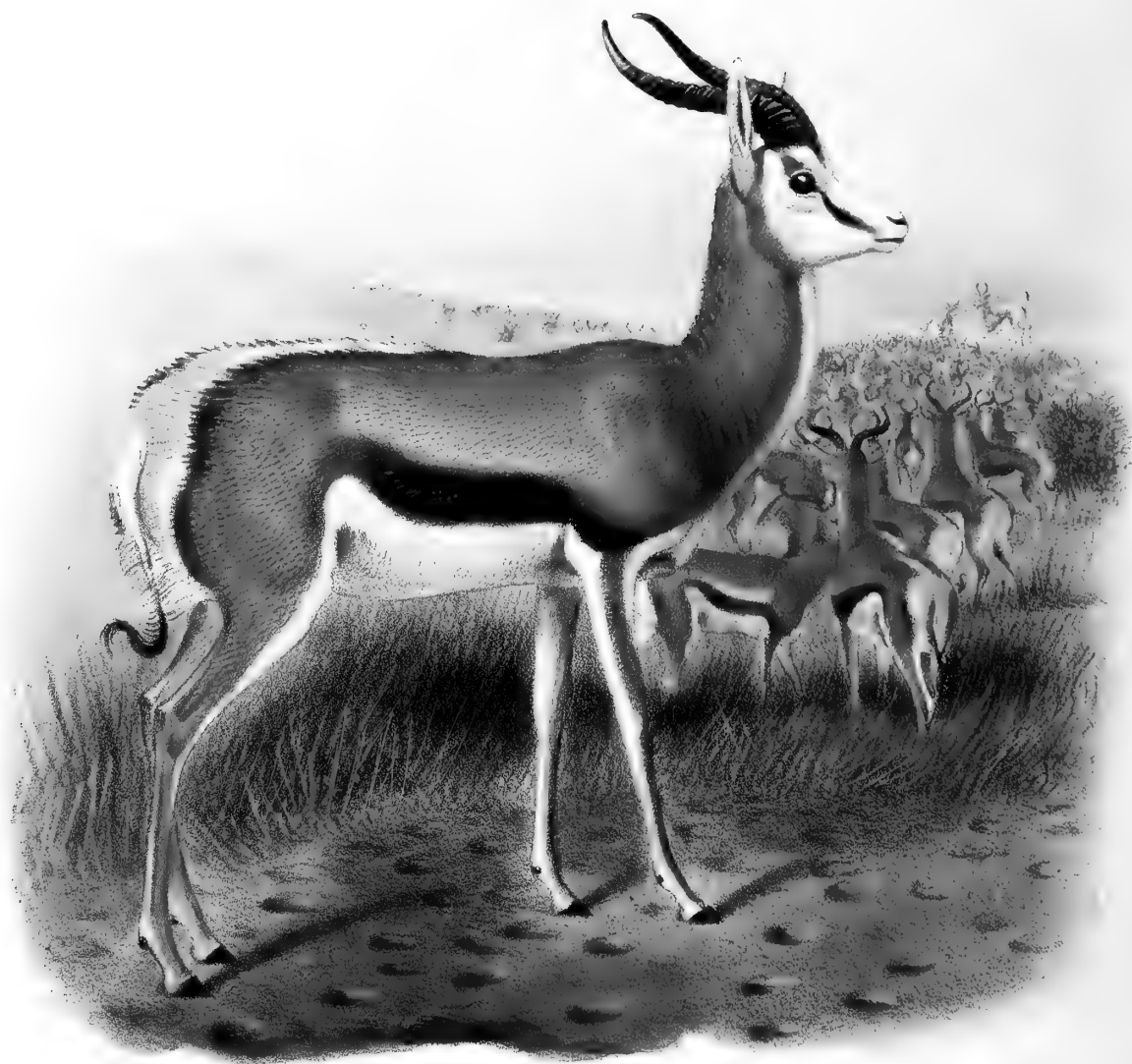
General characters as in *Gazella*, but, as in *Saiga tatarica* alone of Ruminants, with only two lower premolars, and the upper anterior premolar reduced to half the size of the second. Back with a peculiar elongate evertible fold in the skin.

Skull with small but particularly deep anteorbital fossæ, no anteorbital vacuities, and very broad and open posterior nares.

Horns medium, lyrate, twisted inwards, with a double serpentine curvature, convex inwards and in front below, outwards and behind above. The points turned inwards or backwards.

Range of Genus. Africa south of the Zambesi.





Wolff del. J. Smit lith.

The Springbuck .
ANTIDORCAS EUCHORE .

Hanhart imp.

Published by R.H. Porter.

81. THE SPRINGBUCK.

ANTIDORCAS EUCHORE (ZIMM.).

[PLATE LI.]

- La Gazelle à bourse sur le dos*, Allamand, in Schneider's ed. of Buffon's Hist. Nat., Suppl. iv. p. 142, pl. lx. (1778); *id.* Buff. H. N., Suppl. vi. p. 180 (Paris, 1782).
Antilope marsupialis, Zimm. Geogr. Gesch. ii. p. 427 (1780); *Bechst.* Syst. Uebers. vierf. Thiere, ii. p. 645 (1800).
Cemas marsupialis, Oken, Lehrb. Nat. iii. pt. 2, p. 738 (1816).
Springbok, Sparrm. K. Vet.-Ak. Handl. 1780, p. 275; *id.* Reise, p. 396, pl. viii. (1784); *id.* Engl. transl. ii. p. 83 (1786); *Daniell*, Afr. Scenery, no. 18 (1812).
Antilope euchore, "Forst.," Zimm. Geogr. Gesch. iii. p. 269 (1783); *Schr.* Säug. pl. cclxxii. (1787); *Shaw*, Gen. Zool. ii. pt. 2, p. 344 (1801); *G. Cuv.* Dict. Sci. Nat. ii. p. 232 (1804); *Licht.* Mag. nat. Freund. vi. p. 169 (1814); *G. Fisch.* Zoogn. iii. p. 423 (1814); *Afz. N. Act.* Ups. vii. p. 220 (1815); *Desm. N. Dict.* d'H. N. (2) ii. p. 185 (1816); *G. Cuv. R. A.* i. p. 260 (1817); *Goldf.* Schr. Säug. v. p. 1189 (1818); *Schinz*, Cuv. Thierr. i. p. 387 (1821); *Desmoul.* Dict. Class. d'H. N. i. p. 441 (1822); *Desm.* Mamm. ii. p. 455 (1822); *Burch.* Trav. i. p. 290 (1822); *id.* List Quadr. pres. to B. M. p. 5 (1825) (Nugariep R.); *H. Sm.* Griff. An. K. iv. p. 208, v. p. 331 (1827); *Less.* Man. Mamm. p. 373 (1827); *Licht.* Darst. Säug. pl. vii. (♂ ♀) (1827); *J. B. Fisch.* Syn. Mamm. p. 461 (1829); *Smuts*, En. Mamm. Cap. p. 72 (1832); *Less.* Compl. Buff. x. p. 286 (1836); *Laurill.* Dict. Univ. d'H. N. i. p. 615 (1839); *Gerv.* Dict. Sci. Nat. i. p. 261 (1840); *Jard.* Nat. Misc. (1) vii. p. 213, pl. xxvii. (1842); *Less.* N. Tabl. R. A., Mamm. p. 176 (1842); *Forst.* Descr. Anim. p. 388 (1844); *Wagn.* Schr. Säug. Suppl. iv. p. 414 (1844), v. p. 407 (1855); *Schinz*, Syn. Mamm. ii. p. 400 (1845); *id.* Mon. Antil. p. 5, pl. iii. (1848); *Temm.* Esq. Zool. Guin. p. 193 (1853); *Gieb.* Säug. p. 309 (1853); *Brehm*, Thierl. iii. p. 212 (1880); *Huet*, Bull. Soc. Acclim. (4) iv. p. 485 (1887).
Cerophorus (Gazella) euchore, Blainv. Bull. Soc. Philom. p. 75 (1816).
Guzella euchore, *A. Sm.* S. Afr. Quart. J. ii. p. 191 (1834); *Harr.* Wild Anim. S.

- Afr. pl. iii. (♂ ♀) (1840); **Sund. K. Vet.-Ak. Handl.** 1842, pp. 201 & 243 (1843); **Gray, List Mamm. B. M.** p. 160 (1843); **id. Cat. Ost. B. M.** pp. 56 & 145 (1847); **id. Knowsl. Men.** p. 6 (1850); **Turner, P. Z. S.** 1850, p. 168; **Brooke, P. Z. S.** 1873, p. 550; **Drumm. Large Game S. Afr.** p. 426 (1875); **Buckley, P. Z. S.** 1876, pp. 282 & 291; **Bocage, P. Z. S.** 1878, p. 741 (Huilla, Angola); **Selous, P. Z. S.** 1881, p. 757; **Scl. List Anim. Z. S.** (8) p. 142 (1883), (9) p. 156 (1896); **Flow. & Gars. Cat. Coll. Surg.** ii. p. 264 (1884); **Bryden, Kloof and Karroo,** p. 220, figs. ♀ (1889); **W. Scl. Cat. Mamm. Calc. Mus.** ii. p. 162 (1891); **Flow. & Lyd. Mamm.** p. 342 (1891); **Ward, Horn Meas.** (1) p. 122 (1892), (2) p. 163 (1896); **Nicolls & Egl. Sportsm. S. Afr.** p. 29, pl. vi. fig. 20 (1892); **Lyd. Horns and Hoofs,** p. 238 (1893).
- Antidorcas euchores*, **Sund. Pecora, K. Vet.-Ak. Handl.** 1845, p. 271 (1847); **id. Hornschuch's Transl., Arch. Skand. Beitr.** ii. p. 267; Reprint, p. 87 (1848); **Gray, P. Z. S.** 1850, p. 116; **id. Cat. Ung. B. M.** p. 63 (1852); **Gerr. Cat. Bones Mamm. B. M.** p. 233 (1862); **Blyth, Cat. Mamm. Mus. As. Soc.** p. 171 (1863); **Fitz. SB. Wien,** lix. pt. 1, p. 158 (1869); **Gray, Cat. Rum. B. M.** p. 40 (1872); **id. Hand-l. Rum. B. M.** p. 109 (1873); **Jent. Cat. Ost. Leyd. Mus. (Mus. Pays-Bas, ix.)** p. 169 (1887); **id. Cat. Mamm. Leyd. Mus. (op. cit. xi.)** p. 137 (1892).
- Antilope saccata*, **Bodd. Elench. Anim.** p. 142 (1785).
- Capra pygargus*, **Thunb. Resa,** ii. p. 28 (1789), **Engl. Transl.** ii. p. 24 (1793).
- Antilope pygarga*, **Thunb. Mém. Ac. Pétersb.** iii. p. 315 (1811) (and no doubt of many other earlier authors; *nec* Pall.).
- Antilope saltans*, **Kerr, Linn. An. K.** p. 312 (1792).
- Antilope saltatrix*, **Link, Beytr.** p. 79 (1795) (*nec* Bodd.).
- Antilope saliens* and *A. dorsata*, "Lac.," **Desm. N. Dict. d'H. N.** (1) xxiv. Tabl. p. 33 (1804).

VERNACULAR NAMES:—*Springbuck* of English; *Springbok* or *Pronkbok* of Dutch; *Tsebe* (*A. Smith*) or *Umegi* (*Drummond*) of Kaffirs. *Insaypee* of Bechuanas; *Eetsaypee* of Makalakas (*Selous*).

Height at withers 31 or 32 inches. General colour bright rufous fawn; a strongly marked, dark, lateral band present, as in many Gazelles. Face pure white, a narrow fawn-coloured line running forwards to the muzzle from the openings of the anteorbital glands on each side. Crown and centre of forehead fawn-coloured like the neck and back. Ears long and pointed, their backs white or pale fawn. Posterior back with a strongly contrasted pure white line, the white hairs of which are placed in a fold of the skin, which fold is everted when the animal is excited, and then forms a prominent white

crest; rump white, in continuation with the dorsal line; tail also white basally, black and crested terminally. Belly pure white. Limbs fawn-coloured externally, white on their inner sides and behind.

Skull-dimensions of a male:—Basal length 7·8 inches, greatest breadth 3·7, muzzle to orbit 4·7.

Horns attaining a length of about 14 or 15 inches round the curves, one specimen being recorded as long as 19 inches.

Female similar to male, but horns smaller and not so strongly ringed at the base.

Hab. South Africa, south of the Zambesi, extending northwards on the west to Mossamedes.

The Springbuck is, no doubt, very closely allied to the Gazelles; but in view of its peculiar dentition, which, as we have pointed out above (p. 53), is unique in the bovine family, and of the remarkable dorsal fold of skin, which is not found in any of its allies, we have thought it advisable to adopt for it the generic term *Antidorcas*, first provisionally suggested for it by Sundevall in 1847, and subsequently employed by many naturalists. The locality of the Springbuck is also quite distinct from that of the typical Gazelles, which are essentially a northern group, no true *Gazellæ* being met with until we advance as far north as German East Africa.

This Antelope, with its bright colour and lively movements, as may be easily imagined, quickly attracted the notice of the early Dutch settlers at the Cape and received from them the appropriate name of "Springbok," from the extraordinary springs and leaps which it makes in running. The first scientific account of it published appears to be that given by Allamand in Schneider's edition of the 'Histoire Naturelle' of Buffon, published at Amsterdam about 1778. In the fourth volume of the 'Supplement' of this rather rare work, for the privilege of consulting which we are much indebted to Sir Edmund Loder, will be found (under the head of an addition to the article on Gazelles issued in the twelfth volume of the original work) described and figured "La Gazelle à bourse sur le dos," as Allamand named the Springbuck. Allamand informs us that his figure and description (which unmistakably relate to this animal) were taken from a specimen then living in the menagerie of the Prince of Orange, which had been brought from the

Cape by Capt. Gordon, and was the only survivor of twelve examples of this animal with which Captain Gordon had started for Europe.

Upon Allamand's "Gazelle à bourse" Zimmermann, in the second volume of his 'Geographische Geschichte,' issued in 1780, established his *Antilope marsupialis*, adding a Latin diagnosis and a shortened translation of Allamand's description. In the meantime, however, another name seems to have been proposed for the same animal by Forster, who, as we are informed by Zimmermann in the third volume of his 'Geographische Geschichte,' had called the Springbuck *Antilope euchore*. This no doubt was done in the famous 'Descriptiones Animalium,' which, although generally accessible in manuscript to the naturalists of the day, and frequently quoted by them, was not published until 1844. However, as Forster's name for the Springbuck has been accepted nearly universally by subsequent naturalists, we do not now propose to change the name by which this animal has been known for so many years.

The immediately succeeding writers added little or nothing to our knowledge of this Antelope until about 1829, when Lichtenstein, in the second number of his 'Darstellung der Thiere,' gave coloured figures of both its sexes under the name "*Antilope euchore*, Forster," from specimens in the Berlin Museum procured by him or his assistants in Cafferland.

A few years later Cornwallis Harris visited South Africa. In his great work on the results of his journey subsequently published, this celebrated sportsman and naturalist devotes his third plate to the illustration of a group of Springbucks, which he describes at the period of his writing (1840) as then still abundant in the Colony and "distributed over the arid plains beyond it in unlimited herds." "Amongst the many striking novelties," Cornwallis Harris writes, "which present themselves to the eye of the traveller in Southern Africa there are, perhaps, few objects more conspicuous or more beautiful than the dancing herds of graceful Springbucks which speckle the broad plains of the interior."

"Matchless in the symmetry of its form, the Springbok is measurelessly the most elegant and remarkable species of the comprehensive group to which it pertains. The dazzling contrast betwixt the lively cinnamon of its back and the snowy whiteness of the lower parts is agreeably heightened by the intensely rich chestnut bands which traverse the flanks—its dark beaming eye, with its innocent and lamb-like expression of face, and the showy folds of gossamer on the haunches—displayed or concealed at the animal's

volition—combining to render it one of the most beautiful objects in the animal creation. As the traveller advances over the trackless expanse, hundreds of this delicately formed antelope bound away on either side of his path with meteor-like and sportive velocity, winging their bird-like flight by a quick succession of those singularly elastic leaps which have given rise to its colonial appellation, and which enable it to surpass, as well in swiftness as in grace, almost every other mammiferous quadruped.

“But although frequently found herding by itself, the Springbok is usually detected in the society of Gnoos, Quaggas, Ostriches, or Blesboks. Fleet as the wind, and thoroughly conscious of its own speed, it mingles with their motley herds, sauntering about with an easy careless gait, occasionally with outstretched neck approaching some coquettish doe, and spreading its own glittering white folds so as to effect a sudden and complete metamorphosis of exterior from fawn-colour to white. Wariest of the wary, however, the Springboks are ever the first to take the alarm, and to lead the retreating column. Pricking their taper ears, and elevating their graceful little heads upon the first appearance of any strange object, a dozen or more trot nimbly off to a distance, and having gazed impatiently for an instant to satisfy themselves of the actual presence of an enemy,—putting their white noses to the ground, they begin, in colonial phraseology, to ‘*pronken*’ or make ‘a brave show.’ Unfurling the snowy folds on their haunches so as to display around the elevated scut, a broad white gossamer disk, shaped like the spread tail of a peacock, away they all go with a succession of strange perpendicular bounds, rising with curved loins into the air, as if they had been struck with battledores—rebounding to the height of ten or twelve feet with the elasticity of corks thrown against a hard floor; vaulting over each other’s backs with depressed heads and stiffened limbs, as if engaged in a game of leap-frog; and after appearing for a second as if suspended in the air,—clearing at a single spring from ten to fifteen feet of ground without the smallest perceptible exertion. Down come all four feet together with a single thump, and nimbly spurning the earth beneath, away they soar again, as if about to take flight—invariably clearing a road or beaten track by a still higher leap than all—as if their natural disposition to regard man as an enemy indicated them to mistrust even the ground upon which he had trodden.

“The ‘*trek bokken*’—as the Colonists are wont to term the immense migratory swarms of these antelopes which, to the destruction of every green herb, occasionally inundate the abodes of civilization—not only form one of the most remarkable features in the Zoology of Southern Africa, but may also be reckoned amongst the most extraordinary examples of the fecundity of animal life. To form any estimate of their numbers on such occasions would be perfectly impossible—the havoc committed in their onward progress falling nothing short of the ravages of a wasting swarm of locusts.

“Pouring down, like the devastating curse of Egypt, from their native plains in the interior whence they have been driven, after protracted drought and by the failure of the stagnant pools on which they have relied, whole legions of Springboks abandon the parched soil and throng with one accord to deluge and lay waste the cultivated regions around the Cape. So effectually does the van of the vast column destroy every vestige of verdure, that the rear is often reduced to positive starvation.

“Ere the morning’s dawn cultivated fields, which the evening before appeared proud of their promising verdure, despite of every precaution that can be taken, are reaped level with the ground ; and the grazier, despoiled of his lands, is driven to seek pasture for his flocks elsewhere, until the bountiful thunder-clouds re-animating nature restore vegetation to the burnt-up country. Then these unwelcome visitors whose ranks, during their short but destructive sojourn, have been thinned both by man and beast, retire instinctively to their secluded abodes, to renew their depredations when necessity shall again compel them.”

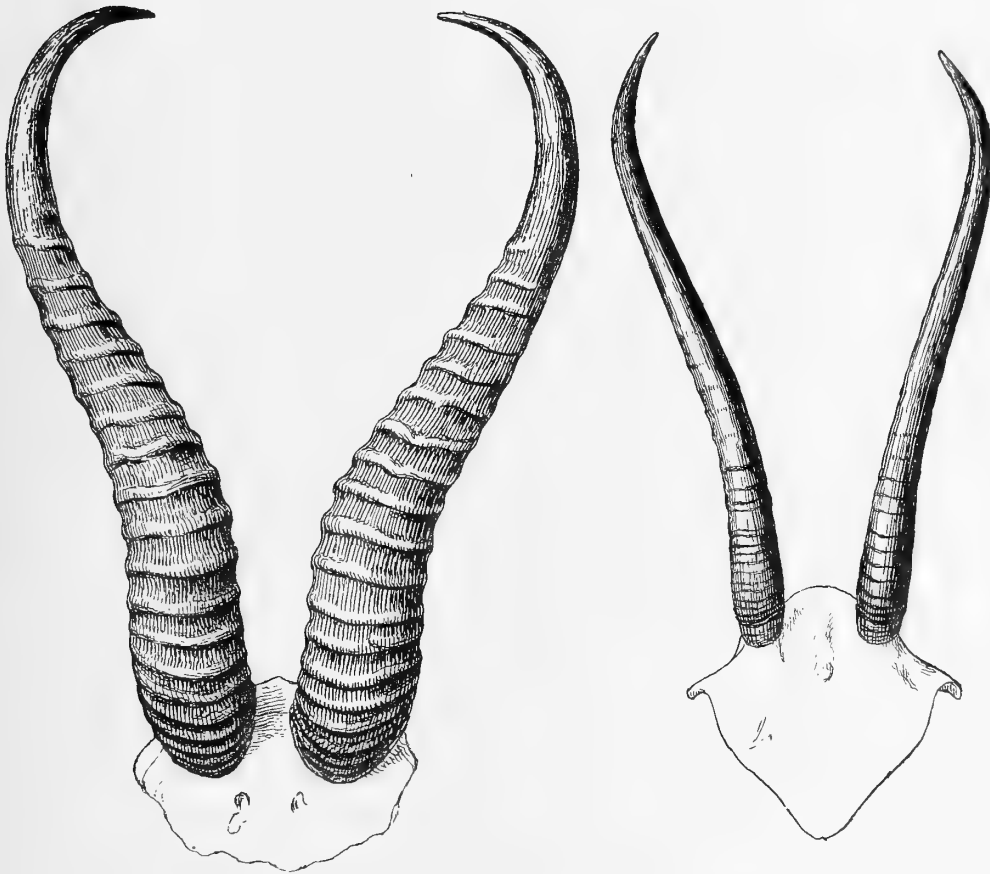
Although not still met with in the countless thousands described by Cornwallis Harris, the Springbuck, we are pleased to be able to say, is even now abundant in many parts of the Cape Colony, and Springbuck shooting is still one of the recognized sports of its inhabitants and of visitors to Southern Africa who go in search of game. Mr. H. A. Bryden, in his well-known volume ‘Kloof and Karroo,’ devotes a whole chapter to the delights of Springbuck shooting, and tells us that of late years large tracts of waste land in the Colony have been fenced in in order to preserve these Antelopes. For example, as the ‘Graaf Reinet Advertiser,’ of November 1886, informs us, Shirlands, the property of Mr. John Priest, of that district, was, twelve to thirteen years ago, a piece of waste land abandoned to squatters. Now there are 16,000 morgen (more than 32,000 acres) fenced in with wire. Within this fence there are fully a thousand Springboks where formerly only a few remained “harassed and hunted to death by impoverished lazy squatters.”

In the Cape Colony Mr. W. L. Sclater, the Director of the South African Museum, Cape Town, kindly informs us that in the west of the Colony the Springbuck is met with in Namaqualand, Clanwilliam, Beaufort West, Prince Albert, and the adjoining districts. In the middle of the Colony it is found in Uitenhaag, Graaff Reinet, Colesberg, Albert, and Queenstown, but is rare in East Albany. On the north it occurs in Great Namaqualand and Damaraland, also in Kimberley, Barkly West, and Herbert. But it must be understood that it is mostly confined in all these districts to those farms of the Dutch and English settlers where it is preserved, and that permission to shoot it must on all occasions be obtained. The same is the case in the Orange Free State and Transvaal. In Bechuanaland, being wholly unprotected, the Springbuck has in recent years been much shot down, except on the open arid flats north and south of the Botletle and the neighbourhood of the great Makari-kari Salt-pan, where Messrs. Nicolls and Eglington say it still roams in large herds.

As regards the northern limit of the Springbuck, it certainly does not cross the Zambesi in any place so far as we have been able to ascertain.

Mr. F. C. Selous (P. Z. S. 1881, p. 757) says that its northern range is bounded on the east by the thick forests which run east and west south of

Fig. 53.



Horns of Springbuck, ♂ and ♀.

the Mababe River. Westwards, as already stated, it occurs in the district of Lake Ngami and throughout Damaraland up to the Portuguese province of Mossamedes, whence specimens have been forwarded to the Lisbon Museum by their energetic collector M. d'Anchieta.

Writing quite recently to Sclater, Mr. J. ffolliott Darling gives the following notes:—

“The Springbuck does not range up so far north as Mashonaland; but I have shot them in Griqualand West, the Transvaal, and the Orange Free State, also in Bechuanaland, where the most northerly point I found them in 1890 was south of the Macloutsie River in the British Protectorate. I was for several years in various parts of Griqualand East, but never saw a Springbuck, though there are large flats suitable for them, on which Oribis abound.

“When protected they become very numerous, so much so as to scarcely leave any grass for the sheep in some places; one farmer told me that he reckoned that the Springbok cost him £200 a year.

“One curious thing, well known to hunters, but I do not recollect ever seeing it in print, is that the white patch of hair on the back smells like honey.

“I have several times coursed Springbuck with good greyhounds, but never caught one; they weary out the dogs playing before starting to run. If one buck be found by himself greyhounds can catch him; but some people say that if you find one alone it means that he is sick, and that is the reason that he can be caught. I know some prominent coursing men do not like their dogs to run after Springbuck, as too frequent failures to kill discourage the dogs, and often when run into they will turn and fight the greyhound, which, if timid, may be spoiled thereby and become afraid to attack other antelopes.

“However, one friend, in whom I have every reliance, told me that a large and very strong greyhound of his on one occasion separated a fine Springbuck ram from a small herd and killed him single-handed.

“Of course the jumping powers of this buck are well known and how they will skip across a road 50 ft. wide without any trouble. The habit of spreading out the hair on the back, so as to expose the white patch more prominently when frightened, is very curious, as in the case of being hunted by dogs it makes the animal more easily perceived and followed in long grass or scrub.”

White and Albino varieties are not so frequently met with amongst the *Bovidæ* as in some other groups of mammals. But the ‘Johannesburg Times’ of January 22nd, 1897, informs us that a perfectly white Springbuck, caught in the Orange Free State, and supposed to be about eleven months old, was at that time being exhibited in Johannesburg by Messrs. Colquhoun and Hill, of Jeppe Street. Such a novelty as a white Springbuck was previously quite unknown in the Transvaal. This communication was sent to us accompanied by a photograph of the animal taken from life, from which it would appear that its colour was absolutely of a spotless white.

The Springbuck, although not unfrequently seen in the Zoological Gardens of Europe, is, as might be supposed, from its free and active habits, some-

what impatient of captivity and does not thrive in confinement except in occasional instances. The Zoological Society acquired their first specimen (by purchase) on July 9th, 1852, and, as will be seen by reference to their published Lists of Animals, others have been subsequently received at short intervals since that date. At the time we are writing there is a fine pair in the Society's Gardens, deposited by H.R.H. the Prince of Wales in March, 1893, which are still doing well. Dr. Wunderlich, Director of the Zoological Garden of Cologne, has kindly furnished us with notes upon a pair of this Antelope which he bought on the 13th May, 1896, from Herr Reiche, of Alfeld. They bred on the 24th May last year, and after a period of 171 days a young one of the female sex was born on the 12th November last. The young one at birth was 45 cm. (about $17\frac{3}{4}$ English inches) in height, and generally of a yellowish-grey colouring. The side stripe was rather darker, but by no means so clearly defined as it is in the adult animal. The under surface and inner sides of the limbs were white, as in the adult. On the face a dark stripe from the eye to the corner of the mouth was visible, but the cheeks and chin generally were yellowish grey like the sides of the body. The little animal did well in company with its mother at first, and after 15 days began to eat corn. Unfortunately, however, it did not continue to thrive, and died on December 21st, when about 40 days old.

The flesh of the Springbuck is much esteemed by the epicures of the Cape Colony, and has been occasionally brought to London in a refrigerator for consumption here. In the 'Field' for 1892 (vol. lxxx. p. 390) will be found an account of its successful importation by Messrs. Brooks, of Leadenhall Market, and of the high appreciation it met with by those who tried the "venison," which was pronounced to be "in good condition, not the least high, and tasting not unlike Chamois."

Our figure of the adult male Springbuck, with a herd of these animals in the distance, has been prepared by Mr. Smit from an original sketch by Wolf, which is now in the possession of Sir Douglas Brooke, and has been kindly lent to us for examination.

There is a good stuffed specimen of an adult male Springbuck in the Gallery of the British Museum. It was obtained by Mr. F. C. Selous at Mahemfontein, in the Orange Free State, in 1896, and was presented to the collection by that gentleman. From a pencil-note on the back of Mr. Wolf's sketch it would appear to have been taken from a specimen of the head of

this species formerly exhibited in the same Museum. The National Collection has also some skins, skulls, and horns of the Springbuck from various parts of South Africa ; but good skulls of this Antelope are still desiderata to the National Collection, and a series of them, with dates and localities, would be much appreciated.

August, 1897.

GENUS VI. GAZELLA.

	Type.
<i>Gazella</i> , Licht. Mag. nat. Freund. Berl. vi. pp. 152 & 171 (1814)	G. SUBGUTTUROSA*.
<i>Dorcas</i> , Gray, Med. Repos. xv. p. 307 (1821)	G. DORCAS.
<i>Dama</i> , Benn. Tr. Z. S. i. p. 7 (1833)	G. DAMA.
<i>Leptoceros</i> , Wagn. Schr. Säug. Suppl. iv. p. 422 (1844)	G. LEPTOCEROS.
<i>Procapra</i> , Hodgs. J. A. S. B. xv. p. 334 (1846)	G. PICTICAUDATA.
<i>Tragops</i> , id. op. cit. xvi. p. 11 (1847)	G. BENNETTI.
<i>Tragopsis</i> , Fitz. SB. Wien, lix. p. 157 (1869)	G. BENNETTI.
<i>Eudorcas</i> , id. tom. cit. p. 159 (1869)	G. "LÆVIPES."
<i>Korin</i> , Gray, Cat. Rum. B. M. p. 39 (1872)	G. RUFIFRONS.
<i>Nanger</i> , Lataste, Mamm. Barb. (Act. Bord. xxxix.), sep. cop., p. 173 (1885)	G. MHORR.

Size medium, but with a considerable range of variation. General form normal; the muzzle simple, neither expanded as in *Pantholops* nor elongated as in *Saiga*; the neck of ordinary length, and the back without any evertible fold as in *Antidorcas*. Coloration ordinarily sandy, with a white belly, the face generally marked with dark and light streaks; streaks also generally present on the flanks and rump. Knee-brushes usually present. Tail short or of medium length.

Skull generally with shallow anteorbital fossæ corresponding to the anteorbital glands, but occasionally—in the *procaprine* section—without any trace of them. Premolars $\frac{3}{3}$, as usual in the Bovines.

Horns generally present in both sexes, the females of the first four species alone being without them. In the male the horns are strong, prominently

* This species may be taken as the type of *Gazella*, as being the only one which is common to Lichtenstein's original genus and to Blainville's "*Gazella*" of 1816. The latter author is ordinarily quoted as the original founder of the name, and his list includes the best known species—*G. dorcas*. But Lichtenstein's genus, two years earlier in date, does not contain *G. dorcas* at all, and the only way in which the name *Gazella* can be properly retained for this group is by regarding *G. subgutturosa* as its type.

ribbed, and generally of medium length, about the length of the head, but occasionally considerably longer. With the exception of their tips they are curved backwards, so as to be convex forwards below, while their ends are commonly more or less recurved forwards or upwards. The degrees of curvature seem to be fairly constant within the species, and to afford very fair specific characters. On the other hand, in the female the horns are slender, straighter, and shorter than in the male, very variable in direction, and as a rule showing little of the characteristic curvature peculiar to the male of each species, although there is a certain correspondence between the lengths of the horns in the two sexes.

Range of the Genus. Northern and Eastern Africa, and Western and Central Asia to Mongolia and British India.

The genus *Gazella* contains the great majority of the members of the present subfamily, and forms a very natural and easily defined group. All the species are lightly built and delicate animals, and are among the best known of all the Antelopes, on account of their beauty and the fact that they are common in confinement, so that every zoological garden is always well provided with examples of them. In the Zoological Society's Gardens at the present time no less than ten species are represented.

The genus *Gazella* was always a favourite one with Sir Victor Brooke, who devoted much time to its elucidation, and published in 1873 a monograph of it, which up to the present time has been the standard work on the subject. From this monograph we venture to quote the following paragraphs which explain the nomenclature of the characteristic markings of the Gazelles: they also give an indication of the difficulties to be met with in working out a genus which, while the largest contained in the present work, is remarkable for the close resemblance of the different species to one another and for the absence of characters which will enable them to be readily separated:—

“For the sake of convenience, and the avoidance of constant repetition, and also to throw into relief the traces of genetic affinity afforded by coloration, I will describe the typical ground-plan which may be seen underlying each variation, the uniformity of the arrangement of the more salient and characteristic markings (where they appear) throughout the group clearly showing the existence of such a plan. To each of these more prominent features, indicating what may be provisionally called generic coloration, I will apply a definite name, which I shall make use of in the following descriptions.

The anterior facial region in Gazelles, from the base of each horn to the muzzle, is cut off from the sides of the face on both sides by white streaks, which, starting externally to the base of each horn, run downwards to within two inches of the nostrils; the former I shall call the '*central facial band*,' the latter the '*light facial streaks*.' From the corner of the suborbital gland, running downwards immediately below the light facial streak, and of about equal width, is a dark line; this I shall refer to as the '*dark facial streak*.' Bordering the white of the belly on each side, and extending from above and behind the ulna to above and in front of the patella, are two bands, the lower of which is darker, the upper lighter than the colour of the back and flanks. The former I shall speak of as the '*dark lateral band*,' the latter the '*light lateral band*.' Lastly, bordering the white of the rump is frequently seen a narrow indefinite darkish band, which may be conveniently called the '*pygal band*.' The difficulty of expressing differences dependent to a large extent upon shades of colour and texture of hair sufficiently sharply to give a just impression of the effect produced by such differences upon the eye may cause the distinction of some of the forms below mentioned to appear doubtful. I can only say that upon occasions when I have had ample opportunity of subsequently verifying my identification, I have never experienced any difficulty in referring specimens entirely new to me to their proper name and habitat. The descriptions must be taken as applying to thoroughly typical specimens, the intensity of the markings and length and curvature of the horns being subject to great individual variation."

Since Sir Victor Brooke wrote his monograph of the Gazelles, many species only known to him by descriptions or by imperfect specimens have become represented in our National Museum by complete examples, while several additional species have been discovered. Our arrangement of the species is therefore necessarily different from his, but is, we fear, still very far from being perfect, as more and better specimens of most of the forms are still wanted before their exact geographical distribution, their extent of variation, and their true relationships to each other can be satisfactorily worked out.

As already noted, we have removed from the genus *Gazella*, under the name *Antidorcas*, the South-African Springbuck, which Sir Victor Brooke included in it. This being eliminated, the 25 species which we are prepared to recognize as distinct may be arranged as follows:—

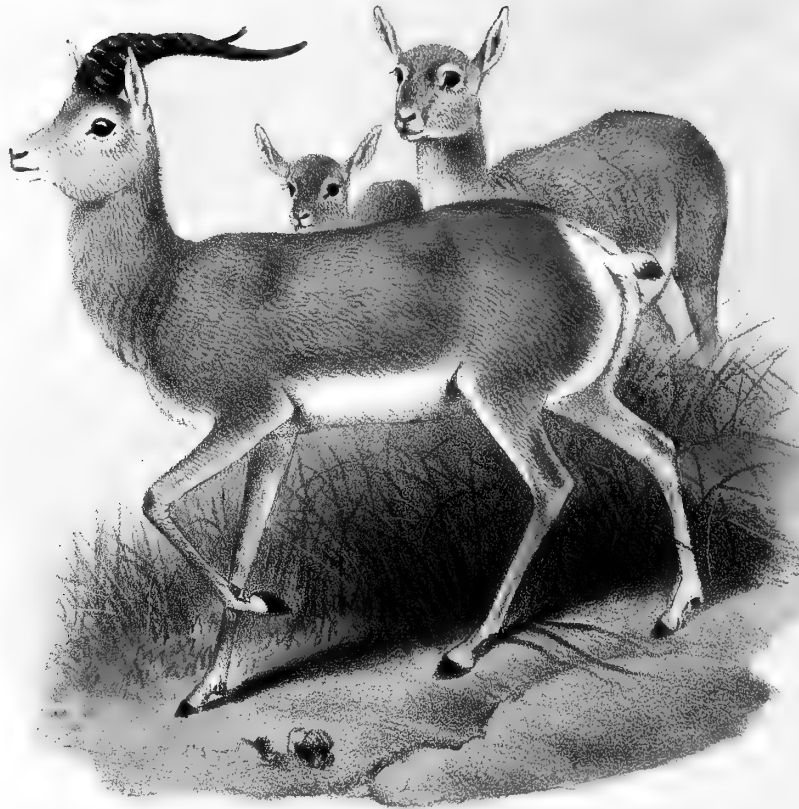
- A. Tail quite short. No Gazelline face-markings. Females without horns.
- a. Horns strongly curved backwards. Skull 7 in. or less in basal length.
- a'. Horns not hooked at tip. (Tibet.) 82. *G. picticaudata*.
- b'. Horns hooked at tip. (Mongolia.) 83. *G. przewalskii*.
- b. Horns but little curved backwards, not hooked at tip. Skull about 9 in. in basal length. (N. China.) 84. *G. gutturosa*.

- B. Tail of average length, its terminal half generally more or less crested with black. Face-markings present. Females (except in *G. subgutturosa*) with horns.
- a. Upper part of face white (at least in old age), interrupting the central facial band.
- a'. No horns in female: size larger. (Central and Western Asia.)
85. *G. subgutturosa*.
- b'. Horns present in female: size smaller. (Arabia.) 86. *G. marica*.
- b. Central dark facial band uninterrupted by white above. Horns present in the female.
- a'. Dark colour of back not invaded by white of rump.
- a². Dark lateral band indistinctly marked, not strong and blackish.
- a³. Tip of horns slightly curved inwards or upwards, not bent in to a right angle.
- a⁴. Horns of medium length.
- a⁵. Horns truly lyrate, the middle portion twisted outwards, the tips reapproaching each other. (Algeria, Egypt, Palestine.) 87. *G. dorcas*.
- b⁵. Horns not truly lyrate, more or less evenly diverging upwards.
- a⁶. Top of muzzle ordinarily with a black spot on it.
- a⁷. Nose simple.
- a⁸. Larger: hair rough. (Algeria.)
88. *G. cuvieri*.
- b⁸. Smaller: hair smooth: darker. (Arabia.)
89. *G. arabica*.
- c⁸. Smaller: hair smooth: lighter. (India and S. Persia.)
90. *G. bennetti*.
- b⁷. Nose with a flabby corrugated elevation on it. (Somaliland.) 91. *G. spekei*.
- b⁶. Top of muzzle without a black spot. (Somaliland.)
92. *G. pelzelni*.
- b⁴. Horns long and very slender. Colours very pale. (Algeria and Egypt.) 93. *G. leptoceros*.

- b*³. Tip of horns hooked inwards or upwards, nearly or quite to a right angle.
- a*⁴. General colour pale fawn, the lateral band and other markings also fawn. (Nubia.) . . . 94. *G. isabella*.
- b*⁴. General colour brownish fawn, the lateral band blackish. (Muscat.) 95. *G. muscatensis*.
- b*². Dark lateral band black and strongly marked.
- a*³. Horns abruptly hooked inwards at the ends. (Abyssinia.)
96. *G. tilonura*.
- b*³. Horns not abruptly hooked at end.
- a*⁴. No nose-spot; face uniform rufous.
- a*⁵. Size smaller. (Senegambia.) . . . 97. *G. rufifrons*.
- b*⁵. Size larger. (Algeria.) . . . 98. *G. rufina*.
- b*⁴. Nose-spot black. (Masailand.) . . . 99. *G. thomsoni*.
- U*. Dark colour of back more or less invaded by white of rump.
- a*². A dark pygal band present.
- a*³. Dark colour of back continued in middle line on to the top of the tail. Size smaller. (E. African Coast.)
100. *G. petersi*.
- b*³. Dark colour of back shut off from tail, which is enclosed in the white anal disk. Size larger.
- a*⁴. Dark lateral bands obsolete, or, in youth, present below the light lateral band only. (Interior of East Africa.)
101. *G. granti*.
- b*⁴. Dark bands present both above and below the light lateral band, uniting with each other behind. (Northern British E. Africa.) 102. *G. notata*.
- b*². No dark pygal band.
- a*³. Tail black-tipped. Horns hooked inwards. (Abyssinian Coast and Somaliland.) 103. *G. soemmerringi*.
- b*³. Tail all white, or merely tipped with fawn. Horns hooked upwards and forwards.
- a*⁴. Neck and anterior back alone rufous; lines of demarcation indistinct. (Kordofan.) 104. *G. ruficollis*.

- b*⁴. Rufous extending over body and flanks, well defined from the white.
- a*⁵. Sides of thighs white, the rufous of body not joining that of hind legs. (Senegal.) . . . 105. *G. dama*.
- b*⁵. Sides of thighs and legs rufous, continuous with that of body. (Morocco.) 106. *G. mhorr*.





Wolf del., Smit lith.

The Tibetan Gazelle .
GAZELLA PICTICAUDATA .

Published by R.H. Porter

Hanhart imp.

82. THE TIBETAN GAZELLE.

GAZELLA PICTICAUDATA (HODGS.).

[PLATE LII.]

- Procapra picticaudata*, Hodgs. J. A. S. B. xv. p. 334, pl. ii. (1846), xvi. p. 696 (1847); Blyth, J. A. S. B. xvi. p. 725 (1847); Gray, P. Z. S. 1850, p. 116; Horsf. Cat. Mamm. Mus. E. I. C. p. 169 (1851); Gray, Cat. Ung. B. M. p. 55 (1852); Hooker, Himalayan Journ. ii. p. 157 (1854); Adams, P. Z. S. 1858, p. 523; Gerr. Cat. Bones Mamm. B. M. p. 232 (1862); Blyth, Cat. Mamm. Mus. As. Soc. p. 173 (1863); Gray, P. Z. S. 1867, p. 245, fig. (skull); Fitz. SB. Wien, lix. p. 161 (1869); Kinloch, Large Game Shooting, p. 10 (1869); Blanf. J. A. S. B. xli. pt. 2, p. 39 (1872); Gray, Cat. Rum. B. M. p. 38 (1872); id. Hand-l. Rum. B. M. p. 105 (1873); Przewalski, Mongolia (Russian ed.), pl. i. figs. 2 & 3 (♂ ♀) (1875); Blanf. P. Z. S. 1876, p. 634; Jent. Cat. Ost. Leyd. Mus. (Mus. Pays-Bas, ix.) p. 136 (1887); id. Cat. Mamm. Leyd. Mus. (op. cit. xi.) p. 167 (1892).
- Antilope picticaudata*, Wagn. Schr. Säug. Suppl. v. p. 408 (1855); Przewalski, Mongolia (Morgan's Engl. Transl.), ii. p. 208 (1876).
- Gazella picticaudata*, Brooke, P. Z. S. 1873, p. 547; Sternd. Mamm. Ind. p. 467 (1884); W. Scl. Cat. Mamm. Ind. Mus. ii. p. 161 (1891); Blanf. Faun. Brit. Ind., Mamm. p. 529 (1891); Flow. & Lyd. Mamm. p. 342 (1891); Ward, Horn Meas. (1) p. 120 (1892), (2) p. 161 (1896); Blanf. P. Z. S. 1893, p. 449; Lyd. Horns and Hoofs, p. 183 (1893); Percy, Badm. Big Game Shooting, ii. p. 342 (1894).

VERNACULAR NAMES:—*Ragoa* and *Goa* (Hodgson); *Ata-dzeren* (Przewalski); all of the Tibetans.

Height at withers about 25 inches. Fur close and thick. General body-colour pale fawn, darkening posteriorly and becoming almost rufous brown along the edges of the white anal patch. No lateral nor pygal bands. Face without any trace of the ordinary Gazelline markings, coloured like the body, or the top of the muzzle sometimes brown; hairs on the sides of the muzzle

elongated, so as to form a sort of lateral tuft, which extends backwards under the eyes. Ears short, narrow, pointed, well haired, coloured like the body. Rump with a prominent white patch surrounding the base of the tail. Tail quite short, projecting little beyond the fur, its end black or dark fawn. Limbs white or very pale fawn; no knee-tufts.

“In the summer the coat is short and of a slaty grey colour” (*Brooke*).

Skull rather broad in proportion to its length. Anteorbital fossæ practically obsolete. Nasals broad behind, evenly tapering forwards. Basal length 6·4 inches, greatest breadth 3·75, muzzle to orbit 4·0.

Horns slender, of median length, much compressed laterally, very closely ringed. With the exception of their tips (2–3 inches), after starting vertically, they curve evenly and strongly backwards, diverging laterally but little. Tips gently curved upwards and slightly inwards, reapproaching each other above to a certain extent.

Female. Similar to the male but without horns.

Hab. Plateau of Tibet and adjoining districts of Central Asia.

Like many other Himalayan and Tibetan animals this Antelope first became known to science from the researches of the great Indian naturalist and antiquarian, Bryan Houghton Hodgson, British Resident at the capital of Nepal. Hodgson described it in 1846, in the ‘Journal of the Asiatic Society of Bengal,’ as *Procapra picticaudata*, and gave a very recognizable figure to accompany his letterpress. He wrote of it as follows:—

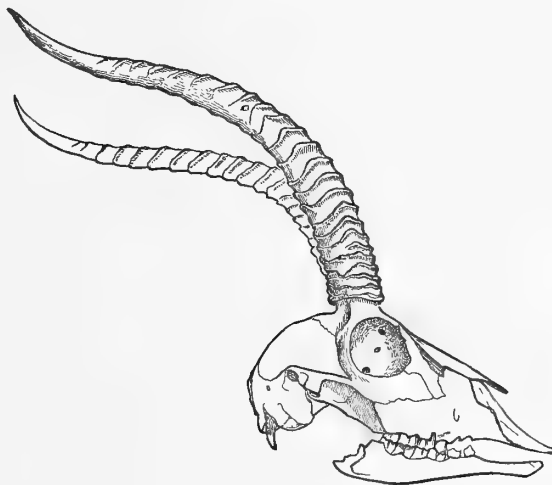
“The exceedingly graceful little animal, which is the subject of our present description, is called by the Tibetans Rágóá, or Góá simply, and they allege that it is found generally throughout the plains of middle and eastern Tibet. But those plains, it must be remembered, are, for the most part, broken by deep ravines or low bare hills, and it is in such situations, more especially, that the Góá dwells, either solitarily or in pairs, or at most in small families, never in large flocks. The species is said to breed but once a year, and to produce ordinarily but one young one at birth, rarely two; and it is added that it browses rather than grazes, preferring aromatic shrubs and shoots to grass, of which latter, indeed, its habitat is nearly void. I have not heard that the Góá is ever tamed, but it is killed for the sake of its flesh, which is esteemed excellent, and is free from all caprine odour, even in the mature males.”

Hodgson also entered into the structural peculiarities of this Antelope, which he described at full length. It is quite evident that, as pointed out by him, the present Gazelle, as also the two allied species (*G. przewalskii* and

G. gutturosa), present certain points of difference from the rest of the group, and that there was, therefore, some justification for Hodgson's proposal of the generic term "*Procapra*," although we do not think it necessary to use it. These three species agree among themselves in the females not possessing horns, in the absence of anteorbital glands, and the corresponding absence of a fossa in the skull, in having no brushes on the knees, and in several other characters, which show that they are really more closely connected to each other than to the more typical Gazelles. Nevertheless we think that, on the whole, it is best to include them in the genus *Gazella*, as no one of these characters is absolutely confined to them. Thus *G. subgutturosa*, often, though wrongly, placed with them, has no horns in the female, while in other characters it is a true *Gazella*, and several species besides these three are without knee-brushes, while the anteorbital fossæ in others are so shallow as to be practically non-existent.

Soon after his discovery of the Goa, Hodgson forwarded specimens of it

Fig. 54.



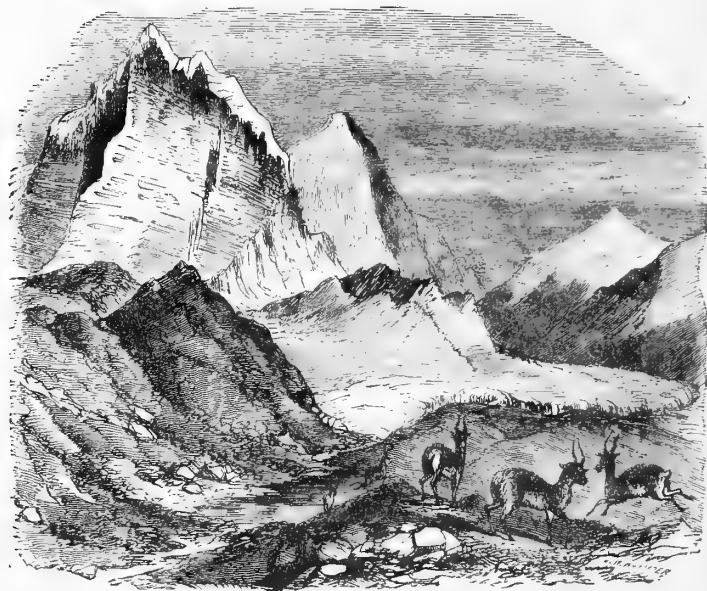
Skull and horns of the Tibetan Gazelle.
(P. Z. S. 1867, p. 245.)

to the British Museum, and the species was included in Gray's catalogues as *Procapra picticaudata*. Under this name also Gray figured a skull and pair of horns of this Gazelle in 1867, in order to point out its differences from the

allied Asiatic form, *Gazella gutturosa*. This figure (fig. 54, p. 73), by the kind permission of the Zoological Society of London, we are now able to reproduce.

In October 1849, Sir Joseph Hooker, as related in his 'Himalayan Journals' (ii. p. 157), met with the Goa feeding on the short grass near the Cholamoo Lake in Sikim, at an elevation of 17,000 feet above the sea-level, and in other adjoining localities on the Donkia Pass between Sikim

Fig. 55.



Goa Antelopes on the Donkia Pass.
(Hooker's 'Himalayan Journals,' ii. p. 139.)

and Tibet. Through his kindness and that of his publishers we are enabled to introduce the illustration of this striking scene (fig. 55) prepared for his well-known work.

Other travellers and sportsmen have also noticed the Goa or Tibetan Gazelle in Ladak and on the frontiers of Tibet. But by far the most complete account of the habits and ways of life of this Antelope is that given by Major-General Kinloch in the various editions of his excellent work on Large-Game Shooting in Tibet.

To the east of Ladak, General Kinloch tells us, in the country that lies between the Upper Indus and the Sutlej, are vast expanses of undulating

hills and valleys of great elevation utterly destitute of forest and with but scanty indications of vegetation. The greater part of these wild uplands would appear at first to be a perfect desert, but, as a matter of fact, on closer inspection, it will be found that there is hardly a slope, however rocky, or an expanse of sand, however thirsty-looking, where an occasional tuft of grass or bunch of sweet-scented herb may not be found, while wherever streams of water exist their banks are often ornamented by the greenest of turf and studded with flowers of the most brilliant hues. This bleak country, General Kinloch continues, the elevation of which varies from 13,000 to 18,000 feet, is the home of the Goa, which is to be found there scattered about in small parties usually varying from two or three to about a dozen in number, and in certain localities is decidedly plentiful. They are not generally very shy, but will seldom allow the hunter to approach openly within shot.

In 1866 General Kinloch made an expedition to the Tsomoriri Lake in this district, mainly with a view of hunting the Goa. We subjoin an account of his adventures, extracted from his work :—

“ In 1866 I went to the Tsomoriri Lake and Hanlé, the Goa being one of my principal inducements to go there. I was accompanied by a friend, and on the 2nd of June we pitched our camp at the corner of the lake and ascended the plateau above. We had not gone far before we discovered some animals feeding at a distance, and the telescope showed them to be Goa. We made a most careful stalk, and got within easy shot, but the small size of the animals deceived us in our estimate of distance, and we both missed. Soon afterwards we saw some more Goa, but I again missed a fair chance. We then separated, but I could see nothing for a long time ; at length I caught a glimpse of the heads of two or three Goas just as they were disappearing over a ridge ; I followed them, and shot a doe through the body as it was galloping away. A greyhound which I had with me gave chase, and ran into it after a long course. The next day I determined to kill a buck, so I ascended the plateau very early in the morning ; I soon discovered some Goa at a great distance, but after stalking to within seventy yards, I found that they were all does and young ones. I therefore would not fire at them, but lay watching the graceful little animals with much interest. Before long they caught sight of me, but being unable to make me out distinctly, they advanced towards me, occasionally rising on their hind legs to obtain a better view. I at length arose and showed myself, upon which they made off. Further on I found some does, and shortly afterwards three bucks, but in a place where they could not be stalked, so I sent a man round to drive them. The driver failed, the Goas going off in the wrong direction, but the man who went after them informed me that he had seen five others, and pointed out the direction in which they had gone. I crossed the plain, and saw them on the slopes at the other

side, and after a *détour*, found myself on the hill-side straight above them. I watched them for some time as they fed along the foot of the hill : at last they approached a deep but narrow ravine which ran down the hill ; I entered this, which afforded me capital cover, and on reaching the plain and looking over the bank, I saw the Goas quietly feeding within about a hundred yards. Resting my rifle on the bank, I fired very steadily at the best buck, but to my surprise missed with both barrels, owing to over-estimating the distance. Dropping behind the bank, I reloaded, and on again looking over was astonished to see the Goas still feeding in the same place. I was more successful this time, wounding one with the first barrel, and killing another with the second. Even now the Goas did not move far, and I had time to fire two more bullets, which, however, missed. Meanwhile I had sent a man to bring my dog, and on his arrival I slipped him at the Goas, but the wounded one seemed to recover completely, and it soon distanced the greyhound. The one I had killed had a very beautiful pair of horns."

Besides the experiences of the travellers and sportsmen from the Indian side, the only published record concerning the Tibetan Gazelle, so far as we know, is that of the great Russian explorer Przewalski, who, after treating of the "Orongo" of Northern Tibet (*Pantholops hodgsoni*), mentions the present species as being found in the same district, and there known to the Mongols as "Ata-dzeren," or Little Antelope *. Przewalski, who met with this animal near the headwaters of the Tatong-gol, in Northern Tibet, and, as he believes, also in the highlands of Kan-su in China, describes its habits as follows :—

"Like the Orongo it frequents elevated plains, preferring, however, the valleys in the mountains where water is abundant. Yet its habits are very different from the Orongo's, and it is without exception the most graceful and the swiftest of the antelopes of Mongolia and Northern Tibet. It generally moves in small herds of from five to seven (seldom as many as twenty), though solitary males are often seen. It is extremely wary, especially in those districts where it has learnt to fear man ; on the banks of the Muruiussu it is a little less timid. Its swiftness is amazing ; it bounds along like an india-rubber ball, and when startled seems absolutely to fly. During their breeding-season, which begins towards the close of December and lasts a month, the males chase one another from their herds, but we never saw them fighting like the Orongo, nor did we ever hear them utter any sound other than a snort on seeing a man ; and the does when startled gave a short loud cry. They scrape themselves trenches a foot deep, in which they lie at night (and probably during the day), and in these we found heaps of their droppings.

"This little antelope is more difficult to shoot than the Orongo, besides being much scarcer and extremely tenacious of life. Its ashy-grey colour, exactly resembling the

* Przewalski's 'Mongolia,' Morgan's Translation, ii. pp. 208 *et seqq.*

soil, renders it almost invisible at a distance, and it is only by its conspicuous white rump, and its snort, that you are able to discover its presence."

There are many specimens of this Antelope in the British Museum presented by Mr. Hodgson, amongst which is the type of the species. There are also in the National Collection skulls from Kumaon and other localities presented by Mr. A. O. Hume, C.B.; from the Changchenmo Valley, Ladak, presented by Mr. R. Lydekker; and from the confines of Tibet north of Sikim, collected by Mandelli and presented by Dr. W. T. Blanford, F.R.S.

There is also a good series of specimens of this Gazelle in the Museum of the Academy of Sciences of St. Petersburg, obtained by the Russian explorers in Northern Tibet and in the mountains of Nan-shan.

Our figure (Plate LII.), which has been put on the stone by Mr. Smit from a sketch prepared for Sir Victor Brooke by Mr. Wolf, represents a male and two females of this species, probably the specimens in the British Museum.

January, 1898.





J Smut del, et lith.

Przewalski's Gazelle .
GAZELLA PRZEWALSKII .

Published by R H Porter

Hanhart imp.

83. PRZEWALSKI'S GAZELLE.

GAZELLA PRZEWALSKII, BÜCHN.

[PLATE LIII.]

- Antilope gutturosa*, Przewalski, Mongolia (Russian ed.), p. 18, pl. i. fig. 1 (♂) (1875);
 id. op. cit. Morgan's Engl. Transl. i. pp. 20 & 28 (1876).
Antilope cuvieri, Przewalski, Cat. Coll. (Russian) p. 110 (1888) (*nec* Ogilb.).
Gazella przewalskii, Büchn. Mélang. Biol. xiii. p. 164 (1890).

VERNACULAR NAME :—*Dzéren* of Mongols (*Przewalski*)—applied to all the Gazelles of Central Asia.

Size rather greater than in *G. picticaudata*. General colour deep fawn in summer, pale finely grizzled fawn in winter. Sides of neck (at least in winter) and top of muzzle slaty brown; no ordinary gazelline face-markings. Ears short, acutely pointed*; coloured like the back. Rump with the white of the anal region running up on to the upper surface, divided in its centre by a narrow fawn-coloured line running from the back on to the tail. Tail very short, hidden in the fur; fawn along its top, inconspicuously pale brown at its tip. Front of limbs more or less brownish; no knee-tufts.

Skull short and stoutly built. No anteorbital fossæ. Nasals broad and short; premaxillæ not reaching up to the latter, the nasal opening unusually large and broad. Basal length of an adult male 7 inches, greatest breadth 3·8, muzzle to orbit 4.

Horns of median length and thickness, much compressed laterally; with the exception of their terminal two inches, they are evenly curved backwards

* Owing to the Plate having been drawn from winter skins, in which the ears are thickly covered with hair, this character is not properly shown in the figures.

and divergent outwards, the divergence increasing above; tips abruptly hooked inwards and slightly upwards, at a sharper angle with the rest of the horn than a right angle.

Female. Similar to the male, but without horns.

Hab. Mongolia; Koko Nor, northern part of Kan-su, and Ordos.

Przewalski's Gazelle, which has been most appropriately named after the famous explorer who discovered it, was first described and figured by Przewalski himself in 1876, but erroneously confounded with the allied form *G. gutturosa*. Twelve years later, it appears, Przewalski discovered his error, and proposed to rename the animal *Antilope cuvieri*. But this specific term properly belongs to another species which had been described by Ogilby many years previously. Under these circumstances Dr. Büchner in his account of the Mammals of the Kan-su Expedition of Messrs. Potanin and Beresowski, proposed that this Gazelle should in future be known as *Gazella przewalskii*—Przewalski's Gazelle.

In the English translation of Przewalski's 'Mongolia' the habits of this species are described as follows:—

“These antelopes are gregarious, their herds sometimes numbering several hundreds or even thousands in those parts where food is plentiful, but they are most frequently seen in smaller numbers of from fifteen to thirty or forty head. Although they avoid the neighbourhood of man, they always select the best pasturages of the desert, and, like the Mongols, migrate from place to place in search of food, sometimes travelling great distances, especially in summer, when the drought drives them to the rich pasture-lands of Northern Mongolia, and as far as the confines of Trans-Baikalia. The deep snows of winter often compel them to travel several hundred miles in search of places almost or entirely free from snow. These animals belong exclusively to the plains, and carefully avoid the hilly country, but sometimes appear in the undulating parts of the steppe, particularly in spring, attracted by the young grass, which shoots up under the influence of the sun's warmth. They shun thickets and high grass, excepting at the time of parturition, which is in May, when the doe seeks the covert to conceal her new-born offspring. But a few days after their birth the fawns follow their mothers about everywhere, and soon rival the fleet-footedness of their sires. They very seldom utter any sound, though the males occasionally give a short loud bleat. Nature has endowed them with excellent sight, hearing, and smell; their swiftness is marvellous and their intelligence well developed, qualities which prevent their falling so easy a prey as they otherwise would to their enemies—man and the wolf.

“The Mongols, armed with their poor matchlocks, hunt the dzerens in the following way. In those parts of the steppe where these antelopes abound they dig small pits at

certain distances apart. These holes at first excite mistrust, so the animals are left alone for some weeks to get used to them. The hunters then repair to their allotted stations, and conceal themselves in the pits, while others make a wide circuit to windward and drive the herd towards the ambush. No gun is fired till they are within a distance of fifty paces or even less. The drivers must know their business and be thoroughly familiar with the habits of the animal, otherwise their labour will be lost. They must never gallop suddenly up to the herd—because if they do the antelopes almost always escape. The usual plan is to make a circuit round the herd, slowly narrowing the circle with repeated halts, or else to ride on one flank at a foot's pace, gradually edging the herd towards the ambush.

“Towards the end of summer the dzerens are very fat, and are eagerly hunted by the Mongols for the sake of their delicate flesh, and also for their skins, which are made into winter clothing. The nomads, however, rarely wear the skins themselves, but sell them to Russian merchants at Urga and Kiakhta. Dzerens are also snared in traps made in the shape of a shoe of tough grass. When caught by the leg in one of these the animal lames itself in its struggles to get free, and becomes unable to move.”

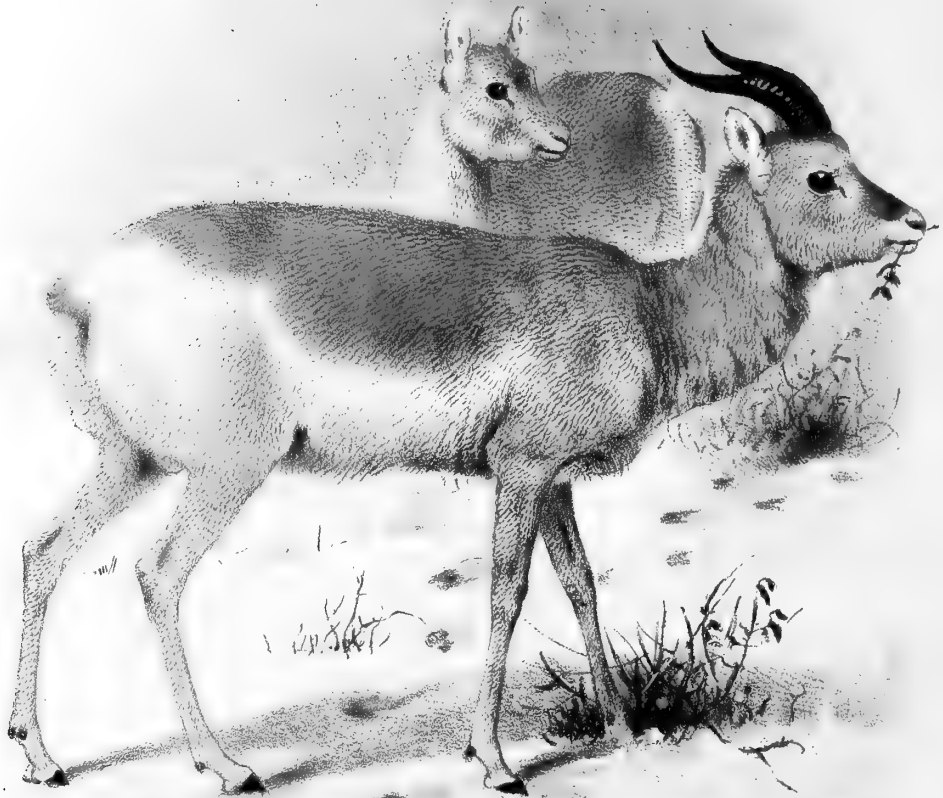
Besides the Russian explorers already mentioned, the only traveller, so far as we are aware, that has met with Przewalski's Gazelle in its native wilds is the well-known explorer Mr. St. George Littledale, F.R.G.S., who brought home a skin and skull of this species from his adventurous journey across Central Asia in 1893, and presented them to the British Museum. In the narrative of Mr. Littledale's expedition, which is contained in the third volume of the 'Geographical Journal' (p. 465), will be found an allusion to this Antelope as observed by him near the Lake Koko Nor. The north shore of this lake, first seen by Mr. Littledale on the 3rd of August, 1893, was flat and swampy, and there were many of these antelopes feeding on it in company with Wild Asses (*Equus kiang*). In some MS. notes with which Mr. Littledale has kindly favoured us on this subject it is stated that he first saw examples of this Gazelle south of the Nan-Shan mountains in about lat. 38° 30' N. and long. 96° 30' E. On that occasion, he says, they were high up above the party, and nearly all males, but, as Mr. Littledale was then expecting an attack from the Tanguts, he did not like to leave the caravan to try after them. As the valley of the Buhain-Gol (the river which flows into Lake Koko Nor) was descended, the old males became scarcer, and round the lake, where he procured the specimen now in the British Museum, there were large bands of females accompanied by young males.

Besides Mr. Littledale's specimens already mentioned, the British Museum

contains a beautiful pair of this Antelope obtained in exchange from the Museum at St. Petersburg, from which our figures representing both sexes (Plate LIII.) have been prepared by Mr. Smit. It will be observed at once that though in its general form and coloration this species is somewhat similar to *G. picticaudata*, the shape of its horns is quite different, and readily distinguishes this species from its allies.

When at St. Petersburg in August 1897, Sclater had the opportunity of examining, under the kind guidance of Herr Büchner, the fine series of specimens of this Antelope in the Zoological Museum of the Imperial Academy of Sciences of that city. The specimens had been obtained in the region of the Koko Nor, in the most northern part of the Chinese province of Kan-su, and in Ordos, which is the country encompassed by the great northern bend of the River Hoang-Ho. In the southern part of this district Przewalski's Gazelle was met with in great numbers during the Kan-su expedition already mentioned, and many specimens of it were obtained for the Imperial Museum at St. Petersburg.

January, 1898.



Wolf del. J. Smit lith.

The Mongolian Gazelle.
GAZELLA GUTTUROSA.

Hanhart imp.

Published by R. H. Porter

84. THE MONGOLIAN GAZELLE.

GAZELLA GUTTUROSA (PALL.).

[PLATE LIV.]

- Caprea campestris gutturosa*, J. G. Gmel. N. Comm. Petrop. v. p. 347, pl. ix. (1760).
Antilope gutturosa, Pall. Spic. Zool. fasc. xii. p. 46, t. ii. (1777); Zimm. Geogr. Gesch. ii. p. 120 (1780); Herm. Tabl. Affin. Anim. p. 108 (1783); Bodd. Elench. Anim. p. 143 (1785); Schreb. Säug. pl. cclxxv. (1787); Gmel. Linn. S. N. i. p. 186 (1788); Kerr, Linn. An. K. p. 310 (1792); Donnd. Zool. Beytr. i. p. 627 (1792); Latham & Davis, Faunula Indica, p. 4 (1795); Link, Beytr. Nat. ii. p. 99 (1795); Bechst. Uebers. vierf. Th. ii. p. 645 (1800); Shaw, Gen. Zool. ii. pt. 2, p. 342 (1801); Turt. Linn. S. N. i. p. 113 (1802); G. Cuv. Dict. Sci. Nat. ii. p. 228 (1804); Desm. N. Dict. d'H. N. (1) xxii. p. 499, xxiv. Tabl. p. 33 (1804); Pall. Zoogr. Ross.-As. i. p. 251 (1811); Licht. Mag. nat. Freund. Berl. vi. p. 171 (1814); G. Fisch. Zoogn. iii. p. 431 (1814); Afzel, N. Act. Ups. vii. p. 220 (1815); Desm. N. Dict. d'H. N. (2) ii. p. 182 (1816); G. Cuv. Règne Anim. i. p. 260 (1817); Goldf. Schr. Säug. v. p. 1221 (1818); Schinz, Cuv. Thierr. i. p. 387 (1821); Desmoul. Dict. Class. i. p. 441 (1822); Desm. Mamm. ii. p. 452 (1822); H. Sm. Griff. An. K. iv. p. 229, v. p. 336 (1827); Less. Man. Mamm. p. 371 (1827); J. B. Fisch. Syn. Mamm. p. 458 (1829); Oken, Allg. Nat. vii. p. 1267 (1838); Laurill. Dict. Univ. i. p. 615 (1839); Gerv. Dict. Sci. Nat. Suppl. i. p. 260 (1840); Less. N. Tabl. R. A., Mamm. p. 176 (1842); Wagn. Schr. Säug. Suppl. iv. p. 416 (1844), v. p. 408 (1855); Reichenb. Säug. iii. p. 104, pl. xxxi. fig. 180 (1845); Schinz, Syn. Mamm. ii. p. 409 (1845); id. Mou. Antil. p. 11, pl. x. (1848); Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 270 (1847); id. Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 266; Reprint, p. 86 (1848); Gieb. Säug. p. 312 (1853); Radde, Ost-Sibirien, p. 254, pl. xi. fig. 1 (1862); Brehm, Thierl. iii. p. 201 (1880).
- Cerophorus (Antilope) gutturosa*, Blainv. Bull. Soc. Philom. 1816, p. 75.
Cemas gutturosa, Oken, Lehrb. Nat. iii. pt. 2, p. 737 (1816).

- Gazella gutturosa*, Gray, Ann. Mag. N. H. (1) xviii. p. 231 (1846); id. List Ost. B. M. p. 56 (1847); id. Knowsl. Men. p. 3 (1850); Brooke, P. Z. S. 1873, p. 546; Flow. & Lyd. Mamm. p. 342 (1891); Ward, Horn Meas. (1) p. 119 (1892), (2) p. 160 (1896); Lyd. Horns and Hoofs, p. 182 (1893); Percy, Badm. Big Game Shooting, ii. p. 341 (1894).
- Procapra gutturosa*, Gray, P. Z. S. 1850, p. 115; id. Cat. Ung. B. M. p. 54 (1852); Gerr. Cat. Bones Mamm. B. M. p. 232 (1862); Gray, P. Z. S. 1867, p. 244, fig. (skull); Fitz. SB. Ak. Wien, lix. p. 161 (1869); Gray, Cat. Rum. B. M. p. 37 (1872); id. Hand-l. Rum. B. M. p. 105 (1873); Flow. & Gars. Cat. Coll. Surg. ii. p. 266 (1884); Jent. Cat. Ost. Leyd. Mus. (Mus. Pays-Bas, ix.) p. 136 (1887); id. Cat. Mamm. Leyd. Mus. (op. cit. xi.) p. 167 (1892).
- Chinese Antelope*, Penn. Syn. Mamm. p. 35 (1771).
- Antilope tzeiran*, Zimm. Spec. Zool. Geogr. p. 543 (1777).
- Antilope orientalis*, Erxl. Syst. R. A. p. 288 (1777); Gatt. Brev. Zool. i. p. 82 (1780); Desm. N. Dict. d'H. N. (1) xxiv. Tabl. p. 33 (1804).

VERNACULAR NAMES:—*Dzéren* of Mongols, the male *Scharcholdsi*, the female *Ohno*, the kid *Ingdacha*. *Hoang-yang* (Yellow Goat) of Chinese. *Tzonrah* (♂) and *Vgovóh* of Tanguts (*Pallas*).

Size fairly large; height at withers rather over 30 inches; form stout and thick. General colour fawn, paler than in most of the other species, but the rump and sides are white, as is the whole of the limbs. Gazelline face-markings absent; top of the muzzle browner than the rest of the head; sides of the muzzle and cheeks white. Ears short but pointed, thickly furred, their backs pale fawn, nearly white. No lateral bands, either dull or light. No knee-brushes. Tail very short, white, its tip brown.

According to Radde all the parts which are fawn in winter are in summer of an intense isabel-yellow.

Skull long and narrow, with a heavy muzzle. Anteorbital fossæ obsolete. Nasals long and broad. Basal length (in a not fully adult specimen) 9 inches, greatest breadth 4.1, muzzle to orbit 5.5.

Horns short in proportion to the size of the animal; heavily and closely ringed; basally they are parallel to each other, diverging above, with their tips again gently curved in towards each other.

Female. Similar, but without horns.

Hab. Northern and Eastern Mongolia, and southern borders of Russian Transbaikalia.

The great traveller and naturalist, Peter Simon Pallas, whose name we have already often mentioned in the course of this work, was the first technical describer of this Antelope, although he was by no means its discoverer, for he himself quotes previous references to it in the works of older authors. But Pallas, in the Supplement to his memoir on the Antelopes, published 1777, gave us the first scientific description of it, and selected for it the appropriate scientific name *gutturosa*, by which it has been ever since known. According to Pallas, the first Europeans to become acquainted with this Gazelle were the Jesuit missionaries in China, one of whom, Pereira, as quoted by Witsenius, mentions it as a Chinese animal; while Du Halde, in his great work upon China, describes it, under the name "Hoang-yang" or *Capra flava*, as wandering about in large flocks in the deserts of Mongolia. Further accounts of this Antelope were subsequently given by Messerschmidt and Gmelin in the Commentaries of the St. Petersburg Academy. These are also quoted by Pallas, who himself met with this animal on the upper course of the River Onon, on the southern frontiers of Transbaikalia. Pallas concludes his history of this species with a lengthened description of its external form and anatomy, and gives an uncoloured figure, in which the peculiar swollen condition of the throat in the male in the breeding-season (whence it was termed *gutturosa*) is correctly shown.

Pallas's posthumous work, 'Zoographia Rosso-Asiatica,' contains little more than a summary of his previous account of this animal.

The numerous authors who followed Pallas added little or nothing to our knowledge of the Mongolian Gazelle, and were content to base their notices of it almost entirely upon his publications. It is not, in fact, until we come to nearly modern days that we obtain any further original information concerning this animal.

Dr. Gustav Radde, now Director of the Museum at Tiflis, made extensive journeys in South-eastern Siberia, under the patronage of the Imperial Geographical Society of Russia, in 1855 and the three following years, and amassed large zoological collections. One of the volumes of his 'Reisen im Süden von Ost-Sibirien,' published at St. Petersburg in 1862, is devoted to an account of the Mammals of South-eastern Siberia, and is, and will long remain, our standard work on this subject. Dr. Radde brought home five good specimens of this Antelope, and commences his account of it with accurate descriptions of its summer and winter pelages. He adds a detailed

description of its skull and dentition, and compares them at length with those of *Gazella subgutturosa*.

As regards its distribution in the present epoch, Dr. Radde points out that, like the Dziggetai (*Equus hemionus*) and the Argali Sheep (*Ovis ammon*), the Mongolian Gazelle has retreated to the south and east from the Russian frontiers since the days of Pallas. There are at present only two places on the southern borderlands of Transbaikalia in which this Antelope remains during the summer and breeds every year. One of these is a district east of the Dsün-tarei which is seldom entered even by the shepherds of the Cossacks. It is an uninhabited and rather mountainous country, without wood or bushes, varied by salt- and some freshwater lakes, and covered only with yellow *Elymus*-grasses. The other district, which is of a similar character, lies north of the left bank of the Argunj, where this river enters into the Russian territories between the border-posts of Sektui and Abagaitui.

Dr. Radde gives the following account of the habits of this animal as observed by himself and as obtained from the reports of the natives in 1856 :—

“About the middle of June the doe produces generally two young ones which remain quiet for three days, but after that are strong enough to follow the mother wherever she goes. If caught when young they quickly become tame. Shortly after my arrival at Zagan-olui in May 1856 I saw a fawn of this Antelope feeding with the sheep and goats without requiring any particular attention.

“In summer these Antelopes are seldom hunted because they are only occasionally to be found, but they are much pursued during the early winter. There are, however, but few good Antelope-hunters, especially amongst the Russians. Various methods are adopted to get within shot. So long as no snow has fallen the Antelopes usually proceed about midday in small flocks to the freshwater lakes, where they break the thin ice with their hoofs in order to drink. They select the same spot every day for this purpose, and there it is that the hunter makes his hiding-place. Driven on to the thin ice, the Antelopes often fall through and thus become an easy prey.

“The ordinary way of hunting these Antelopes requires two sportsmen, one of whom acts as driver for the other. One of the hunters, as soon as he sees the Antelopes at a distance of 4 or 5 versts, lies down flat behind a marmot's hillock, or finds some other hiding-place amongst the grass, and holds his gun ready, whilst the other makes a long circuit and drives the Antelopes towards his companion. The flying Antelopes generally depart in a line; but the old males do not always keep in front, an old female sometimes occupying that position. Pursued by the driver, the frightened animals proceed sometimes at a walk, at other times in a hasty gallop, during which they occasionally utter a sharp clear cry. When they come within range the driver imitates the call of a raven or the howl of a wolf to awake the attention of the animals and

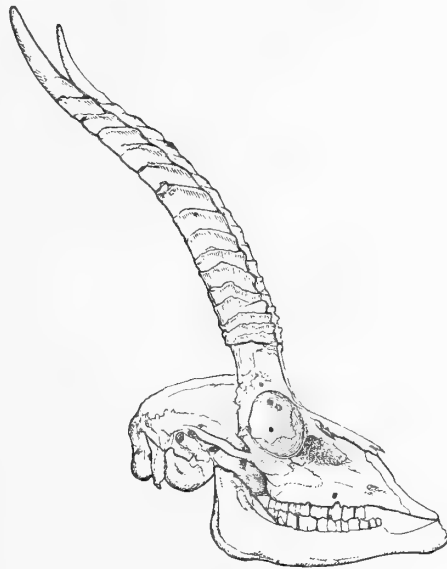
to allow the shooter to choose out his victim more readily. The Tunguts of the Steppes are especially skilled in finding and pursuing the Antelopes, and even the young maidens of these tribes take part in the chase. At one of the border-posts there was a celebrated hunter who in many winters had obtained as many as 200 of these Antelopes, which at this season go about in large herds. They are occasionally so crowded together, as this hunter assured me, that he had sometimes killed three and even four individuals with one bullet.

“In what large numbers this Antelope sometimes assembles I was able to convince myself in October 1856, when I was on the other side of the Argunj in Mongolian territory, for their tracks and their droppings were so numerous that it appeared as if some thousands of sheep had gone by.

“The winter pelts of this Antelope make very warm and durable coats (locally called dachas), which are worn with the hair outside: the hair is not so brittle as that of the Roe. They are valued at about one and a half roubles apiece. The flesh of this Antelope is very palatable and the old bucks in the autumn become extraordinarily fat.”

In 1867 Dr. Lockhart brought home with him from Peking two skulls of

Fig. 56.



Skull and horns of the Mongolian Gazelle.
(P. Z. S. 1867, p. 245.)

this Antelope and presented them to the British Museum. Dr. Gray read some notes on them at a meeting of the Zoological Society of London in

February of that year. These notes were subsequently published in the 'Proceedings,' accompanied by an outline figure of one of the heads, which, by the kind favour of the Society, we are enabled to reproduce. Dr. Lockhart gave to Dr. Gray the following information as to this Antelope:—

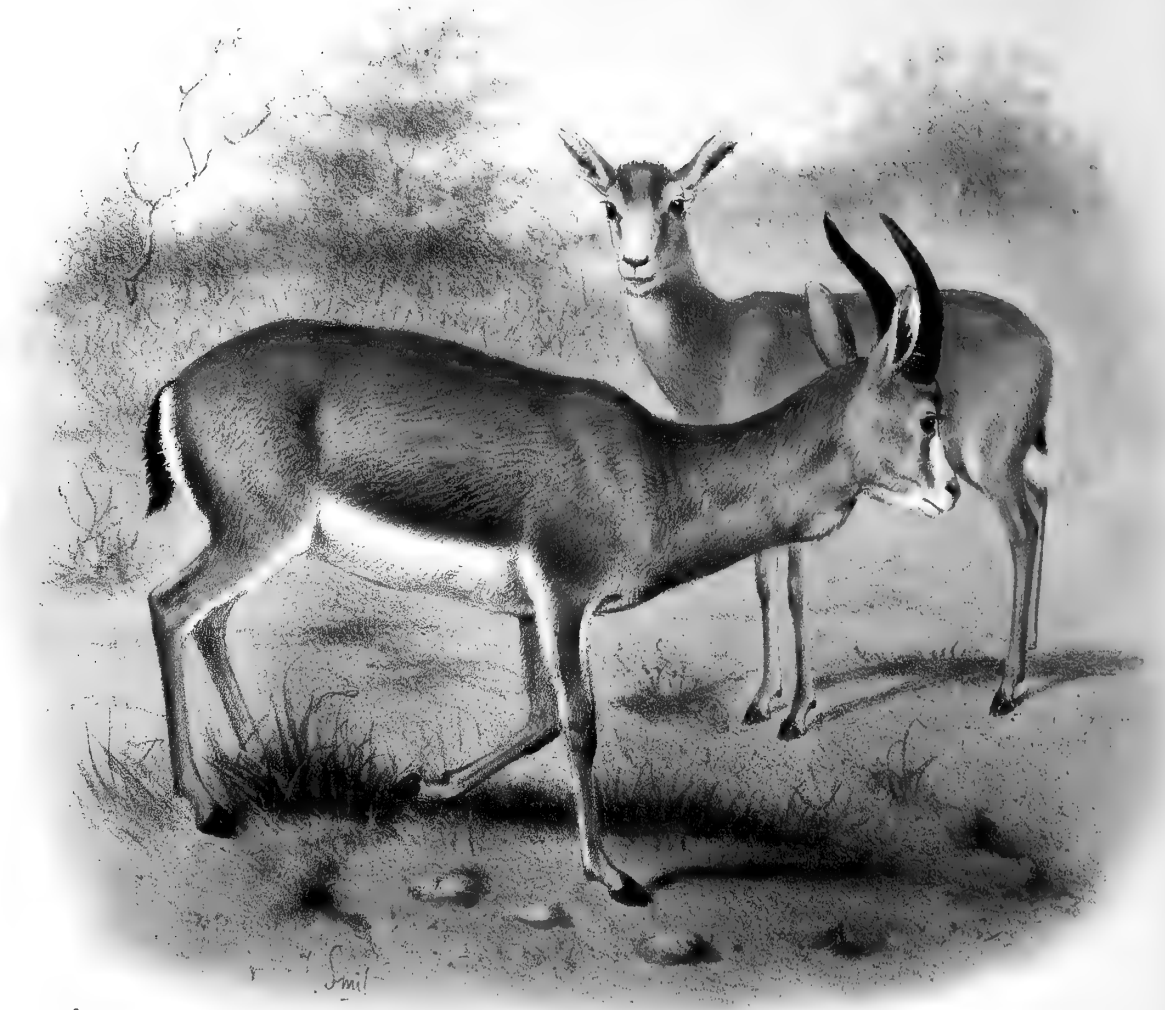
“The animal to which they belong is called *Hwang-Yang*, the Yellow or Imperial Sheep. It is brought into Peking from Mongolia in large numbers in a frozen state, and sold for food. The flesh is much esteemed for its fine flavour and tenderness, and is eagerly purchased both by natives and foreigners.

“The European gentlemen in Peking used to go into Mongolia on shooting-expeditions for the purpose of hunting the *Hwang-Yang*. The animal, however, is very wary and generally keeps a long way out of range, so that the hunters are not very successful. It is considered a great feat to kill one of them.”

Besides an adult stuffed specimen of this species in the British Museum, stated, but probably erroneously, to have come from the Kirghiz Steppes, there are several skins and skulls in the collection obtained by the late Consul R. Swinhoe at Peking, besides the two heads and horns already spoken of as brought home by Dr. Lockhart.

Our illustration (Plate LIV.), which represents both sexes of this Antelope, was put upon the stone by Mr. Smit from a sketch drawn by Mr. Wolf for the late Sir Victor Brooke. We have no record of what were the exact specimens figured.

January, 1898.



J. Smit del. et lith.

The Persian Gazelle.
GAZELLA SUBGUTTUROSA.

Published by R.H. Porter.

Hanhart imp.

85. THE PERSIAN GAZELLE.

GAZELLA SUBGUTTUROSA (GÜLD.).

[PLATE LV.]

Antilope subgutturosa, **Güld.** Act. Ac. Sc. Imp. Petrop. 1778, pt. i. p. 251 (1780); **Schreb.** Säug. pl. cclxx. B (1785); **Gmel.** Linn. S. N. i. p. 186 (1788); **Kerr**, Linn. An. K. p. 311 (1792); **Donnd.** Zool. Beytr. i. p. 628 (1792); **Link**, Beytr. Nat. ii. p. 99 (1795); **Bechst.** Uebers. vierf. Thierr. ii. p. 645 (1800); **Shaw**, Gen. Zool. ii. pt. 2, p. 343 (1801); **Turt.** Linn. Syst. Nat. p. 113 (1802); **G. Cuv.** Dict. Sci. Nat. ii. p. 227 (1804); **Pall.** Zoogr. Ross.-As. i. p. 252 (1811); **Afzel.** N. Act. Ups. vii. p. 220 (1815); **Desm.** N. Dict. d'H. N. (2) ii. p. 185 (1816); **Goldf.** Schr. Säug. v. p. 1196 (1818); **Desm.** Mamm. ii. p. 454 (1822); **H. Sm.** Griff. An. K. iv. p. 210, v. p. 331 (1827); **Less.** Man. Mamm. p. 373 (1827); **J. B. Fisch.** Syn. Mamm. p. 460 (1829); **Hohenacker**, Bull. Soc. Mosc. 1837, viii. p. 137 (Transcaucasia); **Ménétriés**, Cat. rais. Zool. Caucase, p. 24 (borders of Caspian Sea); **Less.** Compl. Buff. x. p. 287 (1836); **Oken**, Allg. Naturg. vii. p. 1268 (1838); **Gerv.** Dict. Sci. Nat., Suppl. i. p. 261 (1840); **Démidoff**, Voy. Russ. Mérid. iii. p. 61 (1840) (Transcaucasia); **Eichwald**, Faun. Caspio-Caucas. p. 39 (1841); **Less.** N. Tabl. R. A., Mamm. p. 176 (1842); **Wagn.** Schr. Säug. Suppl. iv. p. 406 (1844), v. p. 404 (1855); **Schinz**, Syn. Mamm. ii. p. 402 (1845); **Reichenb.** Säug. iii. p. 114, pl. xxxiv. (1845); **Sund.** Pecora, K. Vet.-Ak. Handl. 1845, p. 269 (1847); **id.** Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 265; Reprint, p. 85 (1848); **Gieb.** Säug. p. 307 (1853); **De Fil.** Viagg. in Persia, p. 344 (1865); **Fitz.** SB. Wien, lix. p. 160 (1869).

Antilope (Gazella) subgutturosa, **Licht.** Mag. nat. Freund. vi. p. 171 (1814).

Cerophorus (Gazella) subgutturosa, **Blainv.** Bull. Soc. Philom. 1816, p. 75.

Gazella subgutturosa, **Gray**, List Mamm. B. M. p. 160 (1843); **id.** Ann. Mag. N. H. (1) xviii. p. 231 (1846); **Hutt.** J. A. S. B. xv. p. 151 (1846) (Candahar); **Gray**,

Knowsl. Men. p. 4 (1850); *id.* P. Z. S. 1850, p. 113; *id.* Cat. Ung. B. M. p. 58 (1852); Temm. Esq. Zool. Guin. p. 193 (1853); Blyth, Cat. Mamm. Mus. As. Soc. p. 172 (1863); Wolf, Zool. Sketches, pl. xxii.; Scl. P. Z. S. 1869, p. 602; Blanf. Zool. Abyss. p. 261, pl. i. fig. 4 (horns) (1870); Gray, Cat. Rum. B. M. p. 38 (1872); *id.* Hand-l. Rum. B. M. p. 107 (1873); Blanf. P. Z. S. 1873, p. 313 (distribution); Brooke, P. Z. S. 1873, p. 545; Przewalski, Mongolia (Russian ed.), pl. i. fig. 2 (1875); *id.* Morgan's Engl. Transl. i. p. 207 (1876); Blanf. E. Persia, ii. p. 91 (1876); Severtz. Ann. Mag. N. H. (4) xviii. p. 170 (1876); Danf. & Alst. P. Z. S. 1877, p. 276 (Tigris); *id.* P. Z. S. 1880, p. 55; Scl. List An. Z. S. (8) p. 141 (1883), (9) p. 155 (1896); Sterndale, Mamm. Ind. p. 466 (1884); Scl. P. Z. S. 1886, p. 2; Scully, J. A. S. B. lvi. pt. 2, p. 76 (1887); Jent. Cat. Ost. Leyd. Mus. (Mus. P.-B. ix.) p. 136 (1887); Thos. Linn. Trans. (2) v. p. 64 (1889); Büchn. Mél. Biol. xiii. p. 160 (1890); W. Scl. Cat. Mamm. Calc. Mus. ii. p. 160 (1891); Blanf. Faun. Brit. Ind., Mamm. p. 528 (1891); Jent. Cat. Mamm. Leyd. Mus. (Mus. P.-B. xi.) p. 168 (1892); Ward, Horn Meas. (1) p. 118 (1892), (2) p. 159 (1896); Lyd. Horns and Hoofs, p. 180 (1893); Percy, Badm. Big Game Shooting, ii. p. 342 (1894); Satunin, Zool. JB. Syst. ix. p. 310 (1896) (Transcaucasia).

"*Antilope dorcas*, var. *persica*, Rüpp.," Gray, List Mamm. B. M. p. 160 (1843).

Gazella subgutturosa, var. *yarkandensis*, Blanf. J. A. S. B. xliv. pt. 2, p. 112; *id.* Yark. Miss., Mamm. p. 88, pl. xv. (1879).

Gazella hillieriana et *G. mongolica*, Heude, Mém. Hist. Nat. Chine, ii. p. 245, pls. xxxvi. & xxxvii. (1894).

VERNACULAR NAMES:—*Dshairan* (*Pallas*), *Ahu* (*Blanford*) of Persians; *Karakeuruk* (=Black-tail) of Khirghiz Tartars (*Pallas*); *Kik* (or *Sai-kik*) and *Tairan* of Turkis of Yarkand (*Blanford*).

Size medium, height at withers about 26–27 inches. General colour dark sandy fawn. Face-markings indistinct, the central band visible in youth gradually interrupted and replaced by white as age advances. Dark facial streaks in front of eyes present, but little defined. An anteorbital gland present. Larynx swollen, forming a peculiar projection in front of the neck. Ears of medium length, pointed, their backs short-haired even in winter, pale fawn. Dark lateral band not, or scarcely, darker than the back, from which it is separated by an indistinct light lateral band. Pygal band present, not strongly marked. Tail 8 or 10 inches long, crested, black. Knee-brushes present, brown or black.

Skull stoutly built; nasals broad and short; anteorbital fossa well marked. Basal length 8 inches, greatest breadth 3·8, muzzle to orbit 4·6.

Horns of medium length, thick, evenly diverging from each other as they curve backwards; their tips decidedly, though not abruptly, bent inwards and slightly upwards.

Female similar to the male, but without horns, or occasionally with minute rudiments of them.

Hab. Western Asia from Asia Minor and Caucasia in the west to Turkestan, Yarkand, and Mongolia in the east.

The Persian Gazelle, as it is commonly called, is by no means restricted to Persia, but, as we shall presently show, has a wide range through the steppes of Central Asia from the borders of Asia Minor to Northern China. It was first made known to science by Anton Gldenstdt, an enterprising Russian traveller and naturalist of the last century, who met with it in 1772 in the course of his explorations of the countries adjacent to the Black and Caspian Seas. Gldenstdt wrote an elaborate description of it in 1878 in a memoir published two years later in the 'Acta' of the Imperial Academy of Sciences of St. Petersburg, and named it "*subgutturosa*," "because its throat protruded slightly, but not so much as in *Antilope gutturosa*." Pallas, who also observed this Antelope during his travels in Central Asia, included it under Gldenstdt's name in his 'Zoographia Rosso-Asiatica.'

After Gldenstdt and Pallas several other Russian naturalists—Hohenacker, Nordmann, and Eichwald—recorded this Gazelle as being met with on the plains of Transcaucasia. Mntris, in his memoir on the Zoology of the Caucasus published in 1832, tells us that at that period it was very common, especially in winter, on the vast steppes bordering the Caspian between Baku and Kur, whence, as Herr Bchner has kindly informed us, it extends up the valley of the Kur nearly to Tiflis. Satunin, our most recent authority on the Mammals of this district, states that he found it throughout the steppes of Eastern Transcaucasia, and especially numerous on the Mugan Steppe. Whether this is the Gazelle found on the upper plains of the Tigris and Euphrates, as reported by Danford from hearsay, seems to be uncertain, though it probably penetrates into the highlands of Asiatic Turkey adjacent to Mount Ararat, and is certainly found in the valley of the Araxes.

In Persia, Dr. Blanford tells us, in his volume on the zoology of that country, *G. subgutturosa* is the Gazelle of the highlands, and is found in

almost all the valleys and plains from about 3000 to about 7000 feet above the sea-level, ranging higher in winter and lower in summer, but keeping generally within the limits mentioned. It is unknown in the plains of Mesopotamia, and on the lower ground along the Persian Gulf and the Arabian Sea.

Dr. Blanford adds the following notes from the pen of the late Sir Oliver St. John, who was very well acquainted with Persia and its animals:—

“This is the common Gazelle of Persia, and is found everywhere away from the forests of the Caspian and the shores of the Persian Gulf, in which last locality it is replaced by another species (probably *G. bennetti*). Like the Wild Ass, it especially affects the neighbourhood of the salt deserts. It appears to retire generally to the valleys at the base of hills to breed, and is most commonly seen in small parties of three to half-a-dozen. I do not remember ever having seen twenty together. The fleetest greyhounds cannot come up with the Gazelle when it gets a fair start, but when suddenly roused from a hollow, or when the ground is heavy after rain, good dogs will often pull down males.”

Dr. Blanford has included this Gazelle in the ‘Fauna of British India,’ because, as ascertained by the late Sir Oliver St. John, it occurs in Pishin north of Quetta, now in British territory, though it is not met with in any other part of the Indian Empire.

Throughout the sandy plains along the northern boundary of Afghanistan this Gazelle is abundant. Dr. J. E. T. Aitchison, who accompanied the Commission for the delimitation of the Afghan boundary in 1884, tells us that it was occasionally seen along the whole route from Quetta to Khusan. In the low hills and great gravel plains of the valley of the Hari-rud they were observed everywhere, but were very wary and difficult of approach. In June 1885, at Chinkilok, to the north-west of Herat, between that city and the range of the Parapomismus, Dr. Aitchison caught a young female Gazelle of this species about a day old, and subsequently, on his way home through Persia, obtained three others of about the same age. These four Gazelles, as we have been told, were carried many hundred miles through Persia in large covered baskets on each side of two camels, and were commonly believed by the natives to be Dr. Aitchison’s four wives, the baskets being of the same fashion as those generally used in that country for the conveyance of women! Dr. Aitchison brought his four pets safely home to the Zoological Society’s Gardens, where they thrived well and bred in 1887, 1888, and in several succeeding years. Two of the males of this

family, born in the Society's Menagerie in 1892 and 1894, are still living there.

According to Herr Büchner, who has kindly supplied us with some valuable notes on the Asiatic Gazelles, this species is found in suitable localities all over the Transcaspian Provinces of Russia, and ranges northwards to the steppes between the Caspian and the Aral, and eastwards to Lake Balkash. Far beyond this it extends across the southern portions of the great Desert of Gobi into the Chinese Provinces of Zaidam, Alaschan, and Ordos.

On crossing the high range north of the Hindu Koosh into Eastern Turkestan a Gazelle very similar to the Persian Gazelle is met with. Six examples of this form were obtained by the naturalists of the Second Yarkand Mission in 1873-74, and were described by Dr. Blanford in his memoir on the Mammals of that Mission. Dr. Blanford says that it is perhaps a question whether the Eastern Turkestan Gazelle should not be raised to the rank of a species. It differs principally from the typical form in the very much darker markings on the face and in the much smaller degree to which the horns diverge. The size appears rather larger than that of the typical Persian form. But as there are some variations in the face-markings of Persian specimens, Dr. Blanford has considered it better to regard the Yarkand race as only a variety, which he has proposed to call *Gazella subgutturosa yarkandensis*. Of this subspecies an excellent coloured figure, drawn by Smit, is given in the above-named work. It represents both sexes, and shows the black markings on the face very distinctly.

As pointed out by Dr. Blanford, it is nearly certain that the Gazelle to which Shaw refers, in his volume on 'High Tartary, Yarkand, and Kashgar' (page 221), as having been brought to him at Yarkand, and of which he says the Yarkand name is "*saikeek*," was of the present species—that is, of the local form *Gazella subgutturosa yarkandensis*.

We have already mentioned the four living examples of this Gazelle brought to London by Dr. Aitchison and presented to the Zoological Society's Collection. These, however, were not the first specimens of this animal brought to England alive. As long ago as 1852 females of the present species were obtained from Bussorah on the Persian Gulf and presented to the Society by Alderman Finnis, and in 1869 examples from the same country were given to the collection by the late Mr. T. K. Lynch, F.Z.S.

Other specimens, mostly from the same country, were received in subsequent years*. The examples of this animal just spoken of as being the first to arrive in England formed the subjects of a beautiful drawing by Mr. Wolf, a coloured lithograph taken from which has been published in the first volume of Wolf and Sclater's 'Zoological Sketches' (plate xxii.).

Our figures of this species for the present work (Plate LV.) have been prepared by Mr. Smit from the descendants of the animals brought by Dr. Aitchison from Northern Persia, now living in the Society's Gardens.

The series of specimens of this species in the British Museum comprises a skull from near Ispahan in Persia, presented by Dr. W. T. Blanford, F.R.S.; a head-skin and some horns from Gulran and Galicha, on the Afghan frontier, collected by Dr. Aitchison during the Afghan Boundary Commission; and some skins and skulls from the Saiar Mountains, Altai, presented by Mr. St. George Littledale. There are likewise a skin from the River Aksu, in Chinese Turkestan, presented by Major C. S. Cumberland, and several fine skulls and pairs of horns from the plains of Yarkand, obtained by the late Mr. Dalgleish, and presented to the Museum by Mr. A. C. Hume, C.B. All these last-named specimens represent the Yarkand subspecies, *Gazella subgutturosa yarkandensis*.

January, 1898.

* See List Vert. An. Z. S. 1883, p. 141.



J. Smit del et lith.

The Marica Gazelle.
GAZELLA MARICA.

Published by A. H. Porter.

Hanhart imp.

86. THE MARICA GAZELLE.

GAZELLA MARICA, THOS.

[PLATE LVI.]

Gazella bennetti, Sci. List Vert. An. Z. S. 1896, p. 155, ex. f. (*err.*).

Gazella marica, Thos. Ann. Mag. N. H. (6) xix. p. 162 (1897).

VERNACULAR NAME :—*Reem* of Arabs of Nejd (*Jayakar*).

Closely allied to *G. subgutturosa*, with which it shares the substitution of white for the dark colour of the central facial band, the general plan of coloration, and the curvature of the horns. Size, however, very markedly smaller. General colour pale fawn. Facial markings almost obsolete; when distinguishable they are only of the general body-colour and very slightly defined from the paler bands between them. Ears long, their backs whitish fawn. Pale lateral band scarcely visible; dark lateral band and pygal band pale brown, little marked, scarcely darker than the dorsal colour. Limbs whitish throughout; distinct knee-tufts present.

Skull and horns, so far as the male is concerned, very much as in *G. subgutturosa*, although much smaller. Basal length of skull (in an old male) 6.1 inches, greatest breadth 3.15, muzzle to orbit 3.45.

Female. Similar, but horns only from 3 to 5 inches in length, slender, straight or slightly curved.

Hab. Arabian Desert, from Nejd in Central Arabia to Western Oman.

This little Gazelle is a recent discovery of Surgeon Lieut.-Col. A. S. G. Jayakar, C.M.Z.S., who has been for many years resident at Muscat in the service of the British Indian Government. Surgeon Jayakar, whose magni-

ificent collections of Muscat fishes are known to all ichthyologists, has during the past years collected and presented to the National Museum several consignments of mammals from this little-known country. Of these Thomas published an account in the 'Proceedings' of the Zoological Society for 1894, the most remarkable of them being a new Wild Goat, from the Akhdar Range behind Muscat, which was named *Hemitragus jayakari* after its discoverer. In 1897 the British Museum received from Surgeon Jayakar another consignment of mammals collected at Muscat within the previous two years. In this last series, besides the Oman specimens which were referable to species already recorded in Thomas's paper, there were several skins and skulls of the present Gazelle, obtained from the Nejd or Nedsched Desert in the interior of Arabia. Thomas established his *Gazella marica* upon these examples.

In a letter addressed to Thomas, Dr. Jayakar says that four of the "Reem Gazelles" were from the Nejd Desert and one from Dahireh, the north-western district of Oman. "It is probable," he continues, "that the species extends down to the desert behind Oman, as that is continuous with the Nejd Desert." Surgeon Jayakar subsequently presented to the Museum a sixth (female) specimen from Aboor near Adam in Oman.

The Marica Gazelle is clearly a close relative of the Persian Gazelle, which it seems to represent in Arabia. But it is considerably smaller in size, paler in colour, and is nearly free from face-markings, besides having horns in the female sex. This last point is interesting, as it shows how little importance, in a generic sense, should be attributed to the presence or absence of horns in the female of an Antelope; for it appears that this species, in which the horns are present in the female, is unquestionably more nearly related to one in which the horns are absent in the female than to the group of *Gazella dorcas*, in which the horns are developed in both sexes.

In February, 1892, the Zoological Society of London received as a gift from Lt.-Col. Talbot, then British resident at Muscat, along with a Beatrix Antelope (*Oryx beatrix*), a small female Gazelle, with the information that it had been obtained from the Bahrein Islands, in the Persian Gulf. Sclater was at first much puzzled to give a name to this Gazelle, but after some hesitation came to the conclusion that it might be a small female of the Indian *Gazella bennetti*, which is known to extend along the coast of Baluchistan nearly to

the Persian Gulf, and accordingly entered it in the Society's Register* under that name. This animal, however, which is still living in the Society's Gardens, is undoubtedly a female of the present species. On reference to the late Theodore Bent's paper on the Bahrein Islands (P. R. G. S. xii. p. 8, 1890) it will be found stated that on the desert which occupies the greater part of the largest island of the group "a small Gazelle is abundant," and is often hunted by the Bahreini Arabs with hawk and hounds. There can be little doubt that this Gazelle is *G. marica*.

Our illustration of the Marica Gazelle (Plate LVI.) has been taken by Mr. Smit from the typical specimen from Nejd in the British Museum, and represents an adult male.

January, 1898.

* See P. Z. S. 1892, p. 711.



Wolf del J Smit lith.

The Dorcas Gazelle.
GAZELLA DORCAS.

Published by R.H. Porter.

Hanhart imp

87. THE DORCAS GAZELLE.

GAZELLA DORCAS (LINN.).

[PLATE LVII.]

- Gazella africana, cornibus brevibus*, Ray, Quadr. p. 80 (1693), whence
Capra dorcas, Linn. Syst. Nat. (10) i. p. 69 (1758), (12) i. p. 96 (1766).
Antilope dorcas, Pall. Spic. Zool. i. p. 11 (1767), xii. p. 15 (1777); Müll. Natursyst.
 Suppl. p. 54 (1776); Erxl. Syst. R. A. p. 285 (1777); Zimm. Spec. Zool. Geogr.
 p. 543 (1777); id. Geogr. Gesch. ii. p. 117 (1780); Gatt. Brev. Zool. i. p. 82
 (1780); Herrm. Tab. Aff. Anim. p. 108 (1783); Schreb. Säug. pl. cclxix. (1785);
 Bodd. Elench. Anim. p. 142 (1785); Gmel. Linn. S. N. i. p. 187 (1788); Kerr,
 Linn. An. K. p. 313 (1792); Donnd. Zool. Beytr. i. p. 630 (1792); Link, Beytr.
 Nat. ii. p. 99 (1795); G. Cuv. Tabl. Élém. p. 163 (1798); Bechst. Uebers. vierf.
 Thierr. ii. p. 644 (1800); Lac. Mém. de l'Inst., Sci. Phys. iii. p. 498 (1801);
 Shaw, Gen. Zool. ii. pt. 2, p. 350 (1801); Turt. Linn. S. N. i. p. 113 (1802);
 G. Cuv. Dict. Sci. Nat. ii. p. 225 (1804); Desm. N. Dict. d'H. N. (1) xxiv.
 Tabl. p. 32 (1804); Tied. Zool. i. p. 409 (1808); Licht. Mag. nat. Freund.
 vi. p. 168 (1814); G. Fisch. Zoogn. iii. p. 426 (1814); Afz. N. Act. Ups. vii.
 p. 220 (1815); Blainv. Bull. Soc. Philom. 1816, p. 75; Desm. N. Dict. d'H. N.
 (2) ii. p. 183 (1816); G. Cuv. Règne Anim. i. p. 259 (1817); Schinz, Cuv.
 Thierr. i. p. 386 (1821); Desm. Mamm. ii. p. 453 (1822); Desmoul. Dict. Class.
 d'H. N. i. p. 440 (1822); Less. Man. Mamm. p. 372 (1827); H. Sm. Griff.
 An. K. iv. p. 212, v. p. 332 (1827); J. B. Fisch. Syn. Mamm. p. 459 (1829);
 Less. Compl. Buff. x. p. 286 (1836); Oken, Allg. Naturg. vii. p. 1369 (1838);
 Laurill. Dict. Univ. d'H. N. i. p. 614 (1839); Less. N. Tabl. R. A., Mamm.
 p. 176 (1842); Forst. Descr. Anim. p. 386 (1844); Wagn. Schr. Säug. Suppl.
 iv. p. 405 (1844), v. p. 403 (1855); Schinz, Syn. Mamm. ii. p. 398 (1845); Sund.
 Pecora, K. Vet.-Ak. Handl. 1845, p. 267 (1847); id. Hornschuch's Transl.,
 Arch. Skand. Beitr. ii. p. 263; Reprint, p. 83 (1848); Schinz, Mon. Antil.
 p. 3, pl. i. (1848); Gieb. Säug. p. 305 (1853); Heugl. Ant. u. Buff. N.O.-Afr.
 (N. Act. Leop. xxx. pt. 2) p. 5 (1863) (in part); id. N.O.-Afr. ii. p. 99 (1877);
 Brehm, Thierl. iii. p. 205 (1880).
Cemas dorcas, Oken, Lehrb. Nat. iii. pt. 2, p. 737 (1816).

- Dorcas dorcas*, Gray, Med. Repos. xv. p. 307 (1821).
- Gazella dorcas*, Og. P. Z. S. 1836, p. 137; Gray, List Mamm. B. M. p. 160 (1843); id. Ann. Mag. N. H. (1) xviii. p. 231 (1846); id. List Ost. B. M. p. 56 (1847); id. Knowsl. Men. p. 4, pl. iii. (1850); id. P. Z. S. 1850, p. 112; id. Cat. Ung. B. M. p. 55 (1852); Temm. Esq. Zool. Guin. p. 193 (1853); Loche, Cat. Mamm. Algérie, p. 13 (1858); Tristram, Gt. Sahara, p. 387 (1860); Gerr. Cat. Bones Mamm. B. M. p. 232 (1862); Blyth, Cat. Mamm. Mus. As. Soc. p. 172 (1863); Loche, Expl. Alg., Mamm. p. 67 (1867); Fitz. SB. Wien, lix. pt. 1, p. 159 (1869); Gray, Cat. Rum. B. M. p. 38 (1872); id. Hand-l. Rum. B. M. p. 106 (1873); Brooke, P. Z. S. 1873, p. 537; Danf. & Alst. P. Z. S. 1877, p. 276 (Asia Minor); iid. P. Z. S. 1880, p. 55; ScI. List Vert. An. Z. S. (8) p. 140 (1883), (9) p. 154 (1896); Flow. & Gars. Cat. Coll. Surg. ii. p. 263 (1884); Lataste, Mamm. Barb. (Act. Soc. Linn. Bord. xxxix.) sep. cop. p. 171 (1885); id. Mamm. Tunisie, p. 36 (1887); Jent. Cat. Ost. Leyd. Mus. (Mus. Pays-Bas, ix.) p. 136 (1889); W. ScI. Cat. Mamm. Calc. Mus. ii. p. 157 (1891); Ward, Horn Meas. (1) p. 114 (1892), (2) p. 157 (1896); Jent. Cat. Mamm. Leyd. Mus. (Mus. Pays-Bas, xi.) p. 167 (1892); Lyd. Horns and Hoofs, p. 180 (1893); Thos. P. Z. S. 1894, p. 467 (Algeria); ScI. P. Z. S. 1895, p. 523 (Egypt); Pease, P. Z. S. 1896, p. 812 (range in Algeria); Whitaker, P. Z. S. 1896, p. 815 (range in Tunis).
- La Gazelle*, Buff. Hist. Nat. xii. p. 249, pl. xxiii. (1764), whence
- Antilope gazella*, Pall. Misc. Zool. p. 7 (1766); Bodd. Elench. Anim. p. 140 (1785); Kerr, Linn. An. K. p. 316 (1792); Donnd. Zool. Beytr. i. p. 638 (1792); Latham & Davies, Faunula Indica, p. 4 (1795); Bechst. Uebers. vierf. Thierr. ii. p. 642 (1800); Shaw, Gen. Zool. ii. pt. 2, p. 316 (1801); Turt. Linn. Syst. Nat. i. p. 114 (1802) (nec *Capra gazella*, Linn.).
- Le Kevel*, Buff. Hist. Nat. xii. p. 258, pl. xxvi. (1764), whence
- Antilope kevela*, Pall. Misc. Zool. p. 7 (1766); id. Spic. Zool. i. p. 12 (1767), xii. p. 15 (1777); Müll. Natursyst. Supp. p. 54 (1776); Erxl. Syst. R. A. p. 287 (1777); Zimm. Spec. Zool. Geogr. p. 543 (1777); id. Geogr. Gesch. ii. p. 117 (1780); Gatt. Brev. Zool. i. p. 82 (1780); Schreb. Säug. pl. cclxx. (1785); Bodd. Elench. Anim. p. 142 (1785); Gmel. Linn. S. N. i. p. 187 (1788); Kerr, Linn. An. K. p. 313 (1792); Link, Beytr. Nat. ii. p. 99 (1795); Shaw, Gen. Zool. ii. pt. 2, p. 351 (1801); Desm. N. Dict. d'H. N. (1) xii. p. 380 (1803), xxiv. Tabl. p. 33 (1804); G. Fisch. Zoogn. iii. p. 436 (1814); Desm. N. Dict. d'H. N. (2) ii. p. 184 (1816); H. Sm. Griff. An. K. iv. p. 213, v. p. 332 (1827).
- Cerophorus* (*Gazella kevela*, Blainv. Bull. Soc. Philom. 1816, p. 75.
- Cemas kevela*, Oken, Lehrb. Nat. iii. pt. 2, p. 738 (1816).
- Gazella kevela*, Jard. Nat. Misc. (1) vii. p. 208, pl. xxvi. (1842).
- La Corine*, Buff. Hist. Nat. xii. p. 261, pl. xxvii. (1764), whence
- Antilope corinna*, Pall. Misc. Zool. p. 7 (1766); Erxl. Syst. R. A. p. 291 (1777);

Zimm. Geogr. Gesch. ii. p. 118 (1780); Schreb. Säug. pl. cclxxi. (1785); Bodd. Elench. Anim. p. 143 (1785); Gmel. Linn. S. N. i. p. 188 (1788); Kerr, Linn. An. K. p. 313 (1792); Link, Beytr. Nat. ii. p. 99 (1795); Bechst. Uebers. vierf. Thierr. ii. p. 645 (1800); Desm. N. Dict. d'H. N. (1) vi. p. 219 (1803), xxiv. Tabl. p. 33 (1804); G. Fisch. Zoogn. iii. p. 430 (1814); Desm. N. Dict. d'H. N. (2) ii. p. 184 (1816); Goldf. Schr. Säug. v. p. 1193 (1818); H. Sm. Griff. An. K. iv. p. 214, v. p. 333 (1827).

Cerophorus (Gazella) corinna, Blainv. Bull. Soc. Philom. 1816, p. 75.

Cemas maculata, Oken, Lehrb. Nat. iii. pt. 2, p. 738 (1816).

Gazella dorcas sundevalli, Fitz. SB. Wien, lix. pt. 1, p. 159 (1869).

VERNACULAR NAMES:—*Rhozal* or *Hemar* of Arabs of Algeria (*Pease*); *Ghasala* of Arabs (*Tristram*).

Size small; height at withers 21–22 inches. General colour pale fawn, rather variable in tone. Facial markings distinct; central band rufous fawn; streaks from eye to mouth brownish fawn, contrasting with the white bands between them. Ears long, whitish fawn behind. Light lateral band present, but not strongly marked; dark lateral band brown, considerably darker than the back, but not black. Pygal band indistinct. Knee-tufts present.

Skull rather lightly built; nasals narrow; anteorbital fossæ large and deep. Basal length 6.6 inches, greatest breadth 3.35, muzzle to orbit 3.55.

Horns of medium length, but quite different in their shape to those of any other species, although the difference is not very easy to explain. Primarily it may be said that they are flattened laterally, are evenly divergent as they curve backwards, reapproach terminally, and have their tips bent upwards in a well-marked curve. But in addition to this simple curvature, the middle portion of each horn is lyrated outwards, so that the longest diameter of the horn-section above is quite in a different plane to what it is at the base; it is in consequence of this lyration that the horns, apart altogether from the curved tips, reapproach each other terminally, while in all other species such reapproach as occurs is entirely due to the incurving of the tips. The lyration and curvature of the horns are well shown in our figure (p. 108), and a comparison of it with those of *GG. przewalskii*, *marica*, *tilonura*, and *soemmerringi* will show how different the method of terminal approximation is in this species as compared with them.

Female. Similar to the male, but horns slender, slightly curved, from one-half to three-fourths the length of those of the male.

Hab. Morocco and Algeria, and extending through Egypt into Palestine and Syria.

Like other Antelopes known to Linnæus, the Dorcas Gazelle was placed by the great founder of systematic nomenclature in the genus *Capra*, and called *Capra dorcas*. The specific term selected was taken from the Greek, in which language it signifies primarily a wild goat or fawn, and subsequently the name of a woman, being, as we know from a familiar passage in the New Testament, the equivalent of the Syriac "Tabitha." The term "*dorcas*," however, according to good authorities, was also applied to the present animal by Ælian and other ancient writers. Linnæus based his *Capra dorcas* upon the *Gazella africana* of Ray's 'Synopsis of Quadrupeds,' which there can be little doubt was intended for the present species, although it has been supposed by some authors to be rather applicable to the Bubal (*Bubalis boselaphus*).

In his memoir on the Antelopes, published at Berlin in 1767, Pallas placed *Antilope dorcas* eighth in the list, basing it on Buffon's "*La Gazelle*," which it is evident, both from the figure and the description, was taken from a specimen of the present animal.

Besides "*La Gazelle*" in the twelfth volume of his 'Histoire Naturelle,' Buffon also described and figured another Antelope, "*Le Kevel*," of which he does not state the locality. Some authors have been disposed to refer Buffon's Kevel to the larger Antelope of Algeria, which is generally called *Gazella cuvieri*. But Buffon's description of the colour of the face and the length he attributes to the ears, as likewise his phrase that the Kevel is "plus petit que la Gazelle," taken together form conclusive evidence against this view, and there can practically be no doubt that Buffon's "*Kevel*" was a small individual of *Gazella dorcas*.

A third name invented by Buffon for one of the Gazelles, "*La Corine*," has likewise been the source of some confusion. His figure and description were taken from a female animal at one time living in the park of Saint Cloud, but its locality was not given. Owing to the fact that some horns, brought home by Adanson from Senegal, were subsequently referred to Buffon's "*Corine*," the name *Gazella corinna* (founded upon Buffon's "*Corine*") has been sometimes applied to the *Gazella rufifrons* of Senegal. But, so far as we can judge from Buffon's figure and description, the real

type of Buffon's "Corine" must have been merely an ordinary female of *Gazella dorcas*, although there is some difficulty on the subject in consequence of the discrepancy between Buffon's figure and his description. As Thomas has shown in his observations upon this point (P. Z. S. 1894, p. 469), it seems that a wholly satisfactory determination of Buffon's "Corine" is barely possible.

It is manifest, however, that the names "*kevella*" and "*corinna*" cannot be safely assigned to any other Gazelle than *Gazella dorcas*.

The many systematists whose works we have quoted above in our list of synonyms added very little to our knowledge of this Gazelle beyond the fact that it was supposed to be distributed all over North Africa from Morocco to Egypt and to be also found in Palestine and Syria. It is only quite recently that we have ascertained some precise facts respecting the ranges of this and other Gazelles in the countries above mentioned, and even now our information on this subject is by no means perfect.

Commencing with Morocco, there is no doubt, we believe, from the testimony of various travellers, that a small Gazelle of this group does occur in the interior of that country and that it is probably of this species, but we have never had an opportunity of examining Moroccan specimens. In Algeria we have more definite information available.

From the days of Shaw the "Common Gazelle" has been recognized as an inhabitant of the "Barbary States." The French naturalist Loche included it in his catalogue of 1858, but is not clear in distinguishing it from its allied species. Canon Tristram, in the 'Great Sahara,' published two years later, informs us that this Gazelle is found in small troops in every portion of the Sahara, and is the principal large game to be depended on for food, especially in the neighbourhood of the dayats beyond Laghouat, where pasturage is abundant. The fawns are dropped in the early summer, and follow the dam until towards the end of the autumn. The Bedouin gather the droppings, which have a strong aromatic scent, to mix with snuff.

In the pages of the 'Exploration Scientifique de l'Algérie' devoted to Mammals, likewise from the pen of Loche, we find a little more information concerning the Algerian Gazelles, but it does not appear that Loche was at all clear in discriminating the various species that are there met with.

Good and precise information has, however, been given us on this subject by Mr. Alfred E. Pease, M.P., in his article on the "Antelopes of the Aures

and Eastern Algerian Sahara," published in the Zoological Society's 'Proceedings' for 1896, the principal portion of which we must quote at full length:—

"It is with great respect and diffidence that I object to the Dorcas being described (see P. Z. S. 1894, p. 467) as 'the common Gazelle of the Algerian Sahara generally,' for the Dorcas is not met with in the Sahara proper, so far as I can learn, and in the Eastern Algerian Sahara at least is not to be found south of lat. 33°. The Dorcas in the Eastern Province and in Tunisia is the common Gazelle of the plains immediately south of the Aures Range, which form a sort of transitional zone between the mountains and the Sahara proper. Roughly speaking, this Gazelle is confined to a belt of country not more than 120 or 150 miles wide (and generally very much narrower). It may be found in plains, or even in low hills, within the southern mountain-chains, and on or near some of the sand-dunes on the confines of the Chotts. I have frequently seen it in the neighbourhood of the Chotts, but once into the Oued Souf and sand desert and all trace of it is lost and the Rhime takes its place. In the district of Sef el Menadi, where I have been twice with Sir E. G. Loder, and where he secured the first specimen of the Gazelle (the Rhime) which now bears his name, we found both Rhime and Dorcas on the same ground; and this place may be marked as the most northern limit which the Rhime ever inhabits, as it never leaves the sand, I think, whilst the Dorcas does not go much further south than this. Probably there are several of these isolated islands of sand where the Rhime may be found.

"The best male Dorcas that I have shot had horns a little over 31 cm. in length, the best female 25 cm. (measured along the curve).

"They vary a good deal in colour according to the ground they frequent, and there is a slight variety among members of the same band. In 1893 there was on the plain of Ain Naga a pure white one, no doubt an albino; but though my hunter had frequently seen it, he was never able to find it for me."

Passing on to the Beylik of Tunis, we have excellent notes on the Gazelles of this country drawn up by Mr. Joseph I. S. Whitaker, F.Z.S., published in the same volume of the Zoological Society's 'Proceedings.' Mr. Whitaker writes of this Gazelle as follows:—

"The common Dorcas Gazelle is to be met with throughout the greater part of Central and Southern Tunisia, frequenting the vast semi-desert plains abundant in those districts, but not the more sandy inland country of the extreme south of the Regency, where it is replaced by another species. So far as I can ascertain, the Dorcas Gazelle never occurs in the Tell country; but I have observed it in the neighbourhood of Kairouan, which is probably the extreme northern limit of the range of this species in the Regency. On the extensive plains to the west of Gafsa I have found it particularly abundant; and I understand it is plentiful in the neighbourhood of the Chott Djerid, and throughout a considerable portion of the coast-country of the south,

but not in the true desert further inland, where sand-dunes take the place of the stony scrub-covered plains. It may occasionally stray into the sand country, but this is exceptional.

“In winter the Dorcas Gazelle congregates in large herds, often numbering over one hundred individuals; but in spring these herds break up, and one then meets with the Gazelles in small parties or singly. The female *G. dorcas*, I am told, gives birth to but one young one at a time, and this generally in the month of April.

“The horns of this species vary considerably both in size and in shape. As a rule, those of the adult male are stout, deeply annulate, and lyrate, measuring from 10 to 13 inches in length along the front curve; those of the female are much shorter, straighter, smoother, and more slender.

“I may here mention that I have specimens of the Dorcas Gazelle from the country south of the Chott Djerid, which are somewhat paler in colour than the ordinary form. No doubt this variation in colouring is due to some difference in the nature of the soil and surroundings of the districts from whence these particular specimens came.”

So little is known of the natural history of Tripoli and Barca that we can only presume that the Dorcas Gazelle ranges through these countries on its way to Egypt, where it is well known to be abundant in the Western Desert. Sclater examined large numbers of both sexes of this species in the Zoological Garden of Gizeh near Cairo in 1895 from this locality*, and several specimens from the same source have been received in exchange by the Zoological Society of London. Our figures of both sexes of the Dorcas Gazelle (Plate LVII.) have been prepared by Mr. Smit from examples thus obtained.

In the eastern desert of Egypt the Dorcas Gazelle appears in these days to be not nearly so common. Mr. E. N. Buxton, who traversed the eastern desert in his expedition after *Capra sinaitica*, tells us that two or three Gazelles together were the most he ever saw at one time. Between the Nile and the granite mountains 80 miles to the east, a very arid district, Mr. Buxton only saw Gazelles once. They were more numerous among the foot hills of the Kettar range and the porphyry mountains, for the obvious reason that there is more vegetation there.

The Gazelles frequently depicted in the paintings of the ancient Egyptian tombs and temples were, no doubt, usually *Gazella dorcas* in Lower, and *G. isabella* in Upper Egypt, although they were probably also well acquainted with *G. arabica*. Dr. Hartmann in his interesting disquisition on the animals of these paintings (*Zeitschr. f. Aegyptische Sprache und Alterthums-*

* See P. Z. S. 1895, p. 400.

kunde, 1864, p. 22) gives us the hieroglyphic symbols of the Gazelle, and its corresponding name as "*Gahés*." It was evidently a common object of chase even in those days.

Crossing over into the Holy Land, we find the Dorcas Gazelle registered in Canon Tristram's 'Fauna and Flora of Palestine' as met with in all suitable localities. From the same author's 'Natural History of the Bible' we extract the following passages relating to this favourite animal :—

"The Gazelle (*Gazella dorcas*) is by far the most abundant of all the large game in Palestine; indeed it is the only wild animal of the chase which an ordinary traveller has any chance of seeing. Small herds of gazelles are to be found in every part of the country, and in the south they congregate in herds of nearly 100 together. One such herd I met with at the southern end of the Jebel Usdum, or salt mountain, south of the Dead Sea, where they had congregated to drink of the only sweet spring within several miles, Ain Beida. Though generally considered an animal of the desert and the plains, the gazelle appears at home everywhere. It shares the rocks of Engedi with the wild goats; it dashes over the wide expanse of the desert beyond Beersheba; it canters in single file under the monastery of Marsaba. We found it in the glades of Carmel, and it often springs from its leafy covert on the back of Tabor, and screens itself under the thorn bushes of Gennesaret. Among the grey hills of Galilee it is still 'the roe upon the mountains of Bether,' and I have seen a little troop of gazelles feeding on the Mount of Olives, close to Jerusalem itself. While in the open grounds of the south it is the wildest of game, and can only be approached, unless by chance, at its accustomed drinking-places, and that before the dawn of morning; in the glades of Galilee it is very easily surprised, and trusts to the concealment of its covert for safety. I have repeatedly startled the gazelle from a brake only a few yards in front of me, and once, when ensconced out of sight in a storax bush, I watched a pair of gazelles with their kid, which the dam was suckling. Ever and anon both the soft-eyed parents would gambol with it as though fawns themselves."

Canon Tristram describes the mode of hunting Gazelles practised by the Arabs as follows :—

"The usual way of hunting the Gazelle is by lying in wait, either at its watering-places, which are always known to the Arabs, or in the defiles in the rocky districts. A more wholesale mode is practised in the Houran, by driving a herd into a decoy-enclosure, with a pitfall on the other side, where they are easily taken. When in company with great sheikhs, I have more than once had an opportunity of witnessing the chase of the Gazelle, after the only fashion which the high-bred Bedouin thinks sportsmanlike, viz. with the greyhound or the falcon, or more often with both combined. When the greyhound, which is the large Persian dog, with long silky ears and silky tail, is employed alone, success is very uncertain, and the 'roe' often 'delivers itself from the hand of the hunter.' When the chase is conducted with the falcon alone, the bird is trained to dash repeatedly at the head of the victim, taking an instinctive care not to

impale itself on the horns (which, nevertheless, often happens), and by its feints so to delay the quarry that the horsemen are able to come up with it. But the favourite chase is by both bird and dog. The birds are first swung off at the Gazelle, and make repeated swoops, while the greyhound gains upon it and seizes it. With a well-trained bird the poor beast can rarely escape in this chase, unless he have a long start of the hunter. The flesh of the Gazelle, though of high repute, we did not find so savoury as that of the wild goat. Indeed it was generally very dry and always lean, but our taste is not that of the Arabs."

In the desert country east of the Jordan, Canon Tristram tells us, the Dorcas Gazelle is replaced by the Arabian Gazelle (*G. arabica*); but a Gazelle, probably of this species, is found in the Syrian Desert north of Damascus, as testified by many writers.

In his interesting volume on 'Palmyra and Zenobia,' Dr. William Wright, describing his journey between Damascus and Palmyra, says:—

"We passed several gazelle-traps near Karyetan. Little walls converge to a field from a great distance, increasing in height as they approach the field. The field is walled round, leaving gaps at intervals, outside of which there are deep pits. The Gazelles, led on by curiosity, and guided by the little walls, march boldly into the field, and when they are startled, they rush out wildly in a panic, at the breaches, and tumble into the pits. Sometimes forty or fifty are taken out of a pit alive at one time."

But, as we are informed in the valuable papers on the Mammals of Asia Minor published by Messrs. Danford and Alston in the Zoological Society's 'Proceedings' for 1877 and 1880, the Dorcas Gazelle ranges far north of Syria. Danford states that it is "not uncommon" on the plain of Tchukurova and about Tarsus and Adana in the south-east of Asia Minor, and that it is "common" in the wooded valley of the Pyramus on the plain of Bazardjik and extends thence into the stony wooded uplands on the right bank of the Northern Euphrates.

When taken young, the Dorcas Gazelle is easily tamed and becomes very docile and affectionate. It is frequently kept in captivity by the Arabs and thus passes into the hands of Europeans who visit the East. As will be seen by reference to the Zoological Society's List of Animals, specimens of this species reach the Gardens every year. But they cannot be said to thrive in the climate of England, where they miss the bright sun and dry air of their native deserts, and seldom produce young.

The series of examples of this Gazelle in the National Collection is by no means a full one, and wild-killed examples with ascertained localities from different parts of its range are much wanted. At the present

time, besides a number of old specimens without localities, there are only in the collection an adult male from Biskra in Algeria presented by Sir Edmund Loder, a pair of skins from the same place presented by

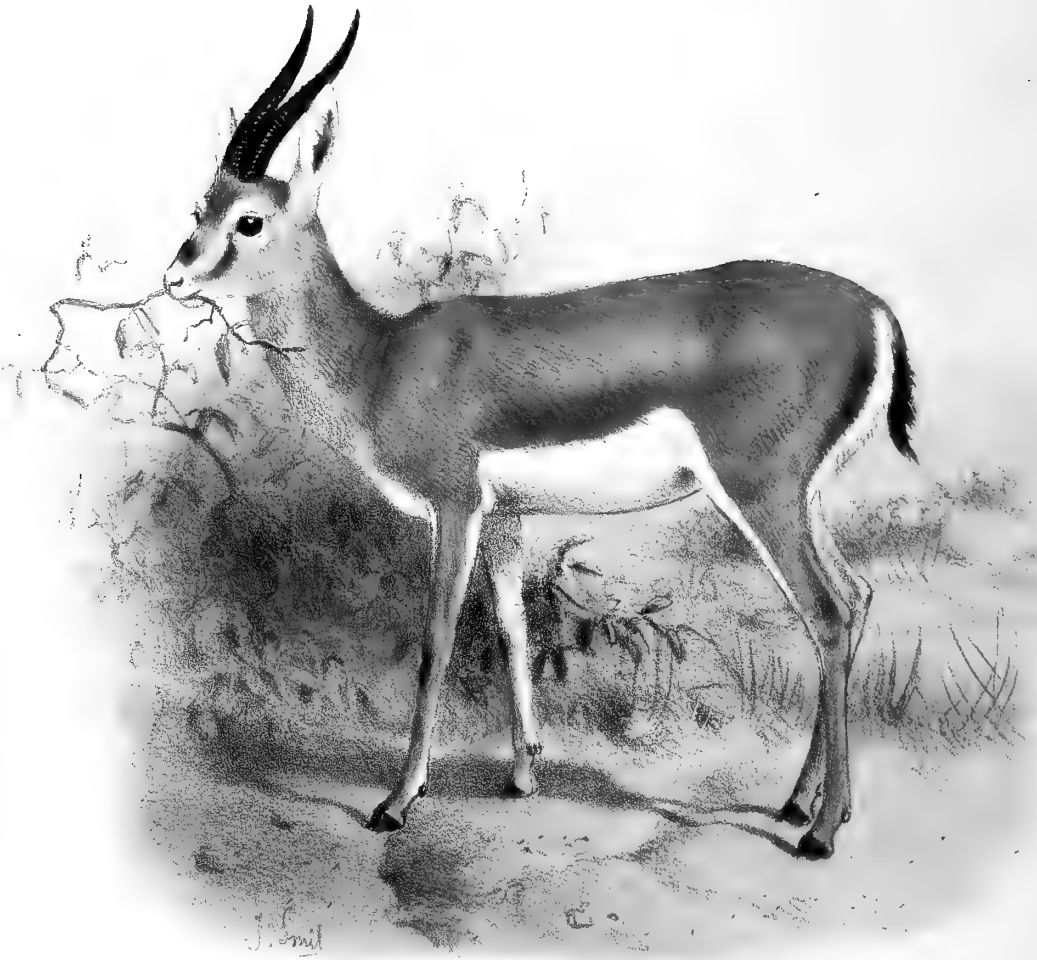
Fig. 57.



Head of the Dorcas Gazelle, ♂.
(From specimens in the British Museum.)

Messrs. Rowland Ward and Co., and a skull from Egypt presented by the late Sir Gardner Wilkinson. The accompanying illustration (fig. 57) gives a front view of a good head of this Gazelle prepared by Mr. Smit from these specimens.

January, 1898.



J. Smit del, et lith.

The Edmi Gazelle .
GAZELLA CUVIERI .

Hanhart imp

Published by R.H. Porter.

88. THE EDMI GAZELLE.

GAZELLA CUVIERI (OGILBY).

[PLATE LVIII.]

- Kevel gris*, F. Cuv. H. N. Mamm. (fol.) iii. livr. lvii. (1827), and iv. livr. lxi. (1833).
Antilope cuvieri, Og. P. Z. S. 1840, p. 34 (Mogador); Schinz, Syn. Mamm. ii. p. 399 (1845); id. Mon. Antil. pl. 2 a (1848); Fraser, Zool. Typ. pl. xvii. (1849).
Gazella cuvieri, Gray, Hand-l. Rum. B. M. p. 107 (1873); Brooke, P. Z. S. 1873, p. 542; Scl. List Vert. An. Z. S. (8) p. 140 (1883), (9) p. 154; Ward, Horn Meas. (1) p. 126 (1892), (2) p. 168 (1896); Lyd. Horns and Hoofs, p. 233 (1893); Thos. P. Z. S. 1894, p. 467; Pease, P. Z. S. 1896, p. 814; Whitaker, P. Z. S. 1896, p. 815.
Gazella dorcas, var. 3, Gray, Cat. Ung. B. M. p. 57 (1852).
Gazella cineraceus, Temm. Esq. Zool. Guin. p. 193 (1853) (from *Kevel gris*, F. Cuv.).
Gazella corinna, Loche, Cat. Mamm. Alg. p. 13 (1850); id. Expl. Alg., Mamm. p. 68 (1867) (*nec* Pall.).
Gazella kevela, Tristram, Great Sahara, p. 387 (1860); Lataste, Mamm. Barbarie (Act. Soc. Linn. Bord. xxxix.), sep. cop. p. 172 (1885); Buxton, P. Z. S. 1890, p. 363.

VERNACULAR NAMES :—*Edmi* of Arabs of Algeria (*Pease*); *Edem* in Tunis (*Whitaker*).

Size comparatively large; height at withers about 26 or 27 inches. Hair rather long, rough and coarse. General colour dull fawn. Face-markings distinct; the central facial band brownish fawn, with a black patch on the top of the nose, in front of which the muzzle is white. Ears long, pointed, their backs fawn. Dark lateral line and pygal band distinct, darker than back; light lateral line present, but little defined. Knee-brushes distinct.

Basal length of skull 7·35 inches, greatest breadth 3·6, muzzle to orbit 4·45.

Horns rather short in proportion to the size of the animal, thick, strongly

ribbed, very slightly curved backwards, and but little divergent from each other; the tips slightly curved upwards and forwards.

Female. Similar, but horns shorter, slenderer, and straighter.

Hab. Morocco, Algeria, and Tunis.

The "Edmi" or Mountain Gazelle of Algeria, though it has often been confounded with the Dorcas, and has only been accurately known within the last few years, is without doubt an absolutely different species not only in structure, but in habits and mode of life. As Sir Victor Brooke has pointed out, it is easily distinguished from all its allies by its larger size, rough coat, dark colour, and long ears.

The first published information that we can certainly refer to this species is that of Frédéric Cuvier, who figured both sexes in his folio work on Mammals from specimens living in the Jardin des Plantes at Paris, but called it only "*le Kevel gris*," without giving it any scientific designation.

Some time in 1839 a living female example of this Antelope was presented to the Zoological Society of London by Mr. W. Willshire, one of their corresponding members, who had procured it at Mogador. After its death in May 1840, Mr. Ogilby, who was at that time Secretary of the Society, and was specially interested in the study of mammals, brought the specimen before the notice of the Zoological Society at one of their scientific meetings, and proposed to name the species "*cuvieri*," after M. Frédéric Cuvier. Ogilby stated that he had observed examples of the same Gazelle in the Paris Museum, and that M. Cuvier would have described it had he, Ogilby, not done so. There can be no question therefore of Ogilby's animal being the same as Cuvier's "*Kevel gris*," and that *Gazella cuvieri* is the earliest certain name to adopt for it.

In 1849 Fraser published a figure of this species in his 'Zoologia Typica,' taken from Ogilby's typical specimen, which is now in the British Museum. Although imported from Mogador there can be little doubt that this example was originally obtained from the chain of the neighbouring Atlas. The Gazelles observed in the Great Atlas in company with Wild Sheep (*Ovis tragelaphus*) by Mr. W. B. Harris, F.R.G.S., on his journey from Morocco to Tafilat in 1893, were no doubt *Gazella cuvieri*.

Passing on to Algeria we find that Loche appears to have referred to this

Antelope under the name *Gazella corinna*, and that Canon Tristram and Lataste have called it *Gazella kevela*. We have already shown, however, that both these names are properly to be applied to the Dorcas Gazelle.

In 1890, Mr. Edward Buxton met with this Gazelle during a shooting excursion into the Atlas, of which he has given us a most interesting account in one of the chapters of his 'Short Stalks.' Mr. Buxton's principal object of pursuit on that occasion was the Aroui or Barbary Sheep (*Ovis tragelaphus*), but he also had the good fortune to obtain a fine head of the Mountain Gazelle, which he exhibited at a meeting of the Zoological Society on March 31st of that year (see P. Z. S. 1890, p. 363).

Mr. Buxton tells us, in the course of the remarks he made on this occasion, that the Mountain Gazelle of Algeria is "about twice the size of the Gazelle of the plains (*Gazella dorcas*), and has straight instead of lyre-shaped horns. It lives on the same kind of steep ground as the Aroui, perhaps at a rather lower elevation. The fact that it is essentially a mountain animal is, I think, shown by its large callous knees, like those of a London cab-horse. The Aroui has the same. They are, I think, absent in *Gazella dorcas*. Another feature consists in the curious hollows or pouches on each side of the testicles."

In his 'Short Stalks' Mr. Buxton gives us full particulars of his adventures in obtaining the much-coveted head of this animal above referred to, and illustrates them by a beautiful picture of a group of these Gazelles drawn and engraved after his instructions by Mr. G. E. Lodge.

In his field-notes on the Antelopes of Eastern Algeria, published in the Zoological Society's 'Proceedings' for 1896, Mr. A. E. Pease speaks as follows of the present species:—

"This Gazelle is by no means so rare as is generally supposed, though it is difficult to secure, its quickness and facility for eluding observation being equal almost to that of the Larrowi (*Ovis tragelaphus*). There is hardly a mountain in the southern ranges of the Aures where they are unknown, and I have seen them on almost every mountain from far to the N.W. of Biskra to the Tunisian frontier at Negrine. I know that they are common on the Djebel Cherchar, and I have seen them as far north as the hills and woods of Melagon, near Chelia. I have seldom seen more than eight in a herd, and far more frequently they are met with singly and in pairs, or bands of three to five. While frequenting the same difficult ground as the Larrowi, it is more usual to find them in larger numbers on those mountains which are lower than the highest. I have seen them on the plateaux and plains among the mountains, and they frequently descend at night to feed on the barley in the valleys, as also does the Larrowi. The best male horns I have measure rather more than 36 cm. along the curve."

Crossing the frontier of Algeria into Tunis we find the Edmi Gazelle prevalent in suitable districts throughout that country. Mr. J. I. S. Whitaker, F.Z.S., who knows Tunis and its birds and mammals well, writes, in the same volume of the 'Proceedings' as we have quoted above, of his experiences of this animal as follows:—

"The Mountain Gazelle, the *Edmi* or *Edem* of the Arabs—the Tunisians use the latter name—is to be found sparingly on most of the mountains throughout the Tunisian Regency. Essentially a mountain species, as its name implies, it never occurs, so far as I am aware, on the plains, or at any distance from hilly country.

"I have met with the Edmi, and obtained specimens of it, on some of the higher ranges near Kasrin, in Central Tunis, and have found it in the south near Gafsa and Tamerza. In the north of the Regency it seems to occur on the mountains near Zaghouan, the extreme eastern range of the Atlas, and in the neighbourhood of Ghardimaou, on the Algerio-Tunisian frontier, from both of which places M. Blanc, the naturalist in Tunis, tells me he has received specimens in the flesh. I myself have also been offered Edmi-shooting on an estate only some twenty miles or so south of Tunis. It seems evident, therefore, that the species has a wide range in the Regency, although perhaps it is nowhere very abundant.

"The Edmi is to be found either in small herds or singly, and occasionally, though not as a rule, at a considerable elevation. On the Djebel Selloum and Djebel Semama, near Kasrin, both of which mountains are nearly 4000 feet above sea-level, I found the Gazelles about halfway up. These mountains, although steep in places and with some very rugged scarps, are in great part well-wooded with Aleppo pines, and on the lower slopes with a thick undergrowth of the usual *maquis* vegetation. In this brushwood the Gazelles easily escape detection and are naturally not very often seen. Although fond of cover, the Edmi will adapt itself to circumstances, and seems equally at home on the arid mountains of the south, where there is but little vegetation, and that merely of a dwarf description, affording slight shelter. In the spring, when my hunting-trips after Aoudad (*Ovis tragelaphus*) and Edmi have taken place, there has always been a little water on these mountains; but for some months of the year, I am told, the watercourses are dry, and the animals then, should they wish to drink, must travel some distance. That both these species, however, shift their quarters constantly I feel convinced, force of circumstances rendering them as much nomads as the Arabs themselves.

"The Edmi is very much larger than the Dorcas Gazelle, its weight being almost double. Its coat is darker in colour and with rather longer and coarser hair, while its knees, besides having very strongly developed brushes, show distinct callosities. The horns in the adult male are very stout and deeply annulated, and generally with but little curve, measuring about 13 inches, or even more in fine specimens. Those of the female are much more slender and smoother, but sometimes of fair length, some in my possession measuring 11 inches."

Among the wood-blocks left ready for use by the late Sir Victor Brooke

was a figure of a fine head of a male of this Gazelle drawn by Mr. Smit, of which we now give an impression.

Fig. 58.



Head of Edmi Gazelle, ♂.

(Drawn by Smit under the direction of the late Sir Victor Brooke.)

The Edmi Gazelle is not often brought alive to Europe, but besides Ogilby's type specimen, which we have already mentioned, at least three others have been exhibited at various times in the Zoological Society's menagerie. An example of this species was first obtained in 1839, as mentioned in the Report of the Council for 1840, and another was acquired in November 1862. Others were presented by Capt. Alan Gardner, R.N., in June 1865, and by Rear-Admiral Sir William Hall, R.N., in May 1867. Sclater observed a female of this Gazelle in the Zoological Garden of Berlin in September 1897 (see P. Z. S. 1897, p. 813).

As we have already stated, the typical specimen of this Gazelle, formerly in the Zoological Society's Collection, is now in the British Museum, as is also a stuffed female, originally presented by H.M. the Queen to the Zoological Society, but transferred to the National Collection in 1855. In the

British Museum Gallery of Mammals will be found a good adult stuffed specimen of this Gazelle stated to be from near Biskra, Algeria, and presented by Mr. J. I. S. Whitaker. There are also some frontlets and horns of this species from the same locality presented by Messrs. Rowland Ward & Co.

We are greatly indebted to Sir Edmund Loder for a photograph of a head of a female of this Gazelle, taken from a specimen in his collection, which

Fig. 59.



Front view of head of Edmi Gazelle, ♀.
(From a photograph.)

he himself shot on the 27th of February, 1893, on the Ahmar Khaddou Mountains, two days' march east of Biskra. It shows very clearly the inferior size of the horns in this sex, and the long ears characteristic of the species.

Our illustration of the male of this Gazelle (Plate LVIII.) has been drawn by Mr. Smit from the Algerian specimen in the British Museum above referred to.

January, 1898.



J. V. Sclater del.

The Arabian Gazelle.
GAZELLA ARABICA.

Published by R.H. Porter

Hanhart imp.

89. THE ARABIAN GAZELLE.

GAZELLA ARABICA (LICHT.).

[PLATE LIX.]

- Antilope arabica*, Licht. Darst. Säug. pl. vi. (1827); Ehrenb. Symb. Phys. Decas i. pl. v. (1828); Fisch. Syn. Mamm. p. 460 (1829); Less. Compl. Buff. x. p. 287 (1836); Waterh. Cat. Mamm. Mus. Z. S. (2) p. 40 (1838); Oken, Allg. Nat. vii. p. 1371 (1838); Gerv. Dict. Sci. Nat. Suppl. i. p. 261 (1840); Less. N. Tabl. R. A. Mamm. p. 176 (1842); Wagn. Schr. Säug. Suppl. iv. p. 407 (1844), v. p. 403 (1855); Reichenb. Säug. iii. pl. xxxiii. fig. 188 (1845); Schinz, Syn. Mamm. ii. p. 399 (1845); id. Mon. Antil. p. 4, pl. ii. (1848); Gieb. Säug. p. 307 (1853); Heugl. Faun. roth. Meer, Peterm. Mitth. 1861, p. 16; id. Ant. u. Büff. N.O.-Afr. (N. Act. Leop. xxx. pt. 2) p. 5 (1863).
- Gazella arabica*, Temm. Esq. Zool. Guin. p. 193 (1853); Tristr. P. Z. S. 1866, p. 86; id. Faun. & Flor. Pal. p. 26 (1884) (Palestine); Fitz. SB. Wien, lix. p. 159; Blanf. Zool. Abyss. p. 261, pl. i. fig. 3 (horns) (1870); Brooke, P. Z. S. 1873, p. 544, 1874, p. 141 (fig., head); ScI. List Vert. An. Z. S. (1) p. 140 (1883), (2) p. 981 (1896); Jent. Cat. Ost. Leyd. Mus. (Mus. Pays-Bas, ix.) p. 137 (1887); W. ScI. Cat. Mamm. Calc. Mus. ii. p. 458 (1891); Jent. Cat. Mamm. Leyd. Mus. (Mus. Pays-Bas, xi.) p. 168 (1892); Ward, Horn Meas. (1) p. 114 (1892), (2) p. 156 (1896); Lyd. Horns and Hoofs, p. 179 (1893); ScI. P. Z. S. 1897, p. 812 (Hodeidah).
- Antilope cora*, H. Sm. Griff. An. K. iv. p. 216, v. p. 333 (1827); Less. Compl. Buff. x. p. 287 (1836).
- Gazella cora*, Gray, List Mamm. B. M. p. 161 (1843).
- Antilope dorcas*, var. δ , Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 268 (1847); id. Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 264; Reprint, p. 84 (1848).
- Gazella vera*, Gray, Knowsl. Men. pl. iii. (1850) (cf. ScI. P. Z. S. 1896, p. 984).
- Gazella bennetti*, Yerb. & Thos. P. Z. S. 1895, p. 555 (Aden).
- VERNACULAR NAMES:—*Ghasal* of Arabs, like *G. dorcas*: *Ariel* or *Aiel* in Syria (Ehrenberg).

Size medium; height at withers about 24 or 25 inches. General colour dark smoky fawn, much darker than in the allied species. Facial markings distinct; central facial band dark rufous-fawn, with a black spot on the nose. Ears of medium length, brownish-fawn behind. Dark lateral and pygal bands smoky brown; light lateral band very slightly lighter than the back. Limbs more rufous than body; knee-brushes brown or black.

Skull with short broad nasals; anteorbital fossæ shallow in the only good skull available. Basal length 6·75 inches, greatest breadth 3·3, muzzle to orbit 3·7.

Horns thick and rather short, almost straight and parallel to each other, a little curved backwards below, and forwards above.

Female. Similar to the male, but horns short and straight.

Hab. Western Arabia.

Although the Arabian Gazelle was described and figured as long ago as 1827, and specimens of it are by no means rare in captivity, we have as yet received little information about its exact range and its mode of life. But the great peninsula of Arabia still remains, we must recollect, one of the largest tracts on the earth's surface that has been least explored by scientific travellers.

Hemprich and Ehrenberg, the discoverers of this Gazelle, met with it during their travels on the eastern coast of the Red Sea, and transmitted specimens of both sexes to the Berlin Museum. Here they were first described and figured by Lichtenstein in his 'Darstellung der Säugethiere'—a work devoted to making known the riches of the Mammal-collection of the great Institution of which he was the Director.

Following Hemprich and Ehrenberg's MS., Lichtenstein named the species "*Antilope arabica*," and a short time afterwards it was again described and figured by Ehrenberg in his 'Symbolæ Physicæ' under the same designation.

Ehrenberg informs us that he and his fellow-traveller Hemprich obtained their first specimens of this Gazelle at Hamam el Faraun, on the coast of the Sinaitic Peninsula between Suez and Tor, and subsequently found it abundant on the island of Farsan on the Arabian coast of the Red Sea. They also observed Gazelles which they believed to be of the same species near Baalbec in Syria, but these, we think, are more likely to have been *Gazella dorcas*.

Succeeding authorities have added very little to our knowledge of this Gazelle. Canon Tristram, in his 'Fauna and Flora' of Palestine, mentions a Gazelle occurring in the "desert-country east of the Jordan" as being probably of this species; but we believe that he did not obtain any good specimens of it. Dr. Blanford, in his volume on the 'Geology and Zoology of Abyssinia,' has figured (for comparison) a head of this species obtained by Captain Heysham

Fig. 60.



Head of Arabian Gazelle.
(P. Z. S. 1874, p. 141.)

near Mocha, S.W. Arabia; and in the Zoological Society's 'Proceedings' for 1874, the late Sir Victor Brooke gave a woodcut of the head of this Gazelle, which, by the kind permission of the Society, we are enabled to reproduce.

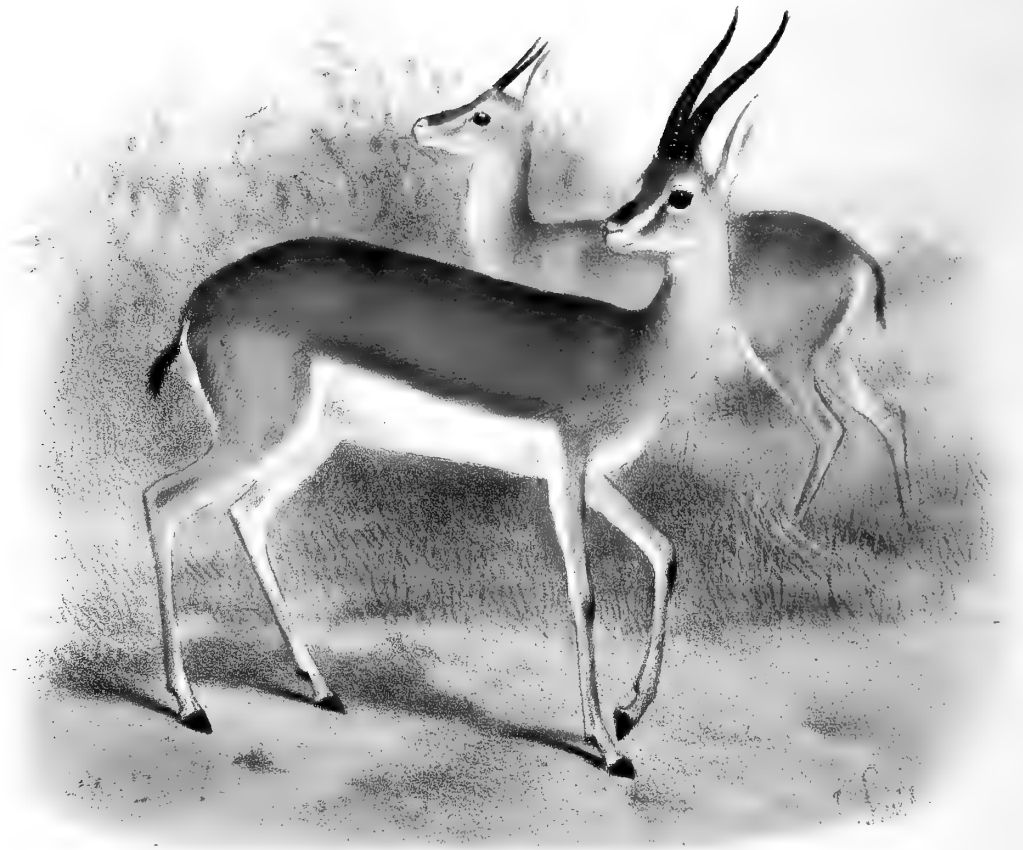
Living examples of the Arabian Gazelle are easily obtained at Aden and at Hodeidah, Jeddah, and other Arabian ports on the Red Sea, and are often brought to Europe. We have little doubt that the Gazelles in the Derby Menagerie figured by Waterhouse Hawkins in the third plate of the 'Gleanings,' and there called by Lord Derby's MS. name, *Gazella vera*, were of this species, though in the text they are referred to as *G. dorcas* and in

the list of plates as *G. cuvieri*. The Zoological Society of London appear to have received their first specimens in 1874 *, and since that date (as will be seen by their published Lists of Animals) have acquired many examples, chiefly by presentation. At the present time there are two fine males in the Society's Gardens, both brought from Aden and presented—one by Mr. R. G. Buchanan and the other by Mr. J. Bennett Stanford, F.Z.S. From the former of these Mr. Smit's drawing (Plate LIX.) was taken.

The British Museum has lately acquired from the Zoological Society a good male example of this Gazelle, which was obtained at Aden and brought alive to London. It has been mounted for the Mammal Gallery. The Museum also has the skull from Mocha figured by Dr. Blanford, as already mentioned, and since presented by him to the collection, and the skin of a young animal from Gilead, obtained by Canon Tristram, the determination of which is, however, somewhat doubtful.

January, 1898.

* See P. Z. S. 1874, p. 494.



J. Smit del. et lith.

The Indian Gazelle .
GAZELLA BENNETTI .

Hanhart imp.

Published by R.H. Porter

90. THE INDIAN GAZELLE.

GAZELLA BENNETTI (SYKES).

[PLATE LX.]

- Antilope bennettii*, Sykes, P. Z. S. 1831, p. 104; Less. Compl. Buff. x. p. 287 (1836); Waterh. Cat. Mamm. Mus. Z. S. (2) p. 40 (1838); Laurill. Dict. Univ. d'H. N. i. p. 617 (1839); Gerv. Dict. Sci. Nat. Supp. i. p. 261 (1840); Less. N. Tabl. R. A., Mamm. p. 176 (1842); Schinz, Syn. Mamm. ii. p. 400 (1845); id. Mon. Antil. pl. iii. b (1848); Reichenb. Säug. iii. p. 111 (1845); Fraser, Zool. Typica, pl. xvi. (1849); Horsf. Cat. Mamm. E. I. C. p. 166 (1851); Wagn. Schr. Säug. Supp. v. p. 405 (1855).
- Gazella bennettii*, Gray, List Mamm. B. M. p. 161 (1843); id. Ann. Mag. N. H. (1) xviii. p. 231 (1846); Hutton, J. A. S. B. xv. p. 150 (1846) (Neemuch); Gray, List Ost. B. M. p. 56 (1847); id. Knowsl. Men. p. 4 (1850); Temm. Esq. Zool. Guin. p. 193 (1853); Jerd. Mamm. Ind. p. 280 (1867); Blanf. J. A. S. B. xxxvi. p. 196 (1867); Kinloch, Large Game Shooting, p. 57, pl. (1869); McMaster, Notes on Jerdon, pp. 141 & 249 (1870); Blanf. Zool. Abyss. p. 261, pl. i. fig. 2 (horns) (1870); Stoliczka, J. A. S. B. xli. p. 229 (1872); Blanf. P. Z. S. 1873, p. 315 (distribution); Brooks, P. Z. S. 1873, p. 544; Blanf. E. Persia, ii. p. 91 (1876); Ball, P. A. S. B. 1877, p. 172; Sci. List Vert. An. Z. S. (8) p. 141 (1883), (9) p. 155 (1896); Flow. & Gars. Cat. Coll. Surg. ii. p. 264 (1884); Sterndale, Mamm. Ind. p. 463 (1884); Murray, Zool. Sind, p. 56 (1884); Blanf. Faun. Brit. Ind., Mamm. p. 526 (1891); W. Sci. Cat. Mamm. Calc. Mus. ii. p. 159 (1891); Jent. Cat. Mamm. Leyd. Mus. (Mus. Pays-Bas, xi.) p. 168 (1892); Ward, Horn Meas. (1) p. 124 (1892), (2) p. 166 (1896); Lyd. Horns and Hoofs, p. 175 (1893); Percy, Badm. Big Game Shooting, ii. p. 355 (1894).
- Tragops bennettii*, Hodgs. J. A. S. B. 1847, p. 11, & xvi. p. 695; Gray, P. Z. S. 1850, p. 116; id. Cat. Ung. B. M. p. 62 (1852); Adams, P. Z. S. 1858, p. 522 (Punjab); Gerr. Cat. Bones Mamm. B. M. p. 233 (1862); Blyth, Cat. Mamm.

Mus. As. Soc. p. 173 (1863); Gray, Cat. Rum. B. M. p. 39 (1872); *id.* Hand-l. Rum. B. M. p. 108 (1873).

Tragopsis bennettii, Fitz. SB. Wien, lix. p. 157 (1869).

Antilope arabica, Elliot, Madr. Journ. x. p. 223 (1839) (Mahratta Country).

Gazella christii, Gray, Blyth, J. A. S. B. xi. p. 452 (1842); Hutton, J. A. S. B. xv. p. 151 (1846).

Antilope hazenna, I. Geoffr. St.-Hil. Voy. Jacq., Mamm. p. 74, Atl. pl. vi. (1844); Schinz, Mon. Ant. pl. xxi. a (1848); Wagn. Schr. Säug. Supp. v. p. 406 (1855).

Gazella hazenna, Temm. Esq. Zool. Guin. p. 193 (1853).

Tragopsis hazenna, Fitz. SB. Wien, lix. p. 157 (1869).

Gazella fuscifrons, Blanf. P. Z. S. 1873, p. 317 (fig., head ♀) (Jalk, Persia); Brooke, P. Z. S. 1873, p. 545; Blanf. E. Persia, ii. p. 92 (1876); Sterndale, Mamm. Ind. p. 465 (1884); W. Scl. Cat. Mamm. Calc. Mus. ii. p. 160 (1891).

VERNACULAR NAMES:—*Chinkára*, *Chikára*, *Kal-punch* in Hindustani; *Phaskela* in N.W. Provinces; *Ask* or *Ast* and *Ahu* in Baluchistan; *Khazm* in Brahmi; *Kalsipi* in Mahratta; *Tiska*, *Budári*, or *Mudári* in Canarese; *Sank-hulé* in Mysore; *Porsya* ♂, *Chari* ♀ in Baori; *Burudu-jinka* in Telugu; *Ravine-Deer* of many Anglo-Indians.

Size medium; height at withers 24 to 25 inches. General colour dull fawn. Facial markings distinct, the darker ones rufous-fawn; a black spot on the top of the nose. Ears of medium length, fawn-coloured behind. Dark lateral and pygal bands brownish fawn, scarcely darker than the back; light lateral bands scarcely perceptible; knee-brushes present.

Skull with deep anteorbital fossæ:—Basal length 7·2 inches, greatest breadth 3·45, muzzle to orbit 4.

Horns thick, heavily ribbed, close together, diverging little but evenly, gently curved backwards below and forwards at their tips.

Female. Similar to the male, but horns straight, simple, about two-thirds the length of those of the male.

Hab. Indian Peninsula, extending westwards through Baluchistan to the Persian Gulf.

Like the Lion and the Cheetah this Gazelle belongs to an Ethiopian type of mammals, and was originally, no doubt, an intruder into India from the west. But, as will be seen when we come to describe its range, it has now spread itself over the greater part of the peninsula except on the eastern

side. On the west the Indian Gazelle extends far along the Mekran coast to the Persian Gulf, and there meets the Arabian Gazelle, of which it is undoubtedly a very close ally, although the latter is always much darker on the back.

Although the Indian Gazelle, or "Ravine-Deer," as it is usually termed by Europeans, was doubtless known to the sportsmen of British India long ago, it was not made known to science until 1831, when Col. Sykes, one of the earliest pioneers in Indian natural history, described it in a communication made to the Zoological Society of London. Sykes, in his paper on the Mammals of the Deccan read before the Society in July of that year, proposed to name it *Antilope bennetti*, after the late Edward Turner Bennett, a well-known naturalist, who was at that time Vice-Secretary of the Society. Sykes met with this Antelope on the rocky hills of the Deccan "in groups rarely exceeding three or four in number, and very frequently solitary." In 1849, Fraser published a figure of this species in his 'Zoologia Typica,' taken from one of Sykes's male specimens in the British Museum, which is still in the National Collection, although not in the exhibition gallery. In 1844, in his description of the mammals of Jacquemont's 'Voyage dans l'Inde,' Isidore Geoffr. St.-Hilaire described and figured an *Antilope hazenna*, which he at that time considered to be different from the present animal. But there can be no doubt that Jacquemont's specimens, which were obtained at Malwa in Central India, are the same as *Gazella bennetti*, and Sykes's term being the oldest has been universally employed as the designation of this species. As we shall presently show, *Gazella christii* of Gray, from Sind, and *Gazella fuscifrons* of Blanford, from Baluchistan, are names which have been based on what are merely slightly divergent forms of *Gazella bennetti*.

From the researches of Elliot, Jerdon, Blyth, Blanford, and other authorities on the mammals of British India, we are now well acquainted with the range of this Gazelle in the peninsula and adjoining lands to the west. Dr. Blanford describes it as extending throughout the plains and low hills of North-western and Central India, and thence through Baluchistan to the eastern shore of the Persian Gulf. In the Indian peninsula, he continues, the Indian Gazelle ranges in suitable localities throughout the Punjab, Sind, Rajputana, the N.W. Provinces, and the whole of the Bombay Presidency with the exception of the Western Ghats and Konkan; it also occurs in Central India as far east as Palamow and Western Sargiya, and in the

Central Provinces as far east as Seoni and Chánda, together with the Hyderabad territories and the Madras Presidency to a little south of the Kistna, Gazelles being found at Anantapur, south of Kurnool, and in Northern Mysore.

For an account of the habits of the Indian Gazelle and the modes of its chase, we cannot do better than refer to the last edition of General Kinloch's 'Large Game Shooting,' where they are described as follows:—

“The favourite haunts of this Gazelle are extensive wastes of sandy or rocky ground, sprinkled with low bushes, and interspersed here and there with patches of cultivation. Thick jungles they avoid; and they are seldom to be met with in districts which are entirely under crop. During the daytime they resort to secluded spots where they are not subject to annoyance, and in the mornings and evenings they frequently repair to fields of young grain, sometimes in close proximity to villages.

“In some places they are extremely wild, and can only be approached by the most careful stalking; in other localities they are comparatively tame, and will allow the sportsman to walk openly to within easy range. At most times, however, they are restless little animals, continually on the move, and they have a provoking way of trotting off with a switch of their black tails the moment that they suspect danger.

“On open plains the best way of getting within shot of them is under cover of a steady shooting horse. As they afford but a small mark, and seldom remain still very long, quick as well as accurate shooting is required, and beginners in the art of rifle shooting will find them excellent practice.

“The officers of the Guides used to hawk the Gazelle in the neighbourhood of Hótó Mardán, the Falcons used for the purpose being nestling ‘*charghs*’ (*Falco sacer*). Adult caught birds cannot be trained for this sport, and the nestlings had to be obtained from the distant province of Balkh by the assistance of some of the Kábúl Sirdárs. In the present state of our relations with Áfghánistán, the Falcons cannot be procured, and the sport has, for the present at any rate, died out. The hawks alone could not kill a Gazelle, but were assisted by greyhounds, which used to pull it down after the hawks had confused and stunned it by repeated blows. I regret that I never had an opportunity of witnessing the flight, which has been described to me as very interesting and exciting.”

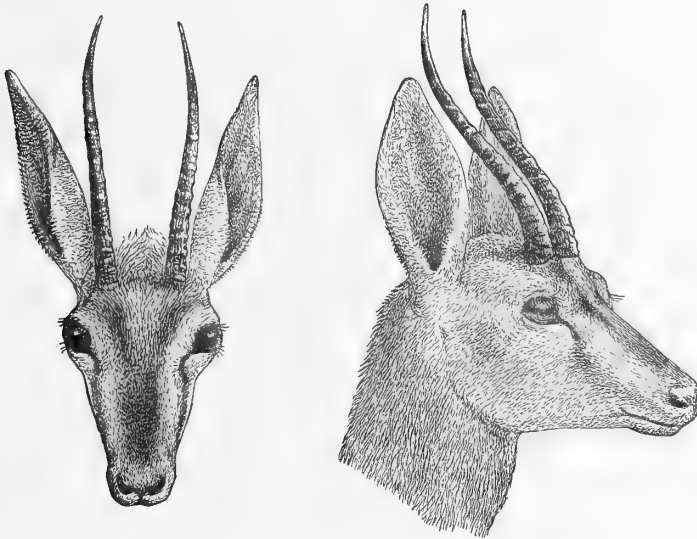
Dr. Blanford tells us that this Gazelle lives on grass and on the leaves of bushes, and, so far as he is aware, never drinks. “I have seen it,” he says, “in the deserts of Sind in places where the only water for twenty miles round was procured from wells; and in spots in Western and Central India where, in the hot weather, the only water to be obtained was in small pools remaining in the beds of streams. But around these pools, in which the tracks of almost every animal in the forest was to be seen, I never yet saw the very

peculiarly formed tracks of the Gazelle, although it frequently abounded in the neighbourhood. The four-horned Antelope, on the other hand, drinks habitually.”

Gazella christii, which we have alluded to above as synonymous with this species, was a MS. name of the late Dr. Gray, which appears to have been first published by Blyth in 1842, and applied to a pale form of the present animal from Kutch and Sind. But more recent researches have shown that it is not properly separable from the typical *Gazella bennetti*.

Gazella fuscifrons, another synonym also mentioned above, was based by Dr. Blanford in 1873 on a doe with distinctly ringed horns and with portions of the face dark brown, obtained in Baluchistan. But the late Sir O. B. St. John subsequently procured what he justly concluded to be the male of this form, which, as acknowledged by Dr. Blanford himself, proved

Fig. 61.



Head of *Gazella fuscifrons*, ♀.
(P. Z. S. 1873, p. 317.)

to be not distinct from *Gazella bennetti*. By the kindness of the Zoological Society we are enabled to reproduce Dr. Blanford's figures of the head of *Gazella fuscifrons*, which, except for the slight differences above mentioned, give an equally good idea of the head of the typical *G. bennetti*.

The Indian Gazelle is frequently brought to Europe alive, though it is not so common in our menageries as *Gazella dorcas*, *G. subgutturosa*, and some other species. According to the Zoological Society's books, the first examples were received in 1838, and since 1860, as will be seen by the printed lists, about twelve specimens have been exhibited. A pair presented by Capt. H. J. Hope Edwards, in April 1883, bred, and the female gave birth to a young one in November of that year; but, like other Gazelles, this species does not usually thrive in the dull climate of England.

As is the case with many common animals, the British Museum does not contain a good series of this Gazelle, and specimens with exact localities from all parts of its range are much required. Besides the old mounted examples from the Deccan presented by Col. Sykes and already alluded to, it possesses only a skin from Sind received from the Karachi Museum, and several skulls and pairs of horns from the Salt Range of the Punjâb and Kelat, received in the Hume Collection.

Our figures of this species (Plate LX.) have been prepared by Mr. Smit—the male from the skin received from the Karachi Museum, and the female from Col. Sykes's specimen.

January, 1898.



J. Smit lith.

Speke's Gazelle
GAZELLA SPEKEI.

Published by R.H. Porter.

Hornhart imp.

91. SPEKE'S GAZELLE.

GAZELLA SPEKEI, BLYTH.

[PLATE LXI.]

Gazella, sp.?, Blyth, J. As. Soc. Beng. xxiv. p. 297 (1856).

"*Gazella cwieri*, Blyth," Speke, Rep. Zool. Coll. Somali, p. 8 (1860).

Gazella spekei, Blyth, Cat. Mamm. Mus. As. Soc. p. 172 (1863); **Blanf.** Zool. Abyss. p. 261, pl. i. fig. 5 (horns) (1870); **Brooke**, P. Z. S. 1873, p. 543; **Kohl**, Ann. Mus. Wien, i. p. 77, pls. iii., iv. fig. 3, & v. fig. 1 (animal & skull) (1886); **Thos.** P. Z. S. 1891, p. 210; **W.** Sci. Cat. Mamm. Calc. Mus. ii. p. 158 (1891); **Sci.** P. Z. S. 1892, pp. 100 & 118; **Swayne**, P. Z. S. 1892, p. 306; **Ward**, Horn Meas. (1) p. 112 (1892), (2) p. 153 (1896); **Lyd.** Horns and Hoofs, p. 234 (1893); **Swayne**, Somaliland, p. 316 (fig., head) (1895); **Hoyos**, Aulihan, p. 179, pl. x. fig. 3 (1895); **Elliot**, Publ. Chicago Mus., Zool. i. p. 120 (1897); **Sci.** P. Z. S. 1897, p. 920 (fig., head).

Gazella, sp. inc., **Lort Phillips**, P. Z. S. 1885, p. 932.

Gazella naso, **Sci.** P. Z. S. 1886, p. 504, pl. li. (head); **id.** in James's Unknown Horn of Africa, p. 268, pl. iii. (1888).

VERNACULAR NAME :—*Dhero* of Somalis (*Swayne*).

Size slightly greater than in *G. dorcas*; height at withers 23–24 inches. Body pale brownish fawn, the light lateral band but little paler than the back, then dark or dull blackish, not sharply defined. Central facial band brownish fawn; top of muzzle, over nasal bones, with a distinct blackish patch, in front of which there is a peculiar swollen and corrugated cushion of skin raised up above the level of the face, and extensible at the pleasure of the animal. Dark cheek-band narrow, indistinct, the light band above it broad and extending to the muzzle. Ears long,

narrow, pointed, their backs whitish fawn. Knee-tufts present, brownish fawn. Pygal band very indistinct.

Skull with short broad nasals, the premaxillæ not or barely touching their outer corners. Basal length in an old male 6·5 inches, greatest breadth 3·35, muzzle to orbit 3·6.

Horns but slightly divergent, evenly and strongly curved backwards for three-fourths their length, their tips gently recurved upwards.

Female. Like the male, but the horns slender, little ridged, less curved, about three-fourths the length of those of the male.

Hab. Interior Plateau of Somaliland.

There can be no doubt that the two Gazelles which inhabit the maritime plain and the high inland plateau of Somaliland respectively, although they are closely allied, and have been confused together by some writers, belong to distinct species, distinguishable by well-marked characters. The Gazelle of the interior plateau, which we treat of first, when compared with that of the coast-land is at once recognizable by the generally browner colour, the darker lateral band, the black nose-spot, and above all by the wrinkled and elevated nose of the adult, which is not met with in the sister species.

Speke's Gazelle was first discovered by the energetic African explorer, whose name it appropriately bears, during his expedition to Harar in the summer of 1854 in company with the late Capt. Sir Richard Burton*. Speke, who attended to the natural history of the expedition, forwarded the collections made upon this occasion to Blyth, at that time curator of the Asiatic Society's Museum at Calcutta, and in the zenith of his zoological work. In his report upon the collection, which was published in the twenty-fourth volume of the 'Journal of the Asiatic Society of Bengal,' Blyth did not venture to bestow a new name on this Gazelle, although he gave an accurate description of it, and added a note (obtained from Burton) calling special attention to "the elevation of loose replicated skin upon the nose," so that there can be no doubt as to which of the two allied species Speke's specimens (which are still in the Calcutta Museum †) belong.

* See Burton's "Narrative of a Trip to Harar," Journ. R. G. S. xxv. p. 136 (1855).

† See Cat. of Mamm. in the Indian Museum, Calcutta. Part II., by W. L. Selater (1891), p. 158.

In the reprint of Blyth's 'Report,' which was edited by Speke in 1860 after his return to this country, this Gazelle was erroneously referred to *G. cuvieri* of Ogilby. In 1863, however, Blyth, who had discovered that this was a mistake, proposed the name *Gazella spekei* for this species in his 'Catalogue of the Mammals of the Asiatic Society's Museum,' and this appellation has been generally adopted for it ever since.

When the late Sir Victor Brooke wrote his Monograph of the Gazelles in 1873 Speke's Gazelle was hardly known in this country, and Brooke was only acquainted with it from photographs of the type specimens in the Calcutta Museum. But since that date Somaliland has been fully opened to British travellers, and the numerous explorers and sportsmen who have visited that much-hunted country have brought back good sets of specimens both of Speke's and of Pelzeln's Gazelle, and made us well acquainted with the ranges and other peculiarities of these two species.

One of the first British travellers who visited Somaliland, and made the acquaintance of Speke's Gazelle, was the late Mr. F. L. James, who proceeded there on a shooting-expedition in January 1884, accompanied by his brother and Mr. E. Lort Phillips*. Mr. Lort Phillips read some notes on the Antelopes obtained on this occasion before the Zoological Society in December 1885, and in alluding to this Gazelle called it the "*Flabby-nosed Gazelle*," to which term Sclater attached a footnote stating that it was "probably of a new species," but required further examination. This examination Sclater bestowed upon Mr. Lort Phillips's specimens shortly afterwards (see P. Z. S. 1886, p. 504), and came to the correct conclusion that the so-called Flabby-nosed Gazelle was quite distinct from the species of the coast land. He unfortunately did not perceive that it was the species of the high plateau and not that of the coast land, which had already been named *Gazella spekei* by Blyth, and therefore gave it a new name, *Gazella naso*, under which appellation it will be found described and its characteristic head figured in Sclater's article in the Zoological Society's 'Proceedings' for 1886. But, as Thomas has subsequently shown (P. Z. S. 1891, p. 210), there can be no doubt that *Gazella naso* is merely a synonym of *Gazella spekei*.

Another well-known author, who must not fail to be quoted in any

* See Mr. F. L. James's "Journey through the Somali to the Webbe Shebeyly," Proc. R. G. S. vii. p. 625 (1885).

reference to the game animals of Somaliland, is Capt. H. G. C. Swayne, R.E. Capt. Swayne has made no less than seventeen trips to that attractive country, and is probably better acquainted with its larger mammals than any other living individual. In his excellent narrative of his adventures *, Capt. Swayne has given us some capital notes on Speke's Gazelle and its near ally Pelzeln's Gazelle, both of which are known to the natives by the same name "*Dhero*."

Fig. 62.



Head of adult male Speke's Gazelle.
(Brit. Mus.)

Capt. Swayne calls the former Antelope the "*Ogo*, or Plateau Gazelle," and the latter the "*Guban*, or Lowland Gazelle," and describes the peculiarities of the present species as follows:—

"The Plateau Gazelle, which has the ridges of loose skin over the nose well developed, inhabits the elevated country, commencing about thirty-five miles inland. It is found

* 'Seventeen Trips through Somaliland.' London, Rowland Ward, 1895.

south of Gólis, in Ogo and in the Haud, as well as in Ogo-Gudan, the country near Hargeisa where Guban rises gradually into Ogo.

"I have shot large numbers of Gazelles for food at various times, and have always noticed that the plateau variety has a much thicker and longer coat than the other. This is possibly the result of natural selection, as the high plains of the Ogo and the Haud, where it lives, are subject to sweeping cold winds, and the nights are very cold indeed. The altitude of these plains inhabited by the Plateau Gazelle is from three

Fig. 63.



Head of adult female Speke's Gazelle.
(Mr. F. Gillett, F.Z.S.)

thousand to over six thousand feet, but doubtless they go much lower towards Ogádén. The great steppe of Gólis, with its prolongations east and west, which rises some forty miles inland, and separates Guban, the low coast country, from Ogo, the high interior country, forms the natural line of demarcation between these two Gazelles."

A still more recent explorer of Somaliland, Mr. A. E. Pease, M.P., F.Z.S., has most kindly favoured us with some excellent notes on Speke's Gazelle and its sister species, which we cannot do better than reproduce. Mr. Pease has also sent us along with his MS. remarks a sketch-map of the northern part of Somaliland, in which the ranges of these two species are accurately shown.

He writes as follows:—

“Speke’s Gazelle is called ‘Dhero’ by the Somalis, who do not distinguish it by name from *Gazella pelzelni*. It is a ‘Dhero,’ just as the other, and yet there is no Somali shikari or any other observer who cannot discriminate at a glance between these two very distinct species—distinct in colour, size, horns, and habitat, whilst the peculiar nose, covered with soft pliable folds of loose skin, of the *G. spekei* is alone sufficient to mark it as a species apart.

“The Speke’s or Plateau Gazelle has been termed the Mountain Gazelle by some writers; but it is not strictly a mountain Gazelle, but one that frequents the higher plains and low foot-hills north and south of the Golis. But with its distribution I will deal later.

“In colour the Speke’s Gazelles are much darker than Pelzeln’s Gazelles, the predominating colour in life being a rich strong burnt-sienna buff, distinctly darker over the back. The side-stripes are very dark brown, strongly marked, and maintaining their depth of colour to the edge of the white under the ribs and belly. The tail is a dark reddish brown, and the colour on the quarters towards the tail is of a deeper shade. The coat, though fine in texture, is very long for a Gazelle, being sometimes fully two inches long on the withers, and the stern is heavily feathered with long white hair. Altogether it is one of the most beautifully coloured of all the Gazelles. The head is also strongly marked, the deep dark brown patch on the nose and the tear-mark sprinkled with dark hairs are very distinctive. The enlargement of the nose is covered with three or four folds of loose pliable skin. The horns are more curved back and forward towards the tips than those of Pelzeln’s Gazelle, and on the average do not reach to quite the same length as in that species. Twelve inches along the curve would be an abnormally long horn for *G. spekei*, whilst this measurement is not uncommon in Pelzeln’s Gazelle. The female is very slightly lighter in colour, and has weak horns, reaching to about 9 inches in old ones, with slight indications of the annulations, which are deep and strong in the male.

“This Gazelle I have observed in large numbers on both sides of the Golis range. I have seen it in bands numbering from fifteen to twenty on the plateaux behind (S. of) Gan Libah and Dunanoof. In the Gadabursi country, on the northern limits of the Haud, west of Lija Uri, I have seen them frequently in small bands of from five to eight, and herds of this size may be said to be the rule in the zone north of the Golis Range and south of the Maritime Plain. I cannot call to mind having seen them much further south than the grass plains of Toyo, but there I have observed them mixed up with the Aoul or Soemmerring’s Gazelle.

“I should put down the height of this Gazelle at about 24 inches, and its weight, when living, at about 40 pounds.”

So far as we know, but one specimen of Speke’s Gazelle has as yet reached this country alive. This was a young male, presented to the Zoological Society’s Menagerie in November last year by Dr. L. de Gébert, who had obtained it at Djibutil, the French port of Abyssinia. Unfortunately it did

not live long in captivity, but after its death Sclater, with Mr. F. E. Beddard's kind assistance, was able to examine the specimen more closely. It exhibited a slight protuberance on the nose, as shown in the figure (fig. 64), which by the kindness of the Zoological Society we are enabled to reproduce on the present occasion. Underneath the skin of the nose was a slight cavity, which was easily inflated into a protuberance by blowing air into the nostrils. But dissection, which was carried out by Mr. Beddard, revealed no trace of any glandular structure.

Fig. 64.



Head of young male Speke's Gazelle.
(P. Z. S. 1897, p. 920.)

The collection of the British Museum contains a good mounted example of this Gazelle (procured from Herr Menges, and originally obtained from Gerbatir in Somaliland), from which the coloured figure (Plate LXI.) has been prepared by Mr. Smit. There is likewise in the Museum a good series of skins and skulls from different places in Somaliland collected and presented by Mr. T. W. H. Clarke, Capt. H. G. C. Swayne, R.E., Col. Arthur Paget, and Mr. Ford G. Barclay. From one of these our figure (p. 128) of a good adult head of this Gazelle has been prepared by Mr. Smit; while that of the female (p. 129) has been drawn from a mounted head kindly lent to us for that purpose by Mr. Frederick Gillett, F.Z.S.

May, 1898.





J. Smit lith

Pelzel's Gazelle.
GAZELLA PELZELNI .

Hanhart imp

Published by R.H. Porter.

92. PELZELN'S GAZELLE.

GAZELLA PELZELNI, KOHL.

[PLATE LXII.]

Gazella spekei, Scl. P. Z. S. 1884, p. 540; Lort Phillips, P. Z. S. 1885, p. 931
(*nec* Blyth).

Gazella pelzelni, Kohl, SB. zool.-bot. Ges. Wien, 1886, p. 4; id. Ann. Mus. Wien, i. p. 76, pls. iii. & iv. fig. 1 (animal & skull) (1886); Thos. P. Z. S. 1891, p. 211; Scl. P. Z. S. 1892, pp. 100 & 118; Swayne, P. Z. S. 1892, p. 306; Ward, Horn Meas. (1) p. 113 (1892), (2) p. 155 (1896); Lyd. Horns and Hoofs, p. 238 (1893); Swayne, Somaliland, p. 316 (fig., head) (1895); Hoyos, Aulihan, p. 178, pl. x. fig. 1 (1895); Elliot, Publ. Chicago Mus. Zool. i. p. 119 (1897).

VERNACULAR NAME :—*Dhero* of Somalis (in common with the last species) (*Swayne*).

Size rather greater than in *G. spekei*; height at withers about 25 inches. Colour brownish fawn, rather more rufous than *G. spekei*. Light lateral band distinct; dark band rufous brown, similar to that of the back but rather darker in tone, not blackish. Pygal band distinct, brown. Centre of face dark fawn, without either the black spot or the pale swollen cushion characteristic of *G. spekei*. Dark and light cheek-bands short and indistinct. Knee-tufts dark brown.

Skull narrower than in *G. spekei*, and with long narrow nasals, which articulate broadly with the premaxillæ. Basal length in an old male 6·87 inches, greatest breadth 3·25, muzzle to orbit 3·75.

Horns more evenly divergent, much straighter and less curved backwards than in *G. spekei*, but otherwise similar. In length they attain to about 11 or 12 inches.

Female. Like the male, but the horns much smoother and slenderer, and only about three-fourths the length.

Hab. Maritime plains of Northern Somaliland.

As we have already mentioned in our account of the last species, the late Mr. F. L. James and his party, who visited Somaliland in 1884, appear to have been the first to bring to England examples of the two allied Gazelles of Somaliland. Unfortunately, however, though perhaps not unnaturally, Sclater, who assisted Mr. E. Lort Phillips in the determination of the Mammals obtained during that expedition, referred the coast-land specimens to *Gazella spekei*, and described the examples from the high plateau as belonging to a new species, *Gazella naso*. About two years later, however, this error was corrected by Herr H. F. Kohl, of the Natural History Museum of Vienna, who, in an article upon new and rare Antelopes collected by Herr L. Menges in Somaliland, among which examples of both these Gazelles were comprised, rightly referred the upland species to *Gazella spekei* of Blyth and gave to the lowland species, then still unnamed, the title of *Gazella pelzelni*, after the late August von Pelzeln, a well-known naturalist, who was at that time Custos of the Imperial Museum of Natural History.

Thomas, in his article on the Antelopes collected in Somaliland by Mr. T. W. H. Clarke, published in the Zoological Society's 'Proceedings' for 1891, was the first to make this matter perfectly clear, and to establish the name *Gazella pelzelni* as the permanent designation of the coast-land Gazelle of Somaliland. Since that date the distinctions between the two allied species have become well recognized and understood, and numerous examples of both species have been obtained by the naturalists and sportsmen who have recently visited that country.

Capt. Swayne, in his well-known work on Somaliland and its wild animals (from which, by the kind permission of Messrs. Rowland Ward & Co., the publishers, we have been allowed to borrow illustrations of the heads of both sexes of this Gazelle), tells us that the "short-coated, light-coloured Lowland Gazelle" carries rather longer horns than those of the Plateau Gazelle (*Gazella spekei*), which are "shorter, thicker, more curved, and better annulated." "The habits of both," he continues, "are nearly alike; they go in moderate-sized herds of from three to ten, and resort mostly to stony or sandy undulating ground or ravines thinly dotted over with mimosas. Both species are fond of salt and do not require water. It is hard to understand what they can pick up to eat in the wretched ground which they frequent. They have a curiosity which amounts almost to impudence, but are

wonderfully on the alert, and hard to shoot, seeming to know perfectly well the range of a rifle, and presenting but a very small target."

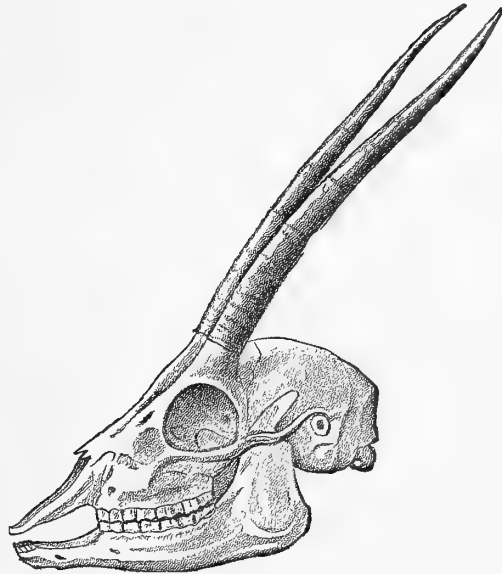
Capt. R. Light, writing to Sclater in 1892, tells us that when he visited Somaliland in 1891 he found this Gazelle between Berbera and Zeila, close down by the sea: "they were often observed feeding side by side with camels and flocks of sheep and goats. When startled they move off the ground in a quick trot, taking bounds over any obstacles and finally breaking into a gallop."

Fig. 65.



Head of Pelzeln's Gazelle, ♂.

Fig. 65 a.



Skull of Pelzeln's Gazelle, ♀.

(From Swayne's 'Somaliland,' p. 317.)

Mr. Pease, who has kindly supplied us with notes on this Gazelle as well as on the preceding species, writes that Pelzeln's Gazelle is essentially the species of the maritime plain and could be seen within shot of the town of Bulhar when he was there in 1896, and within a mile or so of Berbera. "In life it appears of a light rich yellow-buff in colour, with the usual Gazelline marks rather faintly indicated. Its coat is short and fine, and its horns are

straighter and longer than those of *G. spekei*. The horns of the female are weak and almost smooth, like those of Speke's Gazelle." "Within fifty miles of the sea-shore," he continues, "this Gazelle is exceedingly numerous in suitable places. Half-a-dozen herds may be often seen at a time, but I have seldom observed more than twenty in a single band. In size *G. pelzelni* is larger than *G. spekei*, the average height being about 25 inches, while the weight of the carcase is usually a little over 40 lbs."

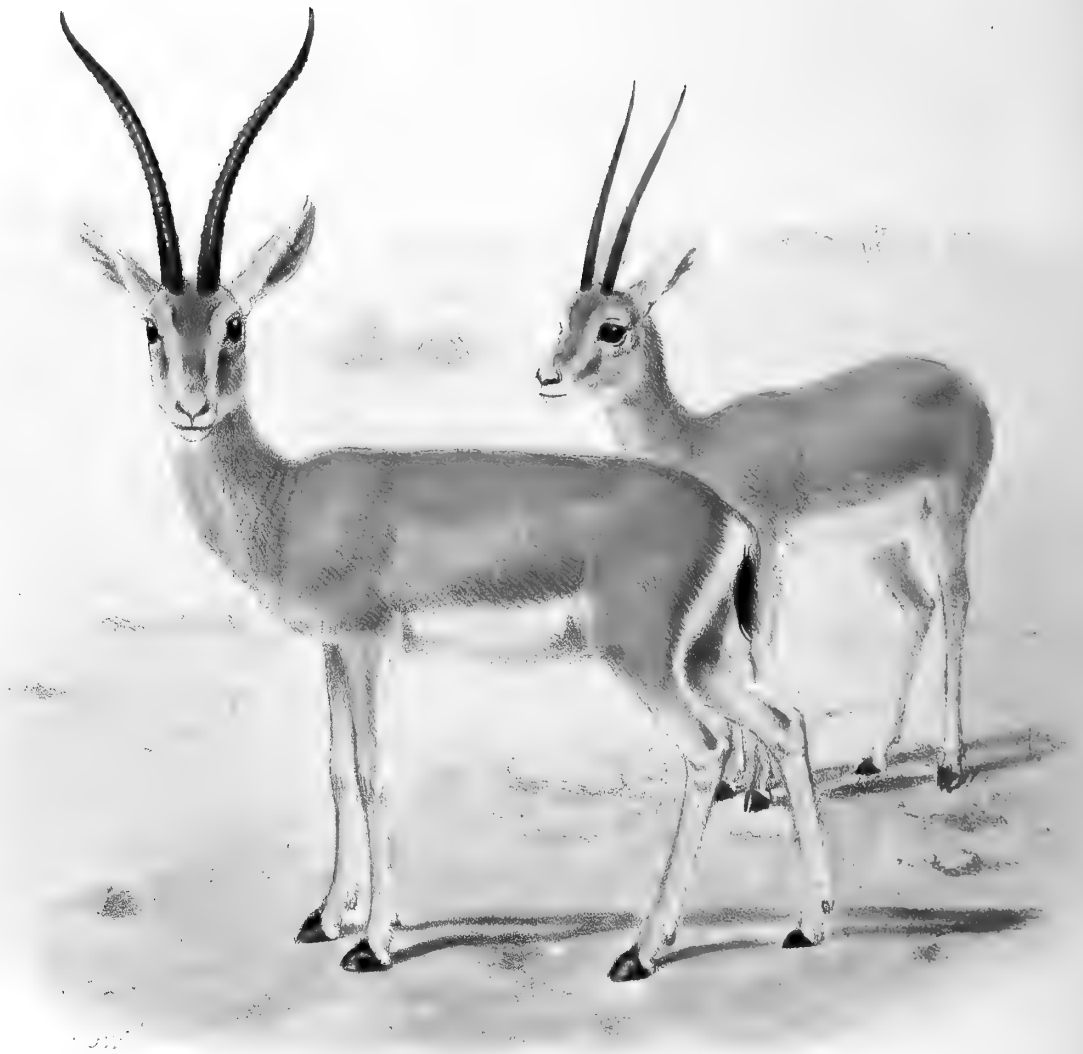
Mr. D. G. Elliot, who made a successful expedition to Somaliland in 1896, for the purpose of obtaining specimens for the Field Columbian Museum of Chicago, gives us the following account of his experiences with the present species:—

"This is the Gazelle of the lowlands and is not often seen much beyond Laferug on the road to Hargeisa, where the following species begins to make its appearance. It is the larger animal of the two, and they resemble each other very much in their habits.

"Pelzeln's Gazelle frequents dry and stony places, covered with low bushes, and it is difficult to see where or how it can obtain sufficient nourishment from the barren, forbidding districts it inhabits. It goes in small troops of from two or three to nearly a dozen individuals. I think eleven was the greatest number I ever saw together at one time. As a rule, it is not a wild creature and readily permits an approach sufficiently near to ensure a fatal shot, but of course when much hunted becomes wary. The males were often seen by themselves, and then it was not difficult to stalk them. Their horns are almost straight and annulated nearly to the tips. The female also carries horns, much straighter and much more slender than those of the male. There is considerable variation in the coloring of individuals and I hardly know what causes it. The typical style has a broad conspicuous chestnut band running lengthwise along the body just above the white of the belly. But some individuals, evidently of equal age, killed practically at the same time and in the same condition of coat, were entirely without the distinguishing mark. It may be possibly an exhibition of individual variation, for these specimens were not confined to any especial locality. I do not think, however, it was in any way an indication of age, for fully adult animals were without the stripe, neither was this peculiarity confined to either sex."

The British Museum contains a good male specimen of Pelzeln's Gazelle, mounted from a skin obtained by Herr Menges near Berbera in Somaliland. Mr. Smit's figures of this species (Plate LXII.), which represent the male in two positions, have been prepared from it. The Museum also contains two skins from the plains of Berbera, collected by Capt. Swayne and originally sent home to Sclater.

May, 1898.



J. Smit lith.

Loder's Gazelle .
GAZELLA LEPTOCEROS .

Published by R.H. Porter .

Hanhart imp

93. LODER'S GAZELLE.

GAZELLA LEPTOCEROS (F. Cuv.).

[PLATE LXIII.]

Antilope leptoceros, Geoffr. St.-Hil. et F. Cuv. H. N. Mamm. (fol.) pls. 473, 474, livr. 72 (1842) (Sennaar?); Wagn. Schr. Säug. Suppl. iv. p. 422 (1844), v. p. 407 (1855); Schinz, Syn. Mamm. ii. p. 445 (1845); id. Mon. Antil. p. 34, pl. 38 (1848); Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 269 (1847); id. Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 265; Reprint, p. 85 (1848); Gieb. Säug. p. 309 (1853); Heugl. Reise N.O.-Afr. ii. p. 100, cum tab. (1877).

Gazella leptoceros, Temm. Esq. Zool. Guin. p. 193 (1853); Brooke, P. Z. S. 1873, p. 543; Lyd. Horns and Hoofs, p. 234 (1893).

Gazella dorcas, var. 4, Gray, Cat. Ung. B. M. p. 57 (1852).

Leptoceros abuharab et *L. cuvieri*, Fitz. SB. Wien, lix. pt. 1, p. 160 (1869).

Gazella loderi, Thos. Ann. Mag. N. H. (6) xiii. p. 452 (1894) (Algeria); id. P. Z. S. 1894, p. 470, pl. xxxii. (animal); Loder, P. Z. S. 1894, p. 473 (habits); Scl. P. Z. S. 1895, p. 522 (Egypt); Bramley, P. Z. S. 1895, p. 863 (Egypt); Scl. P. Z. S. 1896, p. 780 (Viv. Soc. Zool.); Pease, P. Z. S. 1896, p. 813 (Algeria); Whitaker, P. Z. S. 1896, p. 816 (Tunis); Ward, Horn Meas. (2) p. 169 (1896).

VERNACULAR NAMES:—*Abu el harabat* or *Abu el haráb* in Arabic (*Heuglin*); *Reem* of Arabs in Algeria (*Loder*); *Ghazal abiad* (White Gazelle) of Arabs in Tunis and Egypt (*Whitaker* & *Bramley*).

Height of male at withers about 25 inches. General colour very pale sandy fawn, the Gazelline markings little defined. Central facial band and darker cheek-bands sandy, not rufous, and but little contrasting with the light facial streaks. Light lateral bands scarcely perceptible, and the darker ones below them only pale sandy with a tinge of brownish, as are the pygal bands, neither being much darker than the general dorsal colour. Ears long, narrow,

pointed, pale whitish buff externally. Tail sandy at base, darkening terminally to brownish black. Front of fore limbs sandy, of hind limbs whitish; knee-brushes distinct, but little darker than the general colour. Hoofs variable in shape, those of specimens from the sandy regions of the Sahara much elongated, while in other regions they are of the usual shape.

Skull of normal proportions; premaxillæ broadly articulating with nasals. Basal length in an old male 6.45 inches, greatest breadth 3.3, muzzle to orbit 3.6.

Horns of male long, about twice the length of the skull, slender, closely and heavily ringed nearly to the tip. They are very variable as to their exact curvature, but are ordinarily rather straighter than in other species, curving but slightly backwards; they are near together basally, diverging above, sometimes very widely, so as to make them resemble divergent horns of *G. granti* in miniature.

Female. Similar to the male, but the horns, although nearly equally long, are much slenderer and even less curved than in the male.

Hab. Sandy tracts of the interior of Algeria, Tunisia, and Western Egypt, south to Nubia and Sennaar.

The great folio work of Geoffroy St.-Hilaire and Frédéric Cuvier entitled 'Histoire Naturelle des Mammifères,' which was issued in livraisons from 1824 to 1842, contains a long series of coloured figures of mammals, mostly taken from examples living in the well-known Menagerie attached to the Jardin des Plantes. Amongst these in the seventy-second livraison, published in 1842, were the first descriptions and figures given of both sexes of the present Gazelle, from examples stated to have been brought from Sennaar by Burton. They had lived in the Menagerie, we are told, two years, and had bred a young one, which resembled its parents in most particulars. The appropriate scientific name "*leptoceros*," from the long thin horns, had been given to this species, we are informed, by Georges Cuvier, and was adopted by the authors of the work referred to, who, however, called it at the head of their article, after their usual fashion, only by the French name "*Antilope à longues cornes*."

Very little more information was acquired concerning this Gazelle for many years. Most of the systematists were entirely unacquainted with it,

and could only quote the original descriptions. Sundevall and Gray considered it to be merely a variety of *Gazella dorcas*. Rüppell, during his extensive travels in East Africa, seems never to have come across it, and does not mention it in any of his publications.

The first author after its describers to recognize its existence was Heuglin, who in 1877, in the second volume of his 'Reise in Nordost-Afrika,' writes of this species, the name of which he had previously misapplied to another Gazelle, and gives a coloured figure of its head and figures of two pairs of its horns. Heuglin met with *G. leptoceros* in the Libyan desert of Egypt, near the Natron Lakes and the Fayoum, where he states its Arabic name is "Abu el haráb."

Sir Victor Brooke had never seen specimens of this Gazelle, and in his 'Monograph' relies mainly upon Heuglin's description.

So matters remained until recent years, when examples of this Gazelle, or of a very closely allied form, turned up unexpectedly from a new quarter.

Loche, Lataste, and other authorities on the zoology of Algeria had mentioned the existence far in the interior of that country of an Antelope called "El Rim," and examples of the horns of a problematical Gazelle called "El Reem" had been brought to England from the shops at Biskra. In 1894 an enthusiastic sportsman and naturalist, Sir Edmund Loder, F.Z.S., resolved to make a serious attempt to discover this mysterious animal, and proceeded to Algeria for that purpose. We cannot do better than transcribe for our readers Sir Edmund's own account of the results of this successful expedition, which was read before the Zoological Society of London on June 5th, 1894:—

"Seventeen years ago (in 1877) I bought in the bazaar at Biskra several pairs of Gazelle horns. They obviously belonged to three species: *Gazella dorcas*, called by the Arabs 'Rezal'; *Gazella cuvieri*, which they call 'Admi'; and a third called 'Reem,' which I was not able to identify with any described species. All these horns were on frontal bones only. It is very rarely that the Arabs bring in any whole skulls or skins for sale, and I have never seen anything but frontlets of the 'Reem.'

"In 1891 and again in 1893 I went out to Algeria for the purpose of hunting Mouflon (*Ovis tragelaphus*).

"In 1877 I had been prevented from going after them except for a few hours at a time. On these later trips I was more successful and secured some fine male Mouflon, a female of the large Mountain Gazelle (*Gazella cuvieri*), and a few specimens of *Gazella dorcas*.

"At Biskra I again found horns of the Reem, but got no information about it except

that it was reported to live in the sand. I heard a French name for it for the first time, 'Gazelle des sables.'

"As my friend Mr. Alfred Pease was spending a second winter at Biskra and had made the acquaintance of several native hunters, I requested him to try what he could do to find out the habitat of the Reem. About Christmas-time last year he wrote to me that he believed he had reliable information that the Reem was to be found in the desert near Chegga, only about 50 kilometres south of Biskra on the caravan-route to Touggourt.

"We made arrangements for a camping trip, and I left England on February 1st, and started from Biskra with Mr. and Mrs. Alfred Pease on February 8th of this year.

"After two days' marching we got to Chegga and made inquiries respecting the Reem. No one seemed to know anything about the animal except one Arab, who said that if we went on farther south we should come to a place called Ain Gebberah, where there were a few Reem, but if we went on still farther to Hamraia we should find the Reem in quantities.

"We therefore travelled on for two or three more days until we came to Hamraia, but on making inquiries about the Reem the answers were very unsatisfactory. We determined, however, before giving up the search, to stay here a day to hunt and see what game there was in this part of the desert.

"In the early morning of the next day Pease started off from camp with an Arab in one direction, while I went off in the other. By the evening we had covered a considerable extent of country and had used our glasses from every available rise in the ground. We saw several small herds of *Gazella dorcas*, but no tracks even of any other Gazelle. We did not seem to be any nearer to obtaining a Reem than when we started from Biskra.

"At night, when we got back to camp, we were told that a negro camel-herd had been there during the day, and had said that we were not at all in the right country for Reem, that he was well acquainted with the animal and knew where it was to be found. He came into camp again the next morning and told us that the Reem had long slender hoofs and tender feet, lived only in the soft sand, and would be unable to run on hard stony desert such as that round Hamraia. He said he could take us to the Reem country, in rolling sand-hills, but we should not be able to camp very near as there was no water for our horses and pack-animals.

"We agreed to go with him, and he led us a day's march still farther south towards the Oued Souf, and then turned off the caravan-track to the east and chose a camp in the sand about an hour and a half from water. (Almost all the water in the desert is brackish and bad, but the water here was positively nasty.)

"The next morning we left camp very early on horseback, with the negro on foot and an Arab hunter riding a mule. The negro led the way at a tremendous pace, keeping up a good trot in the soft sand and sometimes running fast for a couple of miles without a stop across the dry arm of a chott, keeping us at a hand-gallop most of the time.

"After two hours and a half the negro pointed out the first track of the Reem, which

is quite easily to be distinguished from that of *Gazella dorcas* from its much greater length. We now unsaddled the horses, tied them up, and went off in two parties to hunt for Reem. The negro led the way in front of me, going slowly and with great caution, as the Reem is extremely wary and against the nearly white sand can detect a moving object a long way off. We had not walked very far when we saw the head of a Reem looking over the top of a sand-ridge at about 300 yards distance. We stayed for a long time perfectly still behind a tuft of tall alpha grass, till at last the head disappeared. As soon as it was out of sight we ran as hard as we could across the bare sand to the top of the next ridge, and again sheltered ourselves behind a tuft of alpha. When we looked out cautiously we saw that the Reem had moved on to another sand-hill more to our left, and was again showing just the top of his head over it. We had, however, considerably reduced the distance. Again he stopped perfectly still for a long time and then turned and moved off. We ran to another ridge, and I caught sight of him trotting to the top of the sand-hill beyond at about 150 yards. At the top he turned and I fired at once and got him. A lucky shot! as the distance was long for so small an animal. It was a good male, with horns 13 inches long. I have not seen any much longer than these.

“After taking the Reem back to the place where we had left the horses, we started off again, and during the day saw several small lots containing both males and females (4, 5, and 2), but did not get a chance of another shot. Pease also saw a few.

“We hunted the sand-hills for two more days; on the third day our negro guide took us much farther from camp, running before us with surprising speed and endurance for three and a half hours before we halted and tied up our horses. In the evening, after walking all day in a hot sun and on soft sand, he showed himself still untired and ready to run at the same pace back again to camp. This remarkable man said that he had lived for seven years in the desert without sleeping in a house or tent, and had hardly tasted water, meat, or bread; during the whole of that time his food consisted of dates and camel’s milk, and he attributed his strength to this diet. The long distance of our camp from the sand-hills where the Reem is found was a great hindrance, as we could not hunt for them at the time they were feeding. By the time we got to the ground they were already lying down for the day, generally on the top of the sand-ridges, and keeping a watchful look-out. We saw several small herds each day, but neither of us ever got another chance of a shot.

“We were lucky in having calm weather, as a sand-storm in that country is a very serious matter. The air gets as thick as during a bad London fog and one cannot see even a few yards ahead, making it quite impossible to regain camp, all tracks being blotted out in a few minutes by the wind. Our experience of sand-storms was limited to *one* day, our last day in the desert, luckily for us well outside the region of the sand-hills, when leaving our caravan behind we rode in 50 kilometres to Biskra in the teeth of a cutting wind filled with dust and sand, an extremely painful experience; but we were in no danger of losing our way as we were then on the broad track worn by the caravans travelling between Biskra and Touggourt.

“The Reem is remarkable for its light and uniform coloration, the ordinary Gazelle-

markings being hardly noticeable. The long slender hoofs are also very peculiar, reminding one of those of *Tragelaphus speki*, which lives in the swamps on the borders of lakes and rivers.

"It is quite certain that the Reem can never drink, as there is no water in this country at all, except in the comparatively deep wells dug by the natives.

"The following measurements of the male Reem were taken directly after it was killed:—Height at shoulder 2 ft. 4 in.; girth at brisket 2 ft. 1 in.; length of horns 13 in. It weighed, after being brought into camp (without entrails), 34 lb. These are about the measurements and weight of *Gazella dorcas*.

"For comparison I give the measurements of a good male *Gazella cuvieri* which I killed in the mountains a few weeks after the Reem:—Height at shoulder 2 ft. 7 in.; girth at withers 2 ft. 8½ in.; weight without entrails 58 lb.

"As to the distribution of these species, I may say that *Gazella cuvieri* is found entirely in the mountains, never down in the true desert. It climbs like a Chamois to the tops of the highest mountains in the rockiest ground, and is often found in the juniper-forests on the mountain-slopes. These are also the haunts of the Mouflon, the two animals being constantly seen on the same ground.

"*Gazella dorcas* is found all over the hard stony desert and also on the foot-hills, so that it sometimes overlaps the range of the Admi. I have seen a few in the sand-hills, the true country of the Reem; but I believe that still farther south it is not found, its place being taken entirely by the Reem. I quite believe the statement of the natives that the Reem is never found off the soft sand."

On his return home Sir Edmund Loder submitted his series of specimens of the Gazelles obtained during this and his former journeys in Algeria to Thomas, who, at the same meeting of the Zoological Society at which Sir Edmund's notes were read, proposed to refer his examples of the "Reem" to a new species to be called *Gazella loderi*, after the energetic traveller who first made known its existence in Algeria.

Mr. Pease, in his notes on the Antelopes of Eastern Algeria published in the Zoological Society's 'Proceedings' for 1896, gives us the following additional information:—

"The Rhime (*Gazella loderi*), Arab 'El Rhime,' Tamahaq 'Hankut,' is the common Gazelle of the Sahara. Enormous numbers are killed by the Arabs in the neighbourhood of Rhadamis and their skins dressed and dyed with a dye made from the rind of pomegranates and exported from Rhadamis. They are to be found throughout the region of the great Ergs and everywhere in the Sahara sands where there is vegetation sufficient to support them. The only places where they are to be met with, north of El Oued Souf, are to the south-west of Bou Chaama and near Sef el Menadi. A number of their horns are always on sale at Biskra and sometimes the skins. The male horns of the Rhime sometimes bear so close a resemblance to those of the Admi (*Gazella cuvieri*) that they are often sold and bought as such."

Mr. Pease also points out that in the "Rhime" the horns in their main outline form a long evenly tapering V, whilst in the Admi the horns are more inclined to be parallel, and towards the points usually take an inward and forward turn, as shown in the diagrams (fig. 66, *a*, *b*) which by the

Fig. 66.



Diagram of horns of Rhime (*a*) and Admi (*b*).
(P. Z. S. 1896, p. 814.)

kindness of the Zoological Society we are able to reproduce. The annulations, also, Mr. Pease states, are deeper and more marked in the Admi, and stop more abruptly towards the points than in the "Rhime."

This Gazelle occurs also in Southern Tunis, as we learn from Mr. J. S. Whitaker, F.Z.S., who has written the following notes on it in the Zoological Society's 'Proceedings':—

"This pale desert Gazelle is known to the Tunisian Arabs by the name of 'Ghazel abied' or 'Resêl abied,' meaning the White Gazelle, its Algerian name 'Reem' or 'Rim' being apparently unknown in Tunis.

"It seems to be a true desert species, never occurring out of the sand-dune country, where it replaces *G. dorcas*; and while the home of the latter species is the semi-desert country, with its vast stony plains, covered with scanty scrub vegetation, the habitat of *G. loderi* is undoubtedly the more arid region of sand wastes further south.

"Herr Spatz, who has resided for several years in the south of Tunis, and is well acquainted with this Gazelle, informs me that it is common in the inland country of the extreme south of the Regency, being first met with at about 25 to 30 miles south of the Chott Djerid. In the districts where it occurs it is plentiful, and is generally to be found in small herds; but owing to its very pale colour, which harmonizes so well with that of the desert surroundings, it is not easily distinguished at a distance, and being, moreover, extremely shy and wary, a near approach is not often possible. The nomad Arabs, however, who are nearly all sportsmen, kill a good many, and every year some 500 to 600 pairs of horns of this species are brought by the caravans coming from the interior to Gabes, where they find a ready sale among the French soldiery.

“Herr Spatz confirms what Sir Edmund Loder says of this species never drinking, and, as to its food, says it subsists on the leaves and berries of the few desert plants to be found in the sand wastes. The female of *G. loderi*, according to Spatz, often has two young ones at a birth, differing in this respect from *G. dorcas*, which seems to have but one.

“So good a description of *G. loderi* has been given by Mr. Thomas (P. Z. S. 1894, p. 470), that I can add nothing thereto, except it be merely to say that the coat of this Gazelle is extremely fine and short-haired, and that in the specimens which I have the knee-brushes are so slightly developed as to be scarcely noticeable or worthy of the name.”

In the spring of 1895 Sclater was in Egypt, and convinced himself that besides *G. dorcas*, of which there were many specimens in the Zoological Gardens at Gizeh, there were examples of both sexes of another species belonging to the group of *G. leptoceros* and *G. cuvieri*, stated to have been obtained from the Arabs of the Western Desert (*cf.* P. Z. S. 1895, p. 400). On receipt in London of a skin and skull of this Gazelle subsequently sent to him by Mr. Jennings-Bramley, Sclater, after comparing it with typical specimens of *Gazella loderi* in the British Museum, pronounced them to be of the same species. Mr. Jennings-Bramley also supplied Sclater with some excellent notes on the mode of capture of this Gazelle by the Arabs of the Western Desert of Egypt, from which we extract the following passages:—

“On the 27th of June, 1895, I started from the Pyramids in order, if possible, to catch some living specimens of Loder’s Gazelle (*Gazella loderi*), known to the Arabs as ‘Rasal Abiad’ (the White Gazelle), which the shikaries whom I took with me reported to be found in the desert at some thirty or forty miles distant from Cairo.

“Leaving at 4 P.M. on the 27th, we started, taking a south-easterly direction. We travelled till 12 that night, and at 4 next morning resumed our march. Soon after the sun had risen, one of the shikaries, pointing to the ground, showed what he made out to be the spoor, evidently but lately made, of a fine male Loder’s Gazelle. This, being larger than that of the Dorcas Gazelle, is very easily recognizable; the bluntness of the hoofs in the case of Loder’s Gazelle shows a marked difference. About 12 o’clock one of the camel-men called out that a Gazelle could be seen ahead, but the many heaps of white stones, scattered all over the desert, are so deceiving at a little distance that both shikaries shook their heads.

“The camel-man, however, in this case proved to be correct, as we soon noticed the Gazelle walking leisurely away. It disappeared behind a mound of sand, where it must have remained, for, on reaching the place about half an hour later, we were surprised to come suddenly on the Gazelle, now only some 200 yards off. It was a fine female, very white in colour. Not wishing to disturb any others that might be near, I did not fire. We found, however, that it was alone. At 12 o’clock or thereabouts we came

upon the skirt of the plateau, from which the Fayoum can be seen, and here the shikaries decided to turn back, as they said we had passed the 'White Gazelle ground'; so, after returning about two miles, we set up the tents and waited for the evening, the sun being so hot that it was impossible to continue our search.

"During the afternoon the two shikaries constructed traps, which we set in the evening.

"The Gazelle trap, except the small hemp-platted rope, is made entirely from the date-palm. Taking the long leaves, the shikarie first constructs by plating them together a deep ring, about 3 inches in diameter and about 4 inches deep: it should, in fact, fit well into a golf-hole and make its walls secure. He now takes an old stalk from which the dates have been picked, and separating about twenty of the fibres which compose it, and run its whole length, he twists them into a rude bracelet about three inches in diameter. Then taking three more fibres, in place of twine, he binds the ring securely; the ring or bracelet has then a form much resembling a diminutive 'Ringold' ring. The shikarie now breaks off the points of the date-thorns until he has about twenty-five of them 2 inches in length; these he pushes through the fibrous sides of the ring until all the points meet in the centre, so that when finished this ring has much the appearance of a small sieve. All the thorn-points overlap slightly in the centre of the ring. This ring, holding all the thorns, the deep ring of platted leaves, and a soft thick hemp rope, made by the Arab himself, by the ordinary three-plat from raw hemp (this rope, being soft, not only binds itself more securely to the Gazelle, but does not cut the skin when drawn tight), attached to a date-stick about a yard in length, are all the implements that an Arab requires to catch a Gazelle.

"Starting in the evening for the lower ground, which is studded with small bushes (for when pitching the tents we purposely kept at a good distance from the feeding-ground), we soon found spoor, but none very promising; a buck and two does had been there two nights before. A small desert plant, much resembling our English Red Cranesbill (*Geranium sanguineum*), was pointed out to me by the Arabs as a favourite food of the Gazelles. Finding a spot where the spoor led to one of these plants, and the plant evidently having been nibbled at, we decided to put a trap near it. The Arab sat down and made a hole, using his deep ring to keep its sandy walls intact, so that he now had a hole resembling exactly in size and depth a golf-hole with basket-work sides, within four or five inches of the plant.

"Taking now the thorny ring he places it on the hole, which it should exactly cap. He now powders up some camel-dung and drops it carefully over the thorns in the ring, which being close together hold it up, so that soon nothing can be seen of the thorns. The use of the dried dung is, to hold up the sand which hides the trap. The hemp rope, now made into a slip-noose, is put round the top ring, and the stick to which it is attached buried in the sand. The whole is now carefully covered with sand. One of the shikaries laid his traps so successfully that it was almost impossible to find one again unless a Gazelle was caught in it. The marks like those of a Gazelle made by the fingers over the trap add to the deception. It is curious to remark that a Gazelle will rarely walk over an impression left by either beast or man in the sand.

“When the Gazelle comes in the evening to feed, its foot slips through the top ring in the centre where the thorns meet, and so to the bottom of the hole. The top ring is now fixed round the Gazelle’s leg, at the height of the depth of the hole, the spiky thorns entering the skin. This ring also holds up the hemp rope, which the Gazelle, in endeavouring to kick off the thorny ring that pricks it, draws tight, generally over the knee.

“The Gazelle starts off, dragging after it the date-stick, attached to the rope. The swinging stick makes it impossible for the animal to get away at any pace, as, twisting round one leg or the other, it throws the Gazelle to the ground continually.

“The spoor of the trapped Gazelle with the marks of the swinging stick are easily found, and the animal tracked down until in sight, when a trained greyhound will soon catch and hold it until his master comes up.

“During November and December the Gazelles are caught when fawns by trained hounds, and this is the simplest method; but it can only be practised during two months, as it takes a very good dog to catch a Gazelle when more than this age.

“During the eight days I was in the desert, though unsuccessful in trapping any, I saw several very fine specimens of Loder’s Gazelle.”

In August 1896 a fine adult living female of this Gazelle was received by the Society as a present from Mr. A. R. Birdwood, of Cairo—no doubt obtained in the same locality as that explored by Mr. Bramley. Mr. Birdwood wrote subsequently to Sclater concerning this Gazelle as follows :—

“I am pleased that you have found the Gazelle a real acquisition to your Gardens. I succeeded in securing you a very fine male the other day, but it died almost at once from the effects of the trap used by the Bedouins !

“With regard to the statement that this Gazelle does not drink water, my theory is that it may be true that water is not always obtainable where it is, and that in that case it makes shift with the succulent desert plants that are to be found even in the most arid, seemingly waterless, and barren plains ! Of these desert plants, I have collected more than sixty varieties from the limestone hills of Mariout, in the arid stretches running from Wady Natron to Wady Siwa, and in the still more unfavourable ground of the dunes that intersect the road running from Fayoum to the oases of Farafseh and Dakleh. All have the same characteristic succulence, and one, known to the Bedouins as ‘broth of the Gazelle’ (which looks more like a bundle of dry thorns than anything else), is most delightfully aromatic (when snapped off) as well as succulent ! These seeming deserts after a rain are plains of verdure, but in a few months return to their primitive wildness.”

So far as we know, besides the original specimens of *G. leptoceros* received at Paris in 1884, the female presented to the Zoological Society by Mr. Birdwood is the only example of this Gazelle that has reached the Menageries of

Europe alive. By the kindness of the Zoological Society we are able to give a copy of Mr. Smit's drawing of the head of this animal.

Fig. 67.



Front view of head of a female Loder's Gazelle.
(P. Z. S. 1896, p. 781.)

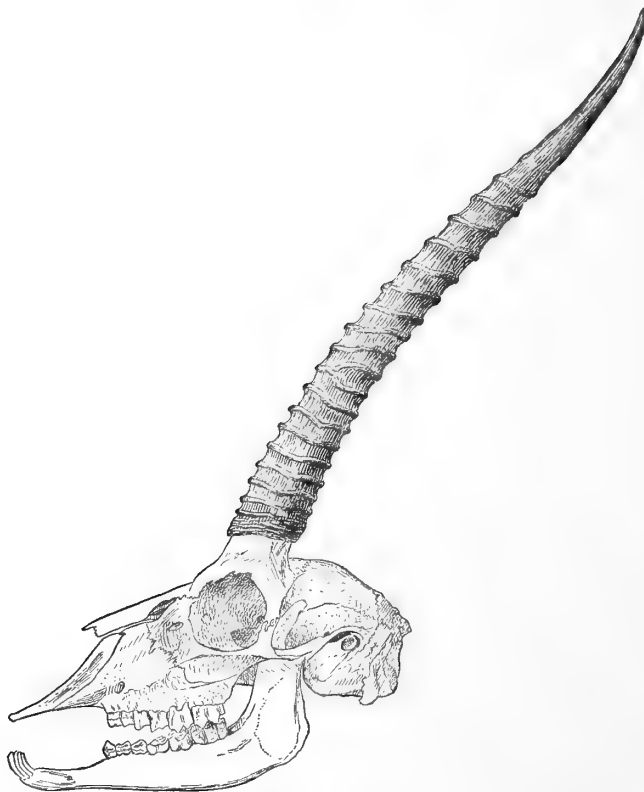
But the identity of the Egyptian *Gazella leptoceros* with the Algerian *G. loderi* is perhaps not yet exactly certain, although we have combined the English name of the latter with the scientific name of the former.

On comparing specimens from Tunis and Algeria with others from Egypt, the size of the former is slightly greater, the markings are even less defined than in Egyptian examples, the horns are less closely ringed, the nasal bones are markedly longer, the nasal opening is both longer and broader, and the premaxillæ articulate less broadly with the sides of the nasal bones.

An old male is 26 inches in height at the withers, and the skull-measurements of the type are:—Basal length 6·75 inches, greatest breadth 3·35, muzzle to orbit 4.

These differences seem to be quite constant, so far as we have materials for comparison, and we therefore think that as the Algerian form has had a name given to it, it may be provisionally retained as a subspecies, at least until these characters are shown to be variable. The accompanying figure, for the use of which we are indebted to the kindness of the Zoological Society, gives a side view of the skull and horns of the Algerian form.

Fig. 68.



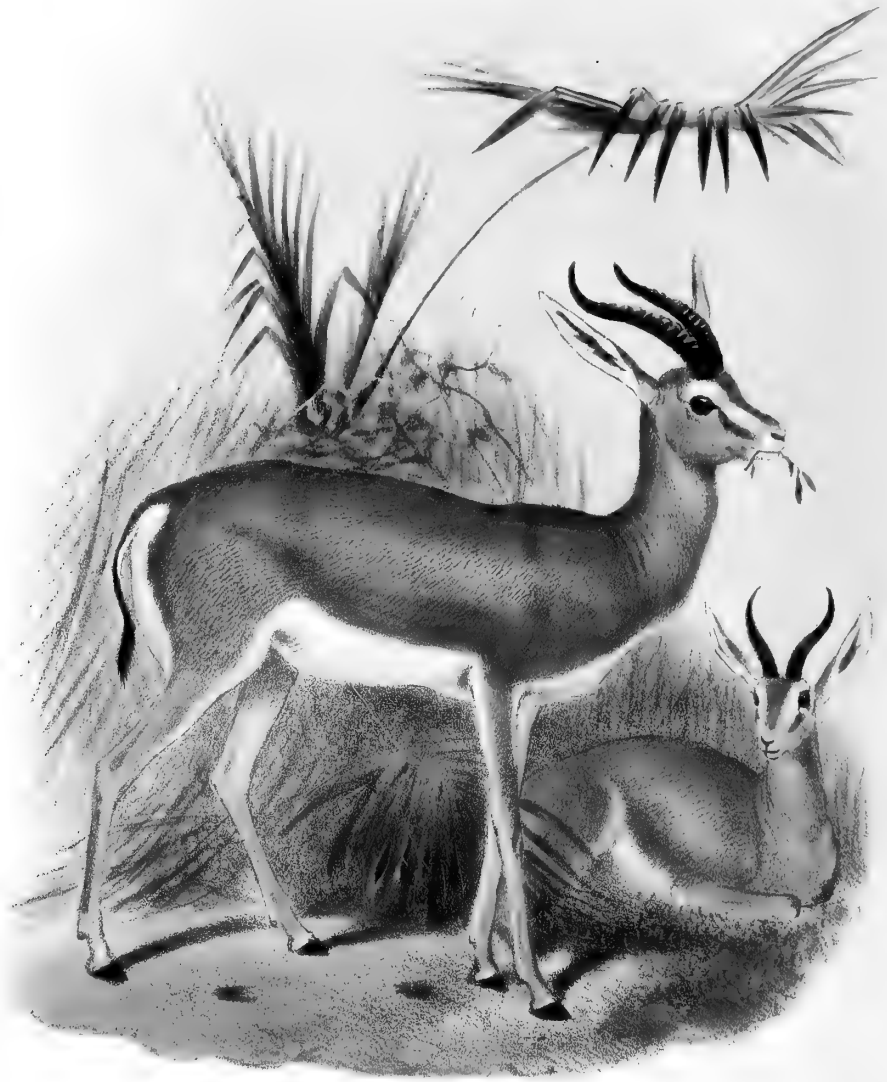
Skull of *Gazella leptoceros loderi*, ♂.
(P. Z. S. 1894, p. 471.)

Our representations of this Gazelle (Plate LXIII.) have been prepared by Mr. Smit—that of the male (front figure) from a mounted specimen in the

British Museum obtained by Mr. J. I. S. Whitaker in the Tunisian Sahara, and presented by him in 1894; that of the female from the example from Egypt living in the Zoological Society's Gardens.

In the British Museum are likewise the typical skin and horns of *Gazella loderi* obtained by Sir Edmund Loder in the desert about a hundred miles south of Biskra, some frontlets and horns from Biskra, presented by Mr. Rowland Ward, and a skin and skull of a female from Tunis, presented by Mr. J. I. S. Whitaker along with the male now mounted. The example of *Gazella leptoceros typica* sent to Sclater by Mr. Birdwood is also now in the National Collection. We have also to thank Dr. J. Anderson, F.Z.S., for the loan of a skin and skull of an old male of the Egyptian form of this Gazelle obtained near the Natron Lakes in Egypt.

May, 1898.



Wm. & J. Smith del.

The Isabella Gazelle .
GAZELLA ISABELLA .

Published by R.H. Porter.

Hanhart imp.

94. THE ISABELLA GAZELLE.

GAZELLA ISABELLA, GRAY.

[PLATE LXIV.]

Antilope dorcas, Licht. Darst. Säug. pl. v. (1827)?*Gazella dorcas*, Blanf. Zool. Abyss. p. 261, pl. i. fig. 1 (1870).*Gazella isabella*, Gray, Ann. Mag. N. H. (1) xviii. pp. 214 & 231 (1846); id. Knowsl. Men. p. 4 (1850); id. P. Z. S. 1850, p. 113; id. Cat. Ung. B. M. p. 57 (1852); Gerr. Cat. Bones Mamm. B. M. p. 233 (1862); Fitz. & Heugl. SB. Wien, liv. pt. 1, p. 591 (1866); Fitz. SB. Wien, lix. pt. 1, p. 158 (1869); Gray, Cat. Rum. B. M. p. 38 (1872); id. Hand-l. Rum. B. M. p. 107 (1873); Brooke, P. Z. S. 1873, p. 539; Huet, Bull. Soc. Acclim. 1887, p. 65; W. ScI. Cat. Mamm. Calc. Mus. ii. p. 157 (1891); Ward, Horn Meas. (1) p. 116 (1892), (2) p. 158 (1896).*Antilope isidis*, Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 267 (1847); id. Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 263; Reprint, p. 83 (1848).

Height at withers about 25 inches. General colour pale fawn, rather variable in tone, sometimes tending towards brownish. Light lateral band very indistinct; dark band generally fawn like the back, occasionally darker, almost smoky brown. Central dark facial band deep rufous, a darker nasal patch often developing in old individuals. Light facial streak well defined, white. Pygal band almost obsolete, little or not darker than the back.

Skull rather variable in the shapes of the nasal bones and premaxillæ. That of a male measures 6.55 inches in basal length, greatest breadth 3.1, muzzle to orbit 3.65.

Horns of male, as well figured by Blanford under the name of *G. dorcas*, evenly diverging and curving backwards for four-fifths their length, their tips strongly bent inwards and upwards nearly or quite to a right angle.

Female. Similar to the male, but the horns slender, scarcely ridged, their tips curved inwards rather than upwards; in length nearly equal to those of the male.

Hab. Coast-lands of the Red Sea from Suakin to Massoua, and over the interior to Bogos, Barca, and Taka.

It is possible that the Gazelles described and figured by Lichtenstein in the first part of his 'Darstellung der Thiere' as "*Antilope dorcas*," which were stated to have been procured by Hemprich and Ehrenberg in Sennaar, may have belonged to the present species. Sundevall certainly considered them to be referable to a species distinct from the true *Gazella dorcas*, and proposed to call them "*isidis*," from Lichtenstein's vernacular name "Isis Antelope." But this identification is by no means certain, and, at all events, the name "*isabella*," under which this Gazelle was shortly diagnosed by the late Dr. Gray in 1846, will take precedence of Sundevall's appellation. Gray's description is very short, and does not allude to the shape of the horns, which are one of the most characteristic features of this species. His type specimen is still in the British Museum. It is an immature male, mounted, and stated to have been received from "Abyssinia," though Gray in later papers gives "Egypt" and "Cordofan" as the localities for his *G. isabella*.

Heuglin, in his various memoirs on the Antelopes of N.E. Africa, did not keep *G. isabella* separate from *G. dorcas*, and united their localities. Sir Victor Brooke, in his monograph of the Gazelles, though he divides them and says that "amongst the smaller Gazelles no two species could produce two more dissimilar animals than typical specimens of *G. dorcas* and *G. isabella*," states his conviction that "every intermediate degree between them will be found represented in intermediate localities." It is indeed true that *G. isabella* is a very inconstant species and requires further careful study.

There can be no doubt that Dr. Blanford's *Gazella dorcas*, in his volume on the 'Geology and Zoology of the Abyssinian Expedition,' is what we here call *G. isabella*. The figure of its horns (*op. cit.* plate i. fig. 1) shows the characteristic twist inwards at the upper end. Moreover, a skull of a male (from Zoulla) and a skull and skin of a female (from Amba), obtained by

him during the expedition, and now in the British Museum, are evidently referable here. Mr. W. L. Sclater has also catalogued four heads in the Calcutta Museum, obtained by Mr. Blanford on the same occasion, as *G. isabella*. Mr. Blanford gives us the following field-notes on the present species:—

“So far as my observation extends, neither this nor Bennett’s Gazelle are ever seen in large flocks, like the animals of the Springbok group. Usually both are seen solitary or in parties of from two to five together, inhabiting thin bushes, generally on broken ground. They feed much upon the leaves of bushes. The male has a peculiar habit when surprised of standing still and uttering a short sharp cry. Like most Antelopes, they keep much to the neighbourhood of some particular spot. After long observation, I am convinced that Bennett’s Gazelle never drinks, and all that I could ascertain of the present Gazelle leads to the same conclusion in its case.”

In our efforts to obtain further information about the Isabella Gazelle, we did not fail to apply to the officers of the Anglo-Egyptian garrison at Suakin for a set of specimens of it for the National Collection. In reply to our requests Major Sparkes, Surgeon-Capt. Fleming, and Lieut. Carleton were kind enough to send to the British Museum five examples of it; but we cannot say that the examination of these specimens has enabled us altogether to understand this very difficult species. Of the five examples from that locality, three have and two have not a black nasal patch, while the dark lateral band in some is fairly distinct and in others almost obsolete. It is thus evident that these characters, of systematic importance elsewhere, are not, in *G. isabella*, even of local constancy.

Among the Gazelles registered in the Zoological Society’s ‘List of Animals’ (1896) as received during the past twelve years there have been several which, doubtless, should have been referred to the present species, but have been entered under *Gazella dorcas*. Amongst these may be specified an example presented by Commander W. Crofton, R.N., in July 1890 (specimen *e*), a female presented by Col. Holled Smith, C.B., in July 1892 (specimen *g*), and a pair (*h, i*) received on deposit in May 1894.

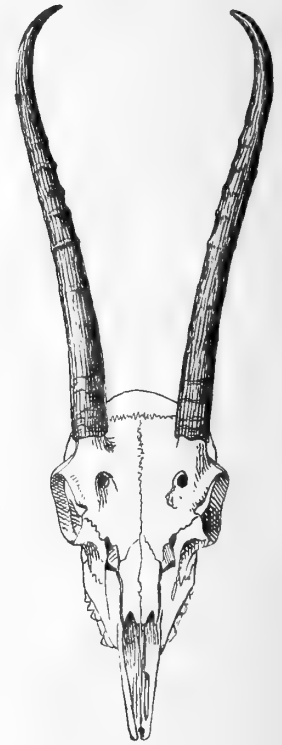
After the arrival of these specimens from Suakin, Mr. A. Thomson, the Head-Keeper, called Sclater’s attention to their differences from the ordinary *G. dorcas*. They were of a more reddish colour, and had a broad and somewhat distinct side-stripe and a blackish nasal spot, in addition to other smaller differences.

Besides the specimens of this Gazelle in the British Museum which we have already referred to, there is a mounted male from the Anseba River, formerly in Sir Victor Brooke's collection, and presented to the Museum by

Fig. 69.



Fig. 69 a.



Heads of Isabella Gazelle, ♂ & ♀.
(From specimens in B. M.)

Sir Douglas Brooke. We believe that our coloured figure (Plate LXIV.), which was prepared by Mr. Smit under Sir Victor's superintendence, was taken from this specimen.

May, 1898.



Wolf del. J. Smit lith.

The Muscat Gazelle.
GAZELLA MUSCATENSIS.

Published by R.H. Porter.

Hanhart imp

95. THE MUSCAT GAZELLE.

GAZELLA MUSCATENSIS, BROOKE.

[PLATE LXV.]

Gazella muscatensis, Brooke, P. Z. S. 1874, p. 141, pl. xxii.; Sel. List An. Z. S. (8) p. 141 (1883); id. (9) p. 155 (1896); Lyd. Horns and Hoofs, p. 179 (1893); Thos. P. Z. S. 1894, p. 451.

Size small, height at withers 21–22 inches. General colour dark rufous fawn, darker than in any other species except *G. arabica*, which it much resembles in colour. Light lateral band scarcely or not perceptible; dark lateral band blackish, its upper edge little defined. Central facial band dark rufous, a distinct blackish patch over the nasals; light facial streak narrow, well defined, dark band below it not defined from the general colour of the cheeks. Knee-tufts present, brownish. Limbs darker in colour than usual, being only white on the inner sides of the forearms and thighs.

Skull very similar to that of *G. isabella*. Premaxillæ scarcely touching nasals. Basal length in an old female 5·7 inches, greatest breadth 2·9, muzzle to orbit 3·6.

Horns of males curved like those of *G. isabella*, but decidedly shorter, not or little longer than the skull.

Female. Similar to the male, but the horns slender, scarcely ringed, nearly as long as those of the other sex.

Hab. Oman, Eastern Arabia.

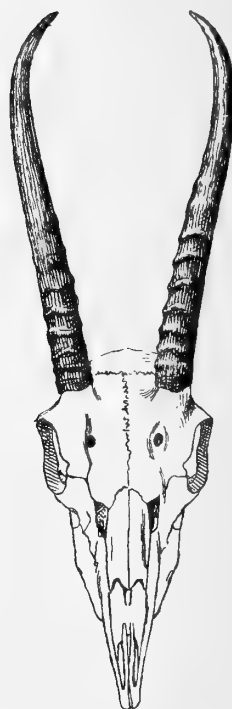
On the 15th of August, 1873, the Zoological Society of London received as a present from Major C. B. Euan Smith (now Col. Sir Charles B. Euan Smith, K.C.B.) a male Gazelle which he had brought with him from

Muscat. On September 20th of the same year a female, obviously of the same species and obtained at the same place, was received by the Society on deposit from Mrs. Harris, then of Limefield, Kirkby Lonsdale. Sir Victor Brooke having then lately published his well-known monograph of the Gazelles in the Zoological Society's 'Proceedings,' and being specially interested in the group, Selater lost no time in calling Sir Victor's attention to these animals, with which he was much delighted. Sir Victor described

Fig. 70.



Fig. 70 a.



Heads of Muscat Gazelle, ♂ & ♀.
(From specimens in B. M.)

them as belonging to a new species at the meeting of the Zoological Society on Feb. 27, 1874, under the name *Gazella muscatensis*, and pointed out the clear differences which separated them from *G. arabica*, which up to that time he had believed to be the only Gazelle met with in any part of Arabia.

Instead of the massive, nearly straight, non-lyrate horns of *G. arabica*, Sir Victor showed that the new species had rather slender horns, compressed

from side to side and distinctly lyrate, with their points turned boldly forwards and inwards. In general appearance also the Muscat Gazelles differed from *G. arabica* in their long and soft coats of a silvery-grey colour, instead of the short close-set pelage of a rich grizzled bay. From *G. dorcas*, to which they bore more resemblance, the Muscat species was recognizable by its smaller size, its different colour, and by the intensity of the facial and lateral markings.

Sir Victor's paper on this new Gazelle was illustrated in the 'Proceedings' by a good coloured plate drawn by Keulemans, in which, however, the general colour is made rather too dark.

In 1874 a second male specimen of this well-marked species was presented to the Zoological Society's Menagerie by Mr. J. H. Bainbridge, and in October 1881 a pair of the same Gazelle were presented by the late Lord Lilford. These last bred a young one, which was born in the Society's Gardens on the 6th of March, 1882.

No more examples of the Muscat Gazelle reached the Regent's Park after this date until 1894, when a female of this species was obtained "in exchange," and a pair were received "on deposit" from the Hon. Walter Rothschild, F.Z.S. The male of this pair is still living in the Society's Menagerie.

The only other specimens of the Muscat Gazelle ever received in Europe, so far as we know, are five examples in the British Museum, presented to that Institution by Dr. A. S. G. Jayakar, of whose many and valuable contributions to science we have already spoken*. Among the several consignments of the Mammals of Oman sent home by Dr. Jayakar, of which Thomas has given an account in the Zoological Society's 'Proceedings' for 1894, were five examples of this Gazelle collected in 1892 and 1893 in several localities in Oman—Khode and Barkah-al-moze, and in Sharkeeyeh, the eastern part of that country. These specimens agree very closely with the type of the species as described by Sir Victor Brooke, which is also in the National Collection.

Our figures of both sexes of this Gazelle (Plate LXV.) have been prepared by Mr. Smit from the specimens in the British Museum.

May, 1898.

* See under *Gazella marica*, above, p. 95.



Wolff del. J. Smit lith.

Heuglin's Gazelle.
GAZELLA TILONURA.

Hanhart imp.

Published by R.H. Porter

96. HEUGLIN'S GAZELLE.

GAZELLA TILONURA (HEUGL.).

[PLATE LXVI.]

Antilope melanura, Heugl. Ant. u. Büff. N.O.-Afr. (N. Act. Leop. xxx. pt. 2) p. 6 (1863) (*nec* Bechstein, 1799).

Gazella melanura, Fitz, SB. Wien, lix. pt. 1, p. 159 (1869).

Antilope tilonura, Heugl. Reise Weiss. Nil, p. 315 (1869); *id.* Reise N.O.-Afr. ii. p. 101 (1877).

Gazella tilonura, Ward, Horn Meas. (1) p. 126 (1892), (2) p. 170 (1896); Lyd. Horns and Hoofs, p. 233 (1893).

Gazella levipes, Brooke, P. Z. S. 1873, p. 541 (*nec* Sund.).

VERNACULAR NAME :—*Tel-badu* in Tigré (*Heuglin*).

Height at withers about 27 inches. General colour deep sandy. Central facial band but little more rufous than the back; no black patch on muzzle. Light facial streak scarcely or not perceptible on sides of muzzle; the area round the eye dull whitish, not sharply defined. Back of ears scarcely lighter than nape. Light lateral band present, not strongly defined. Dark lateral band black, strongly marked, though narrower than in *G. thomsoni*; a sandy line present between it and the white of the belly. No dark pygal band. Tail sandy at base, the remainder black. Knee-brushes present, dark sandy.

Horns not, or little, longer than the head, lyrate, parallel at base, curving outwards above and then abruptly twisted inwards towards each other at the tip, the ends each forming a sharp hook, similar to that found in *G. soemmerringi*, but even more strongly bent inwards.

Hab. Bogosland, North-east Africa.

What little we know of this Gazelle is chiefly due to the researches of the late Baron Theodor von Heuglin, an energetic collector and observer of the Mammals and Birds of North-eastern Africa, whose name we have already had frequent occasion to mention in the pages of this work. In the absence of any better designation, we have selected "Heuglin's Gazelle" as its English name, which is so far applicable that, besides being its first

Fig. 71.



Fig. 72.



Heads of Heuglin's Gazelle, ♂ & ♀.
(From specimens in B. M.)

describer, Heuglin is the only naturalist that has recorded observations on it as met with in its native wilds. Heuglin passed several months in the fertile territory of Bogos, north of Abyssinia (now, we believe, included in the Italian colony of "Eritrea"), when attached to the German expedition sent out in search of the much-lamented traveller Dr. Eduard Vogel. He thoroughly explored this country, which is traversed by the River Anseba,

and discovered many new birds and mammals, which were subsequently described in his various works. Amongst the mammals was the present species of Gazelle, which he met with only "on the bushy plains round Ain-Saba from 3000 to 5000 feet above the sea-level, in small families of from three to six individuals." In his original description Heuglin called this Gazelle *Antilope melanura*, but subsequently altered its specific name to "*tilonura*," there having been already an *Antilope melanura* of Bechstein, which term is, however, a useless synonym of the Oribi (*Ourebia scoparia*). We have not been able to discover what the term "*tilonura*" means, but follow the change, which has been adopted by Sir Victor Brooke and other authors.

Little more, we regret to say, can be told of this beautiful species, which is readily distinguishable amongst its congeners by its broad black lateral stripe and lyre-shaped horns with incurved points. Sir Victor Brooke gave a figure of it from a stuffed specimen in his own collection to illustrate his article on the Gazelles in the Zoological Society's 'Proceedings' for 1873. Our figure (Plate LXVI.), which was prepared by Smit under the direction of Sir Victor Brooke, was probably taken from the same specimen, now in the British Museum, to which it has been presented by Sir Douglas Brooke. It was obtained in Bogosland by Essler about 1872. Four other examples of this Gazelle procured at the same time by the same collector are also in the National Collection. From two of these the accompanying illustrations of the head and horns (figs. 71 & 72, p. 160) have been prepared by Mr. Smit.

May, 1898.





Wolf del. J. Smit lith.

The Red-fronted Gazelle
GAZELLA RUFIFRONS.

Published by R.H. Porter.

Hankart imp.

97. THE RED-FRONTED GAZELLE.

GAZELLA RUFIFRONS, GRAY.

[PLATE LXVII.]

Le Kevel, F. Cuv. H. N. Mamm. (fol.) i. livr. 1, pl. 368 (1818); *Corine*, ii. livr. 36, pl. 369 (1822), and *Corine jeune*, iv. livr. 72, pl. 370 (1842).

Gazella rufifrons, Gray, Ann. Mag. N. H. (1) xviii. pp. 214 & 231 (1846); id. Knowsl. Men. p. 5, pl. iv. (1850); id. P. Z. S. 1850, p. 115; id. Cat. Ung. B. M. p. 60 (1852); id. Cat. Rum. B. M. p. 39 (1872); id. Hand-l. Rum. B. M. p. 108 (1873); Brooke, P. Z. S. 1873, p. 540; ScI. List An. Z. S. (8) p. 140 (1883); Lyd. Horns and Hoofs, p. 232 (1893); Ward, Horn Meas. (2) p. 159 (1896).

Antilope levipes, Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 266 (1847); id. Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 262; Reprint, p. 82 (1848) (ex *Kevel* and *Corine*, F. Cuv., nec Buff.); Wagn. Schr. Säug. Suppl. v. p. 404 (1855).

Gazella levipes senegalensis, Fitz. SB. Wien, lix. p. 159 (1869).

VERNACULAR NAME:—*Seni*, on the Gambia (*Whitfield* fide *Gray*).

Size medium, form comparatively rather stout. General colour deep sandy rufous, brightening into rich rufous on the forehead and muzzle. Nose-spot blackish. White facial streaks well defined, dark cheek-stripes rufous. Light lateral band broad, sandy buff, about the colour of the shoulders, sharply defined from the colour of the back; dark lateral band narrow, black, sharply defined, very prominent, succeeded below by a narrow edging of sandy. Knee-tufts absent. Tail blackish, except just at the base above, where it is sandy.

Skull of medium build; nasals rather broad and short, broadened behind; nasal opening long and narrow, the upper line of the premaxillæ straighter and less concave than usual. Dimensions of a slightly immature male:—Basal length 7 inches, greatest breadth 3, muzzle to orbit 3·95.

Horns rather short in proportion to the size of the animal, evenly

divergent, slightly curved backwards below and forwards above, heavily ringed except for the terminal two or three inches.

Female. Similar to the male, but the horns straight, slender, and less ringed; those of an adult rather less than six inches in length.

Hab. Senegal and Gambia.

The existence of a Gazelle of the group allied to *Gazella dorcas* in West Africa was first made known to us by the authors of the great folio work called 'Histoire Naturelle des Mammifères,' issued at Paris, in which the figures were taken mostly from living specimens. In one of the early livraisons of this publication, in which French names only are primarily used, this species was referred to the "Kevel" of Buffon, and under this name a young male was figured, stated to have been brought to France from Senegal. In a later livraison two young specimens of the same species, also from Senegal, were figured as the "Corine" of Buffon, which was declared to be identical with the "Kevel." We have, however, already shown (under the head of *Gazella dorcas*) that both these terms of Buffon are referable to the last-named species, and that neither these terms nor the scientific names founded upon them can be properly used for any other species. Hence it follows that the first scientific name that can be employed for this Gazelle is *Gazella rufifrons* of Gray, under which term it was curtly described by that author in the 'Annals and Magazine of Natural History' for 1846. Shortly after that period the same species was figured in 'Gleanings from the Knowsley Menagerie' by Waterhouse Hawkins, whose well-drawn plate contains portraits of two males, a female, and a young one of the present species.

As the drawings in the 'Gleanings' were not in all cases taken from animals living in Lord Derby's Menagerie, some of them having been prepared from specimens in the British Museum, it is nearly certain that this was the case in the present instance. It will be observed that Gray in his description mentions almost exactly such a series as being in the Museum as is drawn in the 'Gleanings,' and it is not probable that a similar set should also have been living at Knowsley at the same time.

All the specimens mentioned by Gray, with one exception, are still in the National Collection, and, as "co-types" of the species, show clearly to what animal the name "*rufifrons*" should be applied.

In 1847, in his excellent essay on the "Pecora," the late Professor Carl J. Sundevall established an "*Antilope lævipes*," basing it primarily on the figures of Geoffroy St.-Hilaire and Fr. Cuvier in the 'Histoire Naturelle des Mammifères,' of which we have already spoken. It is obvious, therefore, that Sundevall's term "*lævipes*" is an absolute synonym of "*rufifrons*," though he gives as his principal example a specimen from Sennaar in the Stockholm Museum. But, nevertheless, there would appear to be a closely allied species living in East Africa, which Heuglin, in his first work ('Antilopen und Büffel'), referred to *Antilope leptoceros*, but which he subsequently in 1877 ('Reise in Nordost-Afrika') treated of under Sundevall's name "*Antilope lævipes*." Heuglin states that this Gazelle, of which the native name is "Abu-el-Harabat," is found in Nubia, Kordofan, Sennaar, and Taka, as also near Suakin and on the plains of the Beni Amer, ascending to a height of about 1500 feet above the sea-level. Heuglin specially alludes to the want of knee-tufts in his *Antilope lævipes*, which is the case also in *Gazella rufifrons*. What this East-African Antelope of Sundevall and Heuglin may be we are quite unable to decide, not having been able to examine East-African specimens. It is possible, however, that it may be *Gazella rufina*, which we shall presently speak of.

Of the examples of this Gazelle formerly in the Knowsley Menagerie we have already written. The Zoological Society of London have also, on several occasions, received living examples of this species from the West Coast of Africa. The first of these recorded of late years was purchased in August 1865, and the second, a female, in 1869. In June 1895 a female *Gazella rufifrons* was placed under the Society's care by the Hon. W. Rothschild, F.Z.S., and is still living in the Gardens. In May of last year a fine living pair of this species were received by the Zoological Society from a London dealer and subsequently purchased. It is from this pair that the accompanying figures of both sexes of this beautiful Gazelle (Plate LXVII., have been prepared by Mr. Smit. These animals are still living in the Society's Gardens. They stand about 24 inches in height at the shoulder, the male being slightly the taller of the two. Both male and female have a slight blackish nose-spot, as shown in our figures. The knee-brushes are quite imperceptible in these three specimens, and the knees are perfectly smooth.

May, 1898.

98. THE RUFOUS GAZELLE.

GAZELLA RUFINA, THOS.

Gazella rufina, Thos. P. Z. S. 1894, p. 467 (fig., skull).

Antilope lævipes, Sund. K. Vet.-Ak. Handl. 1845, p. 266 (1847), form *a*, ex Sennaar ;
id. Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 262 ; Reprint, p. 82 (1848) ;
Heuglin, Ant. u. Büff. N.O.-Afr. (N. Act. Leop. xxx. pt. 2) p. 6 ; id. Reise
N.O.-Afr. ii. p. 100 (1877).

Antilope leptoceros, Heugl. Ant. u. Büff. p. 7 (err.).

Closely similar in all respects to *G. rufifrons*, but decidedly larger, the colour throughout particularly rich and brilliant. Light facial streaks not white but sandy, and little different to the general colour of the cheeks. In the single specimen known (a tanned skin), the hairs along the centre of the back and on the sides of the rump are peculiarly waved, but how far this may be due to the preparation of the skin we are unable to say. Knee-brushes dull rufous.

Skull conspicuously larger and heavier than that of *G. rufifrons*. Anteorbital fossæ larger and deeper. Nasal opening shorter and broader in proportion to the general size, and the upper line of the premaxillæ more curved. Basal length of the type, an old male, (circa) 8·05 inches, greatest breadth 3·86, muzzle to orbit 4·9.

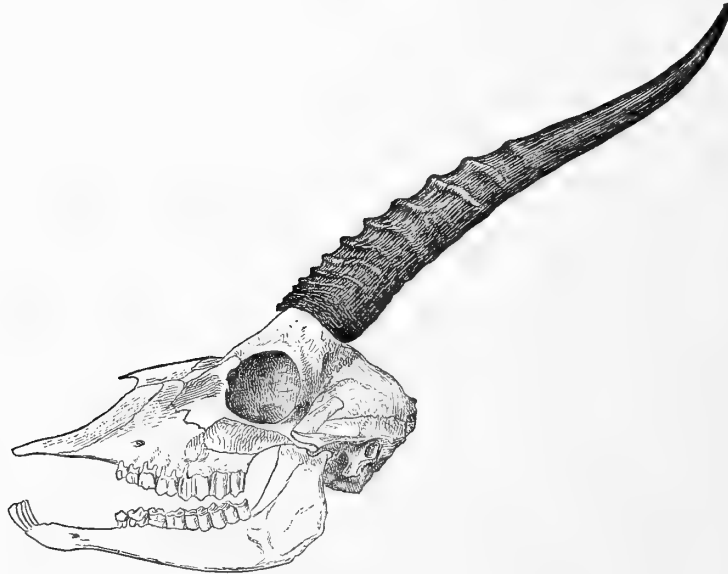
Horns of male short and heavy, their curvature and proportional length about as in *G. rufifrons* ; those of the type are 11·6 inches in length on their anterior curve.

Hab. Interior of Algeria (?).

After his return from Algeria in 1894, Sir Edmund Loder, as we have already stated, placed the whole of his series of specimens of Gazelles from

that country in Thomas's hands for examination. Besides examples of the two previously known Algerian species—*Gazella dorcas* and *G. cuvieri*—Thomas found that two other species, hitherto apparently unrecognized, were represented in the collection. Of one of these, which Thomas named *G. loderi*, we have treated under the head of *G. leptoceros*. Of the other, to which we now propose to refer, only a single specimen, consisting of a skin and a skull, was in the series. This, however, was of so entirely a different character from the three others above-mentioned that Thomas found it necessary to refer it to a new species, which he proposed to call *G. rufina*, from its generally bright, rich rufous colour. The specimen not having been obtained in the field, but having been purchased at a shop in Algiers (in the spring of 1877), cannot have any certain locality assigned to it; but in all probability it was brought from somewhere in the interior, as it is hardly likely that such an object would have been imported into Algiers from a distant country.

Fig. 73.



Skull of Rufous Gazelle.
(P. Z. S. 1894, p. 468.)

There can be no doubt that, as stated above, *Gazella rufina* is most nearly allied to *G. rufifrons* of Senegal, from which, however, we have already stated its points of difference. Sir Edmund Loder has had a water-colour

drawing of the typical specimen prepared by Smit, which has much assisted us in our study of it. It is obviously a larger and more richly coloured animal than *G. rufifrons*, and its skull, of which, by the kindness of the Zoological Society, we are enabled to give the figure that originally appeared in their 'Proceedings' (fig. 73, p. 168), is remarkable for its stout and heavy build and short nasal opening. The only conjecture we can make respecting this somewhat problematical species is that it may possibly be the same as *Gazella lævipes* of Sundevall and Heuglin from North-east Africa, of which we have spoken in our article on *Gazella rufifrons*. It may be remarked that Sundevall, in his account of *Antilope lævipes* (K. Vet.-Akad. Handl. 1845), has noted the existence, in the Paris Museum, of specimens from Algeria of a Gazelle which he considers identical with his species, form α (from Sennaar), and which he separates from form β (from Senegal) on account of the want of the blackish nose-spot. But even if such shall turn out eventually to be the case, the present species will still retain the name "*rufina*,"—" *lævipes*," as we have already pointed out, being correctly treated of as a synonym of *G. rufifrons*.

Sir Edmund Loder has most liberally presented the typical specimen of *Gazella rufina* to the British Museum.

May, 1898.





J. Smit lith.

Thomson's Gazelle
GAZELLA THOMSONI.

Published by R.H. Porter

Hanhart imp

99. THOMSON'S GAZELLE.

GAZELLA THOMSONI, GÜNTH.

[PLATE LXVIII.]

Gazella thomsoni, Günth. Ann. Mag. N. H. (5) xiv. p. 427 (1884) (fig., horns); Thomson, Masai-land, p. 536 (1885) (fig., horns); Hunter in Willoughby, E. Africa, p. 289 (1889); Ward, Horn Meas. (1) p. 133 (1892), (2) p. 171 (1896); True, P. U.S. Nat. Mus. xv. p. 473, pl. lxxvii. (1892) (Taveta); Lyd. Horns and Hoofs, pp. 236, 239 (1893) (fig., horns); Lugard, E. Africa, i. p. 534 (1893); Jackson, in Badm. Big Game Shooting, i. pp. 285 & 298 (1894); Scott Elliot, P. Z. S. 1895, p. 340; Matsch. Säug. Deutsch-O.-Afr. p. 130 (1895); Rhoads, P. Ac. Philad. 1896, p. 519; Jackson, P. Z. S. 1897, p. 434.

Height at shoulders about 25 inches. General colour deep sandy rufous, all the markings well developed and sharply defined. Central facial band deeper rufous, a black patch present on the top of the muzzle. Light facial streaks pure white, extending quite to the muzzle and surrounding the eye; darker cheek-streaks blackish. Light lateral band present, though not very much paler than the back. Dark lateral band deep black, greatly developed, very broad, sharply defined above and below, extending on to the outer side of the elbow; no sandy streak between it and the white of the belly. Pygal band small, blackish. Ears rather short. Tail sandy at its base above, the remainder black. Knee-brushes present, sandy or whitish.

Skull with short, broad, and quadrangular nasals, nearly as broad as long; premaxillæ straight, scarcely concave above, broadly articulating with nasals. Basal length of skull of a male 7·7 inches, greatest breadth 3·6, muzzle to orbit 4·25.

Horns rather like those of *G. bennetti* on a large scale, little divergent, sometimes even quite parallel, evenly but very slightly curved backwards for seven-eighths of their length, their tips gently recurved upwards and forwards. In length, over the front curve, they attain to about 14 or 15 inches, the record being $15\frac{1}{2}$.

Female. Similar to the male, but with the horns rudimentary, much smaller than in other African Gazelles; only from 3 to 6 inches in length, of about the thickness of a cedar pencil, smooth and unridged, and in direction crooked and irregular.

Hab. Interior of British and German East Africa, from Lake Rudolph south to Irangi.

Fig. 74.



Horns of Thomson's Gazelle, ♂.
(Ann. Mag. N. H. (5) xiv. p. 427.)

The name of Joseph Thomson, the African traveller, will always rank among the foremost of those who in the second half of this century have striven to open the Dark Continent to civilized man, and have lost their lives at an early age by violence or disease in consequence. Thomson was, moreover, one of the very few amongst African explorers who had never shed the

blood of a native, nor even, we believe, during his many journeys, fired a shot in self-defence. Thomson's name has been worthily associated with the present Gazelle, of which he was the discoverer during his expedition through Masailand to Lake Victoria in 1883 and 1884, and of which he first brought back specimens to Europe.

Thomson, as we are informed by Dr. Günther, who described this Gazelle as *Gazella thomsoni* in June 1884 from two frontlets presented by Thomson to the British Museum, met with it on his way up the country from the plains near Kilimanjaro to Lake Baringo, at various elevations under 6000 feet. Dr. Günther, we may remark, in his description and figure of these horns fell into a not unnatural error in treating the more slender pair (fig. 74 a, p. 172) as those of a female. But, as we have already stated, the horns are always abnormally small in the doe of this Gazelle, and sometimes, it is said, altogether wanting. The slenderer pair of horns shown in Dr. Günther's figures, which we have been kindly allowed to reproduce in this work, are, like the stouter pair, doubtless those of a male.

In his volume 'Through Masai-land,' Thomson does not appear to have made any reference to this Gazelle, except by repeating the figures of the horns (p. 536) already published by Dr. Günther. Thomson had intended, we believe, to put his notes on the animals and plants collected and observed during this expedition into an Appendix, which, however, from pressure of other matters, was never written.

After Thomson himself, the next earliest information obtained concerning this Gazelle appears to be that collected by Sir John Willoughby's hunting-party in 1886-87. In the Appendix to 'East-Africa and its Big Game,' Mr. Hunter writes of it as follows:—

"This Gazelle, discovered by Mr. J. Thomson during his trip through Masai-land in 1883, was found in large numbers in the plains in the Masai country to the south-west of Kilimanjaro, and we also came across it on the borders of the Masai country at the south end of Kyulu mountain, but it is not met with on the south side of the mountain between these two points. I have seen these Gazelles mixing with *Gazella granti*, the female of which, at long range, though larger, is easily mistaken for a male *G. thomsoni*, both having the broad black stripe on the side. They are generally seen in small herds of one male to about ten females."

In the first volume of 'Big Game Shooting,' of the Badminton Library, Mr. F. J. Jackson, than whom no one can be better qualified to speak of

East-African Antelopes, gives us his experiences with the present species in the following words:—

“In habits *G. thomsoni* is very like *G. granti*, but, as a rule, is found in rather larger herds. Single bucks of this species are, however, more often seen than single bucks of *G. granti*. At Lake Naivasha, in July 1890, I saw a large herd of some sixty head,

Fig. 75.



Front view of head of Thomson's Gazelle, ♀.
(Neumann's 'Elephant-Hunting,' p. 11.)

composed entirely of does, and in the same place, in September of the previous year, I saw a herd of some thirty or forty beasts, every one of which was a buck; but I do not think that this can be taken as evidence that the bucks and does separate at certain seasons of the year, as on the same days on which I saw these two herds I also saw others in which the bucks and does were together. Thomson's Gazelle is a confiding little beast, and, except in places close to a well-beaten caravan-route, where it has been constantly shot at, can be easily approached within 120 yards with ordinary care and

perseverance, even in the most open and covertless spots. These beasts appear to be confined almost entirely to the Masai country, as I have not heard of their having been seen east of the Sigarari plains to the south of Kilimanjaro, or south of the Useri river and the head-waters of the Tsavo. I saw none at Njemps near Lake Baringo, or in Turkwel and Ngaboto in the Suk country, though *G. granti* was plentiful in all these places."

Writing subsequently in the Zoological Society's 'Proceedings' on the Antelopes of the Mau District of British East Africa, Mr. Jackson says that this Gazelle does not, as he believes, extend beyond a few miles north of Lake Nakuru. He adds that "the females are *horned*, whatever may be said to the contrary." With this view Mr. Arthur H. Neumann, one of our most recent explorers in British East Africa, quite agrees. In his lately published volume on 'Elephant-Hunting' in that Protectorate, Mr. Neumann gives a figure of the head of a female Thomson's Gazelle, which, by his kindness and that of his publishers, Messrs. Rowland Ward & Co., we are enabled to reproduce (fig. 75, p. 174): this shows that the horns are present in that sex of *G. thomsoni*, though in a much more dwarfed condition than in most of its allies. Mr. Neumann also claims to have met with this Gazelle much further north than its range is usually held to extend. This was in the district of Kisima, south of the Lorogi Mountains and north of Lake Naivasha.

Col. Lugard, who has had great experience in East-African game-shooting, has stated* that he had never met with a horned female of Thomson's Gazelle. A letter lately received from our much-valued correspondent, Mr. S. L. Hinde of the B.E.A. Medical Service, in response to enquiries on this point, endeavours to explain this diversity of opinion as follows:—

"With reference to the statement that the female Thomson's Gazelle has no horns, I can, perhaps, give some explanation. The horns of the female of this species (see the skulls given by me to the British Museum) are very frail, crooked, and generally malformed. A good pair would be about five inches long; but a very slight blow will break or knock off these horns. Four or five females of this Gazelle that I have shot have knocked off one or both horns when falling to the shot or in their subsequent struggles.

"A doe of this species born in the fort at Kikuyu developed horns; but in play with

* 'The Rise of our East-African Empire,' i. p. 535.

the rest of the herd of five, knocked them off when they were not more than two inches long, and when I last saw her there were two warty scars where the horns had been. I should think that a similar accident is probably a very common occurrence among the wild herds; so much so, that I should not be surprised to see a herd of does 'without horns.' The yearling fawns running with their mothers would have horns not more than half an inch long, and therefore invisible. If a man, for any reason, were to shoot a doe out of such a herd he would probably choose the largest animal. Afterwards, if the question were raised, he would say that he saw a herd of does of Thomson's Gazelle absolutely hornless, and on shooting one found there were only little marks on the head where the horns would have been if the animal had had any.

"I have myself seen hundreds of these Gazelles in Ukambaui, some without horns, some with one, and some with both horns. Of those I have shot or seen shot myself, two were without horns, one had one horn about three inches long, and four had both horns averaging three and a half inches in length, while two had horns about three-quarters of an inch long."

Passing on to German East Africa we find, from Dr. Matschie's volume on the Mammals of that country, that Thomson's Gazelle was met with by Herr Oscar Neumann at various points on his journey north from Tanga to the Victoria Lake. Mount Gurui, Lake Manyara, Ndalalani on the Natron Lake, and the district between Guasso Nyiro and Ngare Dobasch are specially mentioned, but north and west of the latter locality Herr Neumann did not find it. It was also obtained near Mount Meru by Herr v. Höhnel, and in Northern Irambi by Herr Stuhlmann.

We are not aware that examples of Thomson's Gazelle have ever been brought to Europe alive; but it would appear that young individuals of this species are often captured and kept in confinement in British East Africa. The late Capt. B. L. Sclater, R.E., who made the road from Kibwesi to Port Victoria in 1895-97, in his letters written home refers to several such cases, and Lieut. G. E. Smith, R.E., who was second in command of Capt. Sclater's party, kindly sends us the following notes about them:—"Early in January 1896 Capt. Sclater obtained from the Masai two young Thomson's Gazelles, which were fed by hand and thrived well. They became quite tame and used to run about the camp and play with a puppy. One of them subsequently ran away, but the other remained with the camping-party for nearly a year." At Kikuyu, Lieut. G. E. Smith saw a pair of Thomson's Gazelles then fully grown, having been in possession of Mr. Hall, the Resident, for more than two years. The buck was rather fierce and apt to attack natives with his horns. Major Eric Smith, we are told, also generally

had two or three of these Gazelles scampering about his station at Naivasha very tame.

Our figure of the male of this Antelope (Plate LXVIII.) has been prepared by Mr. Smit from a mounted specimen in the British Museum presented by Mr. F. J. Jackson. There are also in the Museum a second mounted specimen of a male presented by Mr. H. C. V. Hunter and the skull of a male from Lake Naivasha presented by Col. Lugard. Besides these the Museum contains two frontlets with horns, being the typical specimens obtained by Thomson, and some skins and skulls of both sexes from Machakos, presented by Mr. S. L. Hinde, as already mentioned in his letter.

May, 1898.



Grant's Gazelle
GAZELLA GRANTI
Finished by R.H. Pomer

Wolfe del. J. Grant lith.

Hinshelwood imp.

100. GRANT'S GAZELLE.

GAZELLA GRANTI, BROOKE.

[PLATE LXIX.]

New Antelope, Ugogo, Speke, Journ. of Disc. p. 61 (1863).

Antelope soemmerringii?, Speke, P. Z. S. 1863, p. 3 (Ugogo).

Gazella granti, Brooke, P. Z. S. 1872, p. 601, pl. xli.; id. P. Z. S. 1873, p. 550; Sci. P. Z. S. 1875, p. 527, pl. lix. (Viv. Soc. Zool.); Brooke, P. Z. S. 1878, p. 723 (figs., head); Sci. List An. Z. S. (8) p. 142 (1883); Pagenst. JB. Mus. Hamb. ii. p. 38 (1884); Johnston, Kilima-njaro Exp. p. 394 (1886); Hunter, in Willoughby, E. Africa, p. 289 (1889); Flow. & Lyd. Mamm. p. 342, fig. 2 (head) (1891); Ward, Horn Meas. (1) p. 104 (1892), (2) p. 148 (1896); True, P. U. S. Nat. Mus. xv. p. 473 (1892); Lyd. Horns and Hoofs, p. 236 (1893); Lugard, E. Afr. i. p. 534 (1893); Jackson, in Badm. Big Game Shooting, i. p. 298 (1894); id. P. Z. S. 1897, p. 453; Matsch. Säug. Deutsch-Ost-Afr. p. 131 (1895); Donaldson Smith, P. Z. S. 1895, p. 868; A. Neumann, Elephant-Hunting in E. Africa, pp. 9, 10 (figs., horns, ♂ ♀) (1898).

VERNACULAR NAMES:—*Swara* (Jackson) and *Njéra* (Stuhlmann) in Swahili.

Size large; height at withers about 34 inches. Fur close and short. General colour fawn, rather variable in tone. Lateral bands, both light and dark, usually very indistinct, often scarcely perceptible; but, on the other hand, occasionally well developed, especially in young animals. Central facial band richer fawn, approaching rufous; a brownish spot present on the muzzle. Light facial streaks white, sharply defined, running up over the eyes to the horns. Below these the dark facial bands are almost imperceptible, scarcely or not at all darker than the fawn-coloured cheeks and neck. Rump with the white of the hams very broad, extended upwards,

and uniting across the base of the tail, so that the latter is quite separated from the dark body-colour; laterally the white penetrates angularly into the body-colour, overhanging the top of the pygal band, which is generally well-defined. Outer sides of limbs fawn, without blacker markings. Knee-brushes present, dark fawn. Tail above white for its basal half; black and crested terminally.

Skull stout and heavy, nasal opening broad. In that of an adult male the basal length is 9·75 inches, greatest breadth 4·4, muzzle to orbit 5·3.

Horns very long, longer and more powerful than in any other Gazelle; evenly but slightly curved backwards below, and gently recurved forwards terminally; sometimes but slightly divergent, but more often, especially in specimens from Kilima-njaro, they spread widely above, approaching each other again at their tips. Their section at base is a long oval, very different from the nearly circular section found in *G. soemmerringi*.

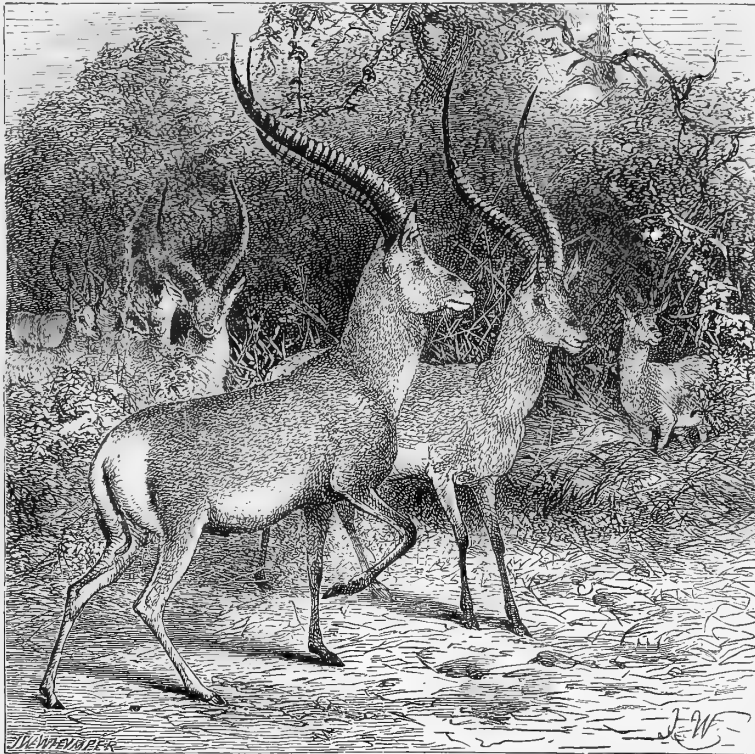
Female. Similar to the male, but the horns slender, nearly circular in section, more strongly ridged than in the females of most Gazelles; about two-thirds in length of those of the male.

Hab. Eastern Africa, from the district of Lake Rudolph, southwards to Ugogo.

Grant's Gazelle, which has been appropriately named after one of its discoverers, is pre-eminent, even in this ornamental genus, for its size and elegance, and is, in fact, generally allowed to be one of the most beautiful species of the whole group of Antelopes. Speke and Grant left Zanzibar on the well-known expedition during which the efflux of the Nile from Lake Victoria was discovered, in September 1860. Starting from Bagamoyo on the opposite coast, and passing through Usagara, they arrived about two months later in Ugogo, then under the rule of a native chief called Magomba. It was in December 1860 during their stay at this place, where they were long detained by the drunken chief and his wazir, that Speke first met with the present Antelope. In the 'Journal' of his travels Speke tells us that while kept waiting to arrange the amount of his "hongo" he took the time out in the jungles very profitably, "killing a fine buck and doe Antelope of an unknown species." "These animals," he continues, "are of much about the same size and shape as the common Indian Antelope, and like them roam about in large herds, the most marked difference between the two being in

the shape of their horns, and in their colour, in which in both sexes the Ugogo Antelopes rather resemble the *Gazella picticaudata* of Tibet, except that the former have dark markings on the face."

Fig. 76.



Grant's Gazelle, Ugogo.

(From Speke's 'Journal of Discovery,' p. 61.)

The original woodcut of Speke's 'Journal,' drawn by Wolf, as shown by his initials, we have now the pleasure of reproducing by the kind favour of the publishers of that work. It was no doubt executed under Speke's direction, and, although not quite satisfactory according to our present knowledge of the animal, gives several views of the shape and size of the horns of Grant's Gazelle.

Although Speke in his 'Journal' writes of the Ugogo Antelope as being undoubtedly new, he was at first evidently by no means certain about this point, as in a letter addressed to Sclater from Kazeh, in February 1861, he referred it doubtfully to *Gazella soemmerringi*. But in a footnote to this

letter (which was published in the 'Proceedings' of the Zoological Society for January 1863) Sclater stated his conviction that, so far as could be determined from the rough sketch of the horns which accompanied the

Fig. 77.

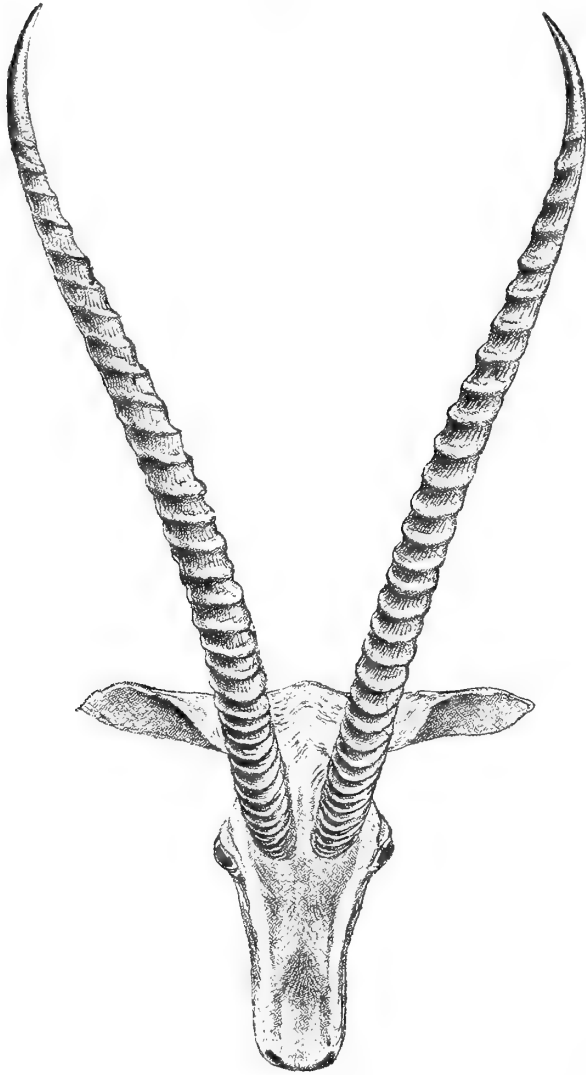


Fig. 78.



Heads of Grant's Gazelle, ♂ & ♀.
(From Mr. Jackson's specimens.)

letter, the Ugogo Antelope was certainly new, and he added that the late Dr. Gray was of the same opinion.

The box containing the specimens of the new Gazelle from Ugogo having

been unfortunately lost on its journey to the coast, Sclater was unable to give any account of this animal in his paper on the Mammals collected and observed during the East-African Expedition, in the 'Proceedings' of the Zoological Society for 1864. The subject therefore was delayed until 1872, when Sir Victor Brooke, who was at that time busy upon the Antelopes, obtained from Col. Grant and Capt. Speke the careful sketches of the heads and skins of this animal which the travellers had made in their note-books. The examination of these sketches confirmed Brooke in the opinion that the Antelope represented by them was undoubtedly new to science; and consequently on April 16th of that year Sir Victor read a communication to the Zoological Society in which he proposed to name the new Gazelle after Grant, Speke's name in this group of animals having been already commemorated by the *Gazella spekei* of Blyth and the *Tragelaphus spekei* of Sclater. Sir Victor gave as good a description of the new Antelope as he could from the notes before him, especially alluding to the extraordinary development of its horns, which attained dimensions nearly double those of any other Gazelle known to him. Brooke's paper, which is accompanied by a beautiful coloured figure of the new Antelope, prepared by Wolf from Speke's sketches, states that Col. Grant, who had supplied him with copious extracts from his note-books, informed him that this species was only met with during their expedition in Western Kinyenye, in Ugogo. The country inhabited by it he described as low-lying sandy plains, dotted over in some places with euphorbias, dwarf acacias, and stunted baobabs. The chief peculiarity of this district, owing doubtless to its comparatively low level, was the great accumulation of salt, which had of course a marked effect on the vegetation. Water at all times of the year was very scarce there, and often entirely absent, the little found being brackish and undrinkable.

In 1875 the Zoological Society received as a present from Sir John Kirk, then British Consul-General at Zanzibar, a living female Grant's Gazelle, which, however, was unfortunately in very poor condition and died shortly after its arrival in London. The acquisition of this animal was announced by Sclater in a report on the additions to the Society's Menagerie read on November 2nd of that year, and was accompanied by a figure of it drawn from the stuffed specimen by Mr. Smit. So far as we know, this is the only individual of Grant's Gazelle that has ever reached Europe alive.

It will be observed that the original place of discovery of Grant's Gazelle

was in what is now German East Africa. In this country, according to Herr Matschie, it has an extensive range over the whole western portion of the colony, extending up to Mpapwa, in which district several sportsmen have met with it, and through Irangi on to Lake Victoria on the borders of British territory. Over this country it has been found in many localities by Fischer, Neumann, and Stuhlmann. Throughout these districts it appears to resort principally, as stated by Grant, to the more open sandy plains, which are thinly covered with euphorbias and other trees, especially where a saline vegetation is prevalent.

In the eastern districts of British East Africa, Grant's Gazelle appears to be not less prevalent in similar spots. Mr. Hunter, in his Appendix to Willoughby's 'East Africa,' tells us that during his expedition in 1886 it was found to be common everywhere in the open plains near Kilimanjaro, one male being generally accompanied by from 10 to 15 females. It was at that time most common in the direction of Useri. The longest pair of horns obtained by the party measured 30 inches in length, but 27 inches were considered to constitute a big head. The best female's head obtained measured 17 inches along the inside curve. Dr. Abbott, during his expedition to Kilimanjaro, as recorded by Mr. True, obtained a good series of specimens of this Antelope, which are now in the United States National Museum. Capt. F. D. Lugard, in his volumes on 'The Rise of our East-African Empire,' writes of Grant's Gazelle as being "a model of symmetry," while "its large and massive horns are most beautiful in their curve and are carried most gracefully." He continues as follows:—

"Grant's Gazelle is always found on the open plains and in rocky ground far from water, and never near forest. Both sexes are horned; the female carries thin but long horns (up to 17 inches in length), the points, as is the case in all horned female Antelopes, turning inwards, the curve being more or less lyre-shaped. I have weighed a male and found it weigh 115 lbs. without the stomach; female 65 lbs. The horns of the male measure up to 30 inches and are about 7 inches in circumference at the base. They are annulated, black in colour, and bend backwards and then forwards at the tip. Anything above 25 inches would be a 'good head.'"

Another excellent authority on the Antelopes of British East Africa, Mr. F. J. Jackson, in a recent article on the subject, writes as follows:—

"Grant's Gazelle ranges north into Turkwel and the Sak country, but is not found on the Mau plateau. At Njemps and Baringo, and in Turkwel, this Gazelle is con-

siderably smaller than those found further south at Naivasha and on the Athi plains. At Njemp I shot the largest buck out of a herd of thirty, in which there were three or four other bucks. It was an old beast, in good condition, but only weighed 135 lbs. with horns 20 inches. To show the differences in size I append some measurements for comparison :—

	<i>G. granti</i> , ♂. Njemp (21.9.96).		<i>G. granti</i> , ♂ (two). Gil-Gil River, Lake Naivasha (2.1.96).		<i>G. granti</i> , ♂. Gil-Gil River, Lake Naivasha (4.4.96).	
	ft.	in.	ft.	in.	ft.	in.
Total length	5	3	5	8	5	7
Height at shoulder.....	2	11	3	1½	3	0½
Depth of chest	1	1½	1	3	1	3
Circumference of chest	2	9	3	1	3	1
,, haunch ..	3	0	3	5
,, loins	2	3	2	9	2	7½
,, throat....	1	6	1	8	1	6
,, neck	1	8	2	0½	2	10½
Tail.....		10½		11		10
Horns.....		20		28¼		24
Weight		135 lbs.		158 lbs.		167 lbs.
						166 lbs."

Dr. Donaldson Smith has recorded the existence of this Gazelle "in great numbers" all along his route homewards from Lake Rudolph on the northern bank of the Tana. But these animals may possibly have belonged to the next species *Gazella petersi*. Dr. Donaldson Smith also met with Grant's Gazelle in the Boran country "a little west of 39° W.L.," and found it "extending as far north as 6° N.L." Mr. Cavendish likewise obtained examples of this Gazelle during his recent expedition to Rudolphia.

There is a good mounted specimen of an adult male of this Antelope in the Gallery of the British Museum, obtained by Mr. F. J. Jackson in the Kilimanjaro district of British East Africa and presented by him. Mr. Jackson has also given the Museum a fine skull of an adult male from the same locality, and has placed at the service of the Museum three other mounted heads of this Antelope. The National Collection also contains skulls of an adult pair of Grant's Gazelle from Kilimanjaro presented by Mr. W. Carlisle Fraser, and several skulls and skins of different ages from

Machakos, collected and presented by Mr. S. L. Hinde. Besides these some skulls and skins obtained during the Cavendish expedition to Lake Rudolph, and presented by Mr. H. S. H. Cavendish and Mr. H. Andrew, have lately been added to the series.

Our illustration of this beautiful Antelope (Plate LXIX.), which shows the horns of the male in various attitudes, was prepared by Mr. Wolf under Sir Victor Brooke's directions and drawn upon the stone by Mr. Smit. We are not sure as to the specimens from which it was taken.

September, 1898.

101. PETERS'S GAZELLE.

GAZELLA PETERSI, GÜNTH.

Gazella granti, Peters, MB. Ak. Berl. 1879, p. 832, pl. v. (skull).

Gazella petersi, Günth. Ann. Mag. N. H. (5) xiv. p. 428 (1884); Lyd. Horns and Hoofs, p. 238 (1893); Jackson, in Badm. Big Game Shooting, i. p. 299 (1894);

A. Neumann, Elephant-Hunting in E. Africa, pp. 9, 10 (figs., horns, ♂ ♀) (1898).

Gazella grantii var. *gelidjiensis*, Noack, Zool. Gart. xxviii. p. 277 (1887).

VERNACULAR NAME:—*Sala* (Swahili) (*Fischer*).

Size large; height at withers about 33 inches. General colour and markings practically identical with those of the last species, *Gazella granti*, with the exception that the white rump-patch is of much less extent. This patch, which in *G. granti* is very broad, and projects prominently forward on each side, overhanging the dark pygal band, and passes across above the tail, separating that organ entirely from the dark dorsal colour, is in *G. petersi* divided above into two portions by an extension of the body-colour which runs down on to and along the top of the tail. Laterally the white is much narrower, and encroaches much less on the body-colour above, scarcely or not at all overhanging the pygal band.

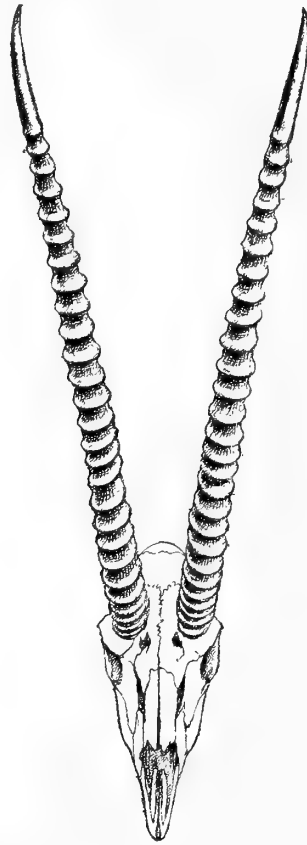
Skull rather smaller than in *G. granti*, and the nasal opening rather narrower. Basal length in a male 9·3 inches, greatest breadth 4·2, muzzle to orbit 5·4.

Horns similar to those of *G. granti*, but smaller and more uniformly parallel, never widely divergent above. Horns of female about two-thirds the length of those of the male, slender and comparatively straight.

Hab. Coast-districts of British East Africa, from Mombasa northwards to beyond the Tana.

In a communication made to the Royal Academy of Sciences of Berlin in October 1879 the former Director of the Berlin Museum, the late Dr. Wilhelm Peters, gave an account of the specimens of Mammals collected in East Africa in 1878 by the well-known traveller Dr. G. A. Fischer. Amongst these were the skull and skin of a young male Gazelle obtained at Gelidja, near the mouth of the Osi and Tana Rivers, on June 27th, and stated to be

Fig. 79.



Skull and horns of Peters's Gazelle, ♂.

(From one of Mr. Jackson's specimens in the British Museum.)

called there by the Swahilis and Wapakomos "*Sala*." Peters added to his paper on this subject an excellent lithographic plate of the skull and horns in question, which he referred, without much doubt, to *Gazella granti*, remarking, however, that the nose-spot was not well defined, and that the horns were straight at the base and not curved.

In 1884 Dr. Günther, commenting on Peters's figure of this supposed *Gazella granti*, stated that in his opinion it "clearly belonged to a distinct species. It resembled somewhat *Gazella thomsoni* in the slight degree in which the horns diverge from each other; but their annulated portion was almost straight, and the annuli themselves were much further apart, much fewer in number (about twelve), and lower towards the hinder part of the horn. The base of the bony core showed a bossy swelling, which was different from that of *Gazella granti*, and entirely absent in *Gazella thomsoni*." This species Dr. Günther proposed to call *Gazella petersi*.

There has, however, been much doubt raised by subsequent authorities as to the validity of this species, and although we have given a separate heading to *Gazella petersi* we have had considerable hesitation as to whether it ought not to be regarded rather as a local subspecies of *G. granti*, to which it is closely allied in all essential characters. But since we have as yet seen no specimens absolutely intermediate between the two, so far as the rump-markings are concerned, we have thought it advisable to keep them provisionally separate. At the same time we shall be in no way surprised if such specimens should occur, in which case the two forms will have to be united. As regards the skulls, no constant or tangible difference can be made out, although those of *G. petersi* can usually be distinguished by their smaller size, narrower nasal opening, and shorter and less divergent horns.

Mr. F. G. Jackson, in 'Big Game Shooting,' gives us the following account of this Gazelle and his experiences with it:—

"*Gazella petersi* (known to the Swahilis also as 'Sala') may be a local variety of *G. granti* rather than a distinct species. It used to be plentiful at Merereni on the British East African coast, and is still found further inland in the Galla country. It is certainly a smaller beast than *Gazella granti* from Kilimanjaro and Machakos, but in other respects is almost identical, excepting in the shape and size of the horns, which I have never known to exceed 22 inches in length measured along the curve. The horns are also straighter, and have not nearly such a pronounced backward curve as those of *G. granti*, neither do they diverge towards the points so much, being rarely more than seven or eight inches apart at the widest parts. *Gazella petersi* is found in the small open plains and open scrub."

In the gallery of the British Museum there is a good mounted specimen of the adult male of this species, also another younger specimen from the

“Mainland opposite Zanzibar,” and a third from “Mombasa,” besides two skulls (♂ and ♀) from “South Somaliland,” all presented by Sir John Kirk. These were formerly labelled *G. granti*, but must be referred to *G. petersi* if the species are kept separate. There is also in the Museum a fine skin and skull of a male *G. petersi* from near Mount Pika-pika, about 40 miles from Mombasa, presented by Mr. L. E. Caine. It would appear, therefore, that the range of *G. petersi* until lately extended all along the coast of British East Africa, though it has now perhaps been nearly shot out in the southern parts.

The British Museum has likewise three skulls of this Gazelle from the Tana River presented by Mr. F. J. Jackson, to whom we are also much indebted for the loan of two other representative heads of this species from Merereni, south of Formosa Bay.

September, 1898.

102. THE BANDED GAZELLE.

GAZELLA NOTATA, THOS.

Gazella grantii notata, Thos. Ann. Mag. N. H. (6) xx. p. 479 (1897); A. Neumann, Elephant-Hunting in E. Africa, p. 238 (1898).

Only known from a single flat skin, without the head. Fur unusually long and shaggy. Size about as in *G. grantii*, and general body-markings as in that species, but all much intensified. Dark and light lateral bands much longer and broader, the former nearly black and reaching forwards on to the shoulder, and backwards nearly to the white rump-mark; the latter pale buff, and succeeded above by a second dark band, lighter than the main lateral band, but distinctly darker than the centre of the back. This second dark band united with the other behind the posterior end of the light band. Pygal band black and very strongly defined.

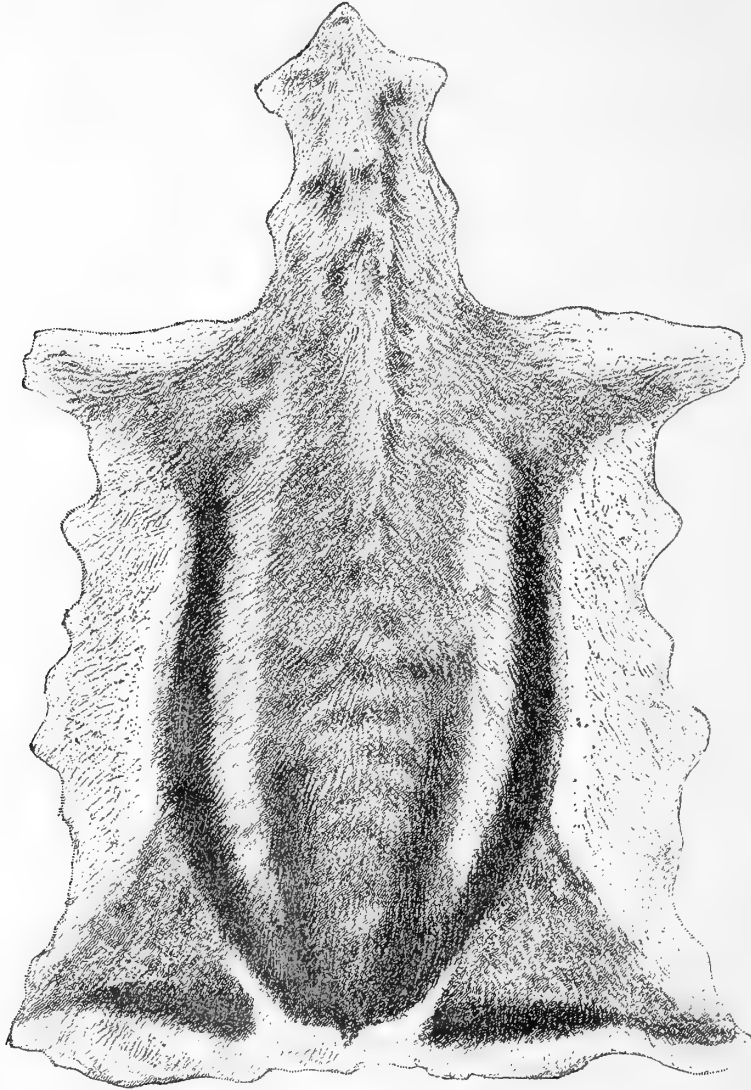
Horns said by the discoverer to have been like those of *G. grantii*.

Hab. Western slope of the Loroghi Mountains, British East Africa.

In Mr. Arthur H. Neumann's recently published volume on 'Elephant-Hunting in East Equatorial Africa' there will be found an account of his adventurous journey to Lake Rudolph, during which, on more than one occasion, he made his camp for some months at El Bogoi, a place situated east of the Loroghi Mountains, in rather higher than 1° N. lat., which was a favourite station for elephants. While at this place in October 1895 Mr. Neumann, accompanied by his native attendants, made an excursion over the Loroghi range, and encamped close to the edge of the open country on their western slope, at an elevation reckoned to be about 5500 feet above the sea-level, at a place called in the map attached to his narrative Kisima. Here, on taking a stroll into the open, he "shot a brace" of what he at first

supposed to be Grant's Gazelles; but on examination he found that they differed from the Grant's Gazelles of the other side of the range, and of everywhere else that he had been, "in having longer hair, and dark bands on the

Fig. 80.



Skin of the Banded Gazelle.

sides," while the "shade on the back" was also deeper than in the common kind. On one of the skins thus obtained and presented to the British Museum (see fig. 80), Thomas has based his subspecies "*Gazella grantii notata*."

For much the same reasons as in the case of *G. petersi*, that is because no intermediate examples were yet known, we decided, when drawing up our Synopsis of Gazelles (above, p. 69), to give a separate heading to this form.

But since our Synopsis was prepared, Lord Delamere has sent home some skins which are, to a certain extent, intermediate between *G. granti* and *G. notata* in the development of the dark markings, and which, therefore, support Thomas's original view that the latter should be looked upon as a subspecies of the former. Yet, on the whole, Lord Delamere's skins are more like *G. granti* than *G. notata*, especially in the character of their fur, so that they may be provisionally assigned to the older known form, leaving the exact status of *G. notata* to be settled when further materials are available.

Thomas stated, in his original description of *G. notata*, that this Gazelle had also been obtained by Mr. H. S. H. Cavendish, that traveller having supposed that he recognized in the typical skin of *G. notata* a Gazelle which he had met with during his journey to Lake Rudolph. This supposition, however, has been proved to be mistaken, as the Gazelle in question when brought home turned out to belong to *G. thomsoni*—an animal up to that date unknown to Mr. Cavendish. Mr. Neumann, the donor of the typical skin of *G. notata* to the British Museum, remains, therefore, the only sportsman who has yet met with this handsome form, concerning which we hope to receive further information before long.

September, 1898.





Wolf del J. Smit lith.

Soemmerring's Gazelle.
GAZELLA SOEMMERRINGI.

Published by R. H. Porter.

Hanhart imp.

103. SOEMMERRING'S GAZELLE.

GAZELLA SOEMMERRINGI (CRETZSCHM.).

[PLATE LXX.]

- Antilope soemmerringii*, Cretzschmar, Atl. Rüpp. Reise, p. 49, pl. xix. (♂) (1826); J. B. Fisch. Syn. Mamm. p. 462 (1829); Rüpp. N. Wirb. Abyss. p. 25 (1835); Less. Compl. Buff. x. p. 287 (1836); Waterh. Cat. Mamm. Mus. Z. S. (2) p. 40 (1838); Laurill. Dict. Univ. d'H. N. i. p. 616 (1839); Gerv. Dict. Sci. Nat. Suppl. i. p. 261 (1840); Less. N. Tabl. R. A. Mamm. p. 176 (1842); Rüpp. Verz. Senck. Mus. p. 38 (1842); Sund. K. Vet.-Ak. Handl. 1842, p. 201 (1843); Wagn. Schr. Säug. Suppl. iv. p. 415 (1844), v. p. 405 (1855); Reichenb. Säug. iii. p. 114, pl. xxxiv. fig. 205 (1845); Schinz, Syn. Mamm. ii. p. 403 (1845); Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 266 (1847); id. Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 262; id. Reprint, p. 82 (1848); Schinz, Mon. Antil. p. 7, pl. v. (1848); Gieb. Säug. p. 308 (1853); Heugl. Faun. roth. Meer, Peterm. Mitth. 1861, p. 16; id. Ant. u. Buff. N.O.-Afr. (N. Act. Leop. xxx. pt. 2) p. 7 (1863); id. N.O.-Afr. ii. p. 102 (1877); Hartm. Z. Ges. Erdk. Berl. iii. p. 254 (1868).
- Gazella soemmerringii*, Jard. Nat. Libr. (1) vii. p. 215, pl. xxviii. (1842); Gray, List Mamm. B. M. p. 161 (1843); id. Ann. Mag. N. H. (1) xviii. p. 231 (1846); id. Knowsl. Men. p. 5 (1850); id. P. Z. S. 1850, p. 114; id. Cat. Ung. B. M. p. 59 (1852); Temm. Esq. Zool. Guin. p. 193 (1853); ScI. P. Z. S. 1867, p. 817, pl. xxxvii. (yg.); Fitz. SB. Wien, lix. pt. 1, p. 158 (1869); Blauf. Zool. Abyss. p. 260 (1870); ScI. P. Z. S. 1871, p. 701 (Suez?); Gray, Cat. Rum. B. M. p. 39 (1872); id. Hand-l. Rum. B. M. p. 107 (1873); Brooke, P. Z. S. 1873, p. 549; ScI. List An. Z. S. (8) p. 142 (1883); Lort Phillips, P. Z. S. 1885, p. 932; Jent. Cat. Ost. Leyd. Mus. (Mus. Pays-Bas, ix.) p. 137 (1887); id. Cat. Mamm. Leyd. Mus. (op. cit. xi.) p. 169 (1892); Thos. P. Z. S. 1891, p. 210; W. ScI. Cat. Mamm. Calc. Mus. ii. p. 161 (1891); ScI. P. Z. S. 1892, p. 100; Swayne, P. Z. S. 1892, p. 305; Jent. Cat. Mamm. Leyd. Mus. (Mus. Pays-Bas, xi.) p. 169 (1892);

Ward, Horn Meas. (1) p. 108, (2) p. 150 (1896); Lyd. Horns and Hoofs, p. 236 (fig., head) (1893); Swayne, P. Z. S. 1895, p. 305 (habits); id. Seventeen Trips to Somaliland, p. 314 (1895); Donaldson Smith, P. Z. S. 1895, p. 868 (Juba R.); Hoyos, Zu den Aulihan, p. 179, pl. x. fig. 6 (1895); Thos. Ann. Mus. Genov. (2) xvii. p. 107 (1896); Elliot, Publ. Chicago Mus., Zool. i. p. 122 (1897).
Antilope soemmerringii berberana, Matsch. SB. nat. Freund. 1893, p. 65; Rhoads, P. Ac. Philad. 1896, p. 519.

VERNACULAR NAMES:—*Arab* or *Harab* at Massowa, *Bus-Adu* in Danakil, *Om-Sabah* in Arabic (*Heuglin*); *Aoul* of Somalis (*Swayne*).

Size large, height at withers $35\frac{1}{2}$ inches in an old male of the Somali subspecies. General colour very pale fawn, and very uniform everywhere, as there are neither light nor dark lateral bands nor any pygal bands. Central facial band black or blackish fulvous, contrasting markedly with the white lateral facial streaks. Dark facial streaks also black, but very narrow. Sides of muzzle black, continuous with the central facial band. Back of ears whitish, margined and tipped with black. White of rump very broad and extended, projecting far into the body-colour, which it broadly shuts off from the tail. The latter is white basally, black tufted terminally. Knee-brushes present, whitish or fawn.

Basal length of skull 8.85 inches, greatest breadth 4.2, muzzle to orbit 5.4.

Horns long, nearly circular in section, heavily ringed. In the typical subspecies they are but little divergent for their basal half, but then curve widely outwards above, their tips being again abruptly hooked inwards so as to point almost directly towards each other. In the Somali subspecies their length is greater and their divergence is quite even, not increasing above, so that their upper portions are not nearly so widely separated; their tips also hook rather forwards, and not so directly inwards.

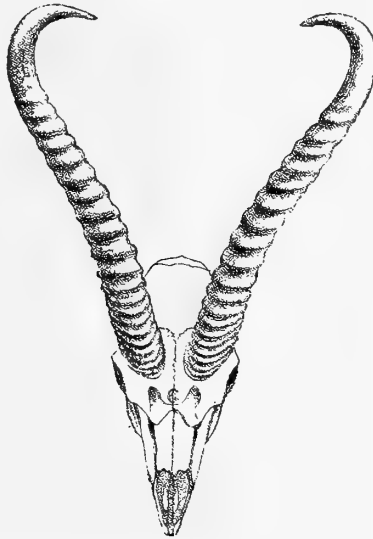
Female similar to the male, but the horns much thinner and less rough, though almost as long as those of the male. In both of the subspecies their curvature is closely similar to that found in their respective males.

Hab. Coastland of Red Sea from Suakin south to Tajurah (subspecies *typica*); Northern Somaliland (subspecies *berberana*).

This fine Gazelle was one of the many discoveries made in North-east Africa by the great traveller and naturalist Edouard Rüppell, and was first

described and figured by Cretzschmar in the 'Atlas' which illustrated the zoological portion of Rüppell's 'Reise.' The species was dedicated to Ritter Samuel Thomas von Soemmerring, on the occasion of that savant attaining the fiftieth year of his Doctorate—an event which was celebrated by the Senckenbergian Naturalists' Society of Frankfort-on-the-Main on the 7th of April, 1828. The original specimens were procured by Rüppell on the eastern slope of the Abyssinian coast-range, and were deposited along with all his other collections in the Senckenbergian Museum. In a *résumé* of his knowledge of the East-African Antelopes contained in a subsequent work on the Vertebrates of Abyssinia, Rüppell tells us that he only met with this species in the bush-clad valleys of the Abyssinian coast, but that it was said to occur also on the large island of Dahalak off Massowah. It was generally observed in small families, which, however, sometimes congregated into larger herds.

Fig. 81.



Skull and horns of *Gazella soemmerringi typica* (male).
(From a specimen in the British Museum.)

Heuglin, another good authority on the animals of North-east Africa, informs us that this Antelope extends along the coast of the Red Sea from 20° N. latitude southwards to the Danakil country, and that it is also found in valleys of the Baraka and Atbara in the interior, and extends up to the neighbourhood of Berber, but is not so plentiful here as in the coast-districts.

Dr. W. T. Blanford, who accompanied the British Abyssinian Expedition of 1867-68 as naturalist, found this Antelope abundant on the coast of the Red Sea near Annesley Bay and Massowah, but states that it never ascends the hills. It was met with principally in the low bush and acacia-scrub in herds varying in size from a few individuals up to one hundred or more. A very large number, he adds, were shot by the sportsmen of the Expedition, who found the flesh excellent eating.

Fig. 82 a.

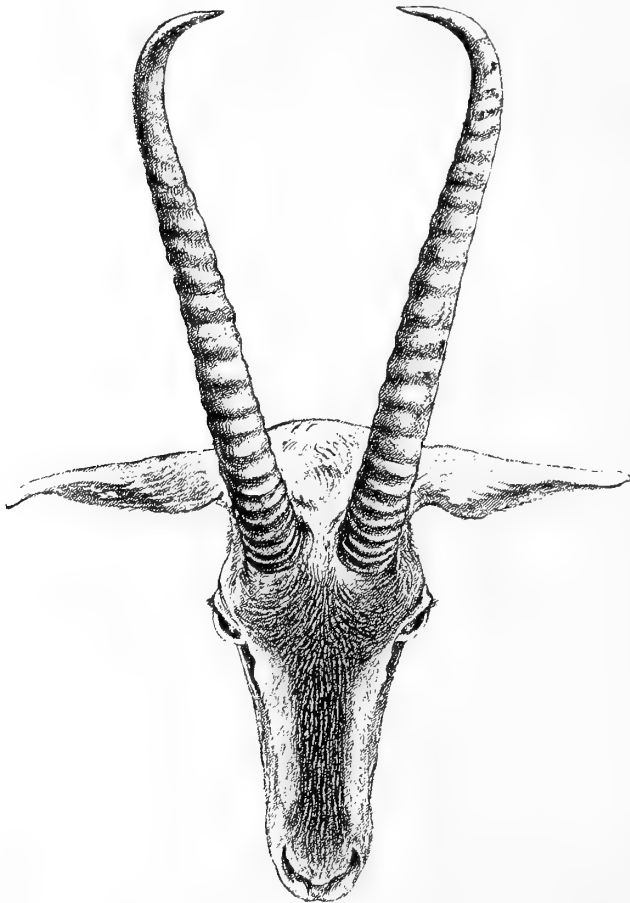
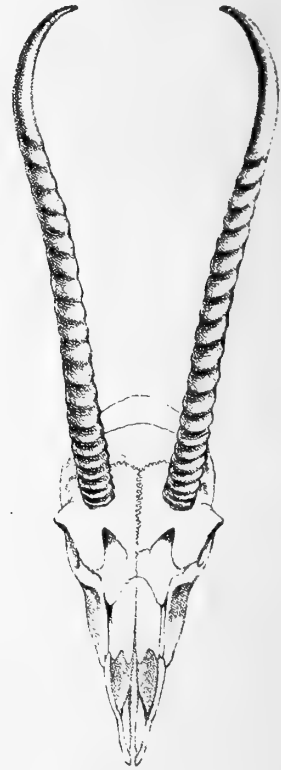


Fig. 82 b.



Horns of *Gazella soemmerringi berberana*, ♂ & ♀.
(From specimens in the British Museum.)

Examples of *Gazella soemmerringi* are recorded by Sundevall as being contained in the extensive collections received by the Stockholm Museum which were made by the Swedish traveller Hedenborg in Sennaar, but the exact localities are not specified.

So much is all we have to say about the smaller and typical form of this species originally discovered by Rüppell. But about the larger subspecies of Northern Somaliland, which has been named *berberana* by Herr Matschie, we are able to give greater details from information supplied by the many naturalists and sportsmen who have of late years visited the country which it inhabits. Although it does not appear that there is any discontinuity between the ranges of these two forms, and it is quite likely that intermediate specimens may occur where the two forms meet, we cannot but allow that Herr Matschie was justified in assigning a subspecific name to the Southern form. Not only is the latter a larger and finer animal with longer horns, but the curvature of its horns is, as we have already pointed out, so different that, so far as our experience goes, there can be no difficulty in distinguishing the two forms by this character alone.

Capt H. G. C. Swayne, R.E., in his 'Seventeen Expeditions to Somaliland,' writes thus of *Gazella soemmerringi*:—

"Five years ago, when I was staying in the quarters at Bulhár, the *Aoul* could be seen from the bungalow grazing out on the plain. The Bulhár Maritime Plain used to be full of them, but they have been so persecuted by sportsmen that they have now retired to some distance.

"The *Aoul* weighs about the same as the Gerenúk, but has a shorter neck and a more clumsy-looking head, and is altogether a coarser animal. It is a grass-feeder, and lives in the open plains or in scattered bush, and never in thick jungle, and prefers tolerably flat ground. The white hind-quarters can be seen from a great distance, making a herd of *Aoul* look like a flock of sheep in the haze of the plains. I have never seen them in the cedar-forests on the top of Gólis, but in the hartebeest-ground to the south they are common. They are often met with in large herds along with the hartebeests, and are very common all over the Haud and Ogádén and near the Webbe.

"They are, I think, the most stupid and easy to shoot of all the Somáli Antelopes, and their habits are identical with those of the Indian Blackbuck, but they are not equal to it in beauty and grace of movement. *Aoul* often make long and high jumps when going away, presumably to look over the backs of the others; they look something like specimens of the Cape Springbuck which I have seen in England. I have never observed them spring vertically to a great height, as the Indian Blackbuck does. They are inquisitive like the Hartebeests, and will follow a caravan in the open, and if fired at they make off across the front, stretching themselves out at racing speed, and drawing up in a troop now and then to gaze."

Captain R. H. Light, of the Indian Staff Corps, who visited Somaliland in 1891, and has kindly furnished us with some field-notes on its Antelopes,

writes that this Gazelle is found there in couples, and also in herds of fifty or more, and generally frequents plains with slight coverts. They are not usually difficult of approach, and out of a large herd he has shot four, one after the other, within a mile of ground, the herd moving off at every shot, but allowing him to approach again. At 150 yards distance or so Capt. Light says it is very hard to distinguish a buck from a doe of this Antelope, the size of the body being the same, and the slight differences in the thickness of the horns and neck being hardly perceptible. Their gait is longer and slower than that of Pelzel's Gazelle, but still not awkward like that of the "Gerenuk" (*Lithocranius walleri*).

Mr. F. Gillett, F.Z.S., who accompanied Dr. Donaldson Smith during the first portion of his journey to Lake Rudolph, and made other expeditions in Somaliland, has favoured us with the following notes on this species:—

"*Gazella soemmerringi* is the common Gazelle of the interior of Somaliland, supplanting the two Gazelles *G. spekei* and *G. pelzelni*, which inhabit the country lying to the south of the Golis Mountains and the barren ground along the coast respectively. Its native name is 'Aoul,' and it is found in the open plains, as a rule in herds of from four to sixty beasts, although occasionally I have come across an old buck by himself. On July 14th, 1894, I saw a small herd of these Gazelles about long. $44^{\circ} 30' E.$ and lat. $9^{\circ} 48' N.$, which is the most northerly point at which I have found them, whilst to the east they are not met with till even farther south. Herds of Speke's Gazelle are seen in company with Soemmerring's Gazelle as far south as lat. $9^{\circ} 6' N.$, after which *Gazella soemmerringi* is alone found.

"Whilst in the Haud in 1894 I saw Oryx, and Waller's, Speke's, and Soemmerring's Gazelles all together at the same time. The Soemmerring's Gazelles prefer the open plains, although they are also found in bushy park like country, but never in the Khansa forests like *Gazella walleri*. When sighting anything strange they bunch together and stare; they are the least timid besides being the most plentiful of the Somali Antelopes, but in the open plains they will often allow you to walk past them at 200 yards distance, whilst any Oryx that are with them decamp long before. The horns of the female are much more slender than those of the male, they are also shorter and more irregular.

"The flesh of this Gazelle is preferred by the Somalis to any other, and on several occasions I have been asked by sick men to shoot one for them, especially in cases of fever, when it is considered to be very strengthening. When in the Arusa Galla country in 1894-5 I did not come across this Gazelle between the Webbe Shabeyli and long. $40^{\circ} 30' E.$, lat. $7^{\circ} N.$; in fact once across the Webbe I did not meet it again till my return to Somaliland, the country beyond being absolutely unsuited to it. In the Aulihan district opposite Bari, however, I met with it on the farther side of the Webbe.

"In February 1897, whilst camping in the Haud along with Mr. Percy V. Aylmer,

we met with examples of this Gazelle at least 35 miles from the nearest water as the crow flies. As it was the dry season these animals could have obtained no moisture except dew unless they travelled that distance. Although at present the most plentiful, this, I fear, will be one of the first of the Antelopes of Somaliland to disappear, and the Reservation, as now laid down, will be of little or no use in protecting it."

To Mr. Alfred E. Pease, M.P., F.Z.S., we are greatly indebted for the following notes on his experiences with this Antelope.—

"Soemmerring's Antelope is widely distributed throughout Somaliland. In the following notes my remarks are confined to my own personal observations of this species during two expeditions. The first was in the north-western corner of the British Somali Protectorate, the second across the Haud into Ogaden and the country south of Harrar frequented by the Rer Mellingowr Ogaden. The average height of an adult male Soemmerring's Gazelle is about 35 inches at the shoulder, with a girth behind the elbow of 32 inches. Unfortunately I never weighed any specimen. In colour they are amongst the most beautiful of the African Antelopes, and to see large herds of them moving about as the first bright gleams of the sun in the early morning touch them is one of the prettiest of the many charming sights that meets the traveller's eye in this part of Africa. Their colour is an extremely rich clear pale orange on the body, spread evenly over the back, flanks, and running in narrowing bands down the four legs; this colour is set off by a wide margin of snowy white, which not only covers the whole of the belly and inner side of the legs, but which cuts back into the rump, so that when the Gazelle is standing with its tail towards you, you see little else but the snowy stern. Their heads are beautifully marked, the pervading tint forming the groundwork being of a slightly browner and fainter hue than the body, relieved by an almost black band running down from between the horns to the nostrils, and covering both sides of the nose and facial ridge; a short band, also very distinct, of the same colour runs down the tear-mark below the eye. In old bucks these dark stripes are often very nearly jet-black; in younger males and females the colouring varies from pale to dark brown. The throat is sometimes white, and when not altogether so, generally wears a more or less distinct crescent of white about two-thirds down the lower part of the underside of the neck. Both males and females carry heavy horns for animals of their size. The female's horns are quite as long as, and perhaps slightly longer in proportion to their age than, the male's, but they are weaker and less regular, though almost as deeply notched and annulated as in the buck. In general form they may be described as lyrate in a front view; the tips often point exactly towards each other, being separated sometimes two inches, sometimes even more than six. Sometimes the tips point backwards, and sometimes distinctly forwards.

"The 'Aoul,' as the Somalis call this Antelope, is almost ubiquitous in Somaliland. I have seen it within a few hours of Bulhar and Berbera on the maritime plain, whilst in 1896 we observed herds of it on the prairies to the south of the Elmas Mountains. Once in the mountains, whether in the ranges of the Gadabürsi country or of the Golis, you lose it and do not find it again, unless it be in some interlying plain, till

you reach the region of the Haud. On the great prairies of the Haud I have seen an astonishing number of great herds from a single point of view. When travelling with Mr. E. N. Buxton and Mr. A. E. Leatham we first came on to the great Marar Prairie these Gazelles were seen in incredible quantities, and not having been hunted by even the Midgans (who devoted their time to pursuing the Oryx with their dogs and poisoned arrows) I found them astonishingly tame, so much so that after securing two or three specimens I never had the heart to betray their confidence, and have often walked past them in the thin bush that lines the northern edge of the plain within 20 paces, and on some occasions so near that I could almost have touched them with a long stick. At such times they have just lifted their heads till I had passed, and on looking back they had resumed feeding within a minute. I mention this as it is so very much in contrast with my experience when crossing the Toyoo Plain to the east in December 1896, when, though there were vast numbers of them, they were most extraordinarily wild and went off full gallop if you came within 400 yards of them. This was no doubt the result of having been shot at by English shikaris, who often take this route into Ogaden. On the Ogaden side of the Haud we found them frequently both in the long dhur grass, the home of the Dibatag (*Ammodorcas clarkei*), and also in open glades in the regular bush. When we were west of Milmil we came across these Gazelles occasionally till we reached the neighbourhood of the Tug Sulul; but I do not remember seeing them again in the more broken country that lies west of this Tug, and which continues practically hilly right up to the mountains of Bourka. From what I have been able to observe of the habits of this Antelope, I should think the traveller might expect to find it in any part of this corner of Africa where there are grass plains or where the bush is level and not too thick. It seems to thrive as well at sea-level as on the Haud at an elevation of 5000 feet.

“In the larger herds (say from 40 to 150 or more) the sexes are generally mixed, with a large preponderance of females. Some large herds are all females. Small herds may be either mixed, or all females, or all bucks. I do not call to mind having seen more than 14 old bucks alone together. The solitaires are, as a rule, old bucks, though you do not often see one quite alone at any distance from a herd. I have seen Speke's Gazelle on the Toyoo Plain feeding in the same herd as the Aoul, and the latter are frequently in the company of the Hartebeest. The 'Aoul' is, in my opinion, identical with the Ariel, which is common in Abyssinia and the neighbourhood of Suakin, but it appears to diminish in size somewhat to the north.”

Of the typical form of this Antelope the British Museum possesses an adult male specimen (mounted, but not exhibited), obtained by Esler in the Bogos country, and purchased in 1873, also a female from Sennaar received from the Stockholm Museum, in exchange, in 1846—probably one of those collected by Hedenborg. It has likewise a young male from Abyssinia procured by Rüppell, the original discoverer of the species, and received in exchange from the Frankfort Museum; a skull of a male obtained by Mr. W. Jesse

during the Abyssinian Expedition; and several heads and skins from Suakin collected and presented by Major W. Sparkes, of the Welsh Regiment, now attached to the Egyptian army.

Of the southern subspecies, *Gazella soemmerringi berberana*, the National Collection possesses a stuffed adult male specimen obtained on the Shebeyli River, Somaliland, and presented by Col. Arthur Paget, who has also given to the Museum two heads (male and female) from the Bourdap Mountains in the same country. In the British Museum there are likewise a mounted head and skins of both sexes of this Antelope collected by Capt. Swayne in Somaliland and presented by Sclater.

The first living examples of Soemmerring's Gazelle received by the Zoological Society were purchased of a dealer in August 1867. The announcement of their arrival, which appeared in the 'Proceedings' for November 14th of that year, was accompanied by a beautiful lithographic plate of the young pair drawn by Mr. Wolf. In 1871 a fine young male example of this Antelope was presented by Mr. Charles McIver, Jun., with the information that the specimen had been obtained in the desert on the Red Sea coast about 100 miles south of Suez. If this was correct, the range of this Antelope would appear to extend considerably further north than we know of upon any other authority. Other specimens of this Antelope were obtained in 1877, 1879, 1892, and 1895, including a fine pair from Suakin presented by Col. Hotted Smith, C.B., in July 1892. At the present moment, also, there is a fine male of this Antelope in the Society's Gardens, obtained by purchase in 1897.

Our representation of this Antelope (Plate LXX.) was drawn by Mr. Wolf under Sir Victor Brooke's directions, and put upon the stone by Smit. It is that of an adult male example, but we unfortunately do not know from what specimen it was taken.

September, 1898.



J. Smeat del. et lith.

The Red-necked Gazelle .
GAZELLA RUFICOLLIS .

Published by R.H. Porter .

Hansart imp.

104. THE RED-NECKED GAZELLE.

GAZELLA RUFICOLLIS (HAM. SMITH).

[PLATE LXXI.]

Antilope dama, Licht. Abh. Ak. Berl. 1824, p. 226 (1826) (*nec* Pall.); id. Darst. Säug. pls. iii. (ad. & jr. ♂), iv. (♀ & jr.) (1827); Cretzschm. Atl. Rüpp. Reis. pp. 39 & 43, pls. xiv.–xvi. (1826) (Abyssinia); H. Sm. Griff. An. K. v. p. 331 (1827) (partim); Hempr. & Ehr. Symb. Phys., Mamm. pl. vi. (1828), text (1833) (Dongola); Rüpp. N. Wirb. Abyss. p. 25 (1835); Waterh. Cat. Mamm. Mus. Z. S. (2) p. 41 (1838); Rüpp. Verz. Senck. Mus. p. 38 (1842); Sund. K. Vet.-Ak. Handl. 1842, p. 201 (1843); Wagn. Schr. Säug., Suppl. iv. p. 408 (1844), v. p. 404 (1855); Schinz, Syn. Mamm. ii. p. 424 (1845); id. Mon. Antil. p. 25, pl. xxvi. (1848); Gieb. Säug. p. 308 (1853); Heugl. Ant. u. Büff. N.O.-Afr. (N. Act. Leop. xxx. pt. 2) p. 6 (1863); Hartm. Z. Ges. Erdk. Berl. iii. p. 253 (1868); Heugl. N.O.-Afr. ii. p. 103 (1877).

Gazella dama, Fitz. SB. Wien, lix. pt. 1, p. 158 (1869); Brooke, P. Z. S. 1873, p. 547; Jent. Cat. Ost. Leyd. Mus. (Mus. Pays-Bas, ix.) p. 137 (1887); id. Cat. Mamm. Leyd. Mus. (op. cit. xi.) p. 169 (1892); Lyd. Horns and Hoofs, p. 235 (1893).

Antilope ruficollis, H. Sm. Griff. An. K. iv. p. 205 (1827).

Gazella ruficollis, Gray, Ann. Mag. N. H. (1) xviii. p. 231 (1846); id. Knowsl. Men. p. 5 (1850); id. P. Z. S. 1850, p. 114; id. Cat. Ung. B. M. p. 60 (1862); Temm. Esq. Zool. Guin. p. 193 (1853); Gray, Cat. Rum. B. M. p. 39 (1872); id. Hand-l. Rum. B. M. p. 108 (1873); Ward, Horn Meas. (1) p. 117 (1892), (2) p. 159 (1896).

Antilope (Dama) addra, Benn. P. Z. S. 1833, p. 2; id. Tr. Z. S. i. p. 7 (1833); Less. Compl. Buff. x. p. 288 (1836); Gerv. Dict. Sci. Nat., Suppl. i. p. 261 (1840); Reichenb. Säug. iii. p. 116, pl. xxxv. fig. 207 (1845).

Antilope dama, var. *orientalis*, Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 266 (1847); id. Hornschuch's Transl., Arch. Skand. Beitr. p. 262; id. Reprint, p. 82 (1848).

VERNACULAR NAMES:—*Addra* in Dongola (*Hemprich & Ehrenberg*); *Ariel* or *Ril* in Arabic (*Heuglin*).

Size large, form graceful. Colour nearly all over white, the only parts which are of the usual rufous shade being the neck and anterior back, the sides and rump gradually shading off into white. Head and ears white, a faint rufous tinge on the centre line of the face. Neck deep rufous all round, except for a white spot on its anterior surface. Lower part of fore legs faintly rufous, rest of limbs and whole of tail white. Knee-brushes present.

Skull, basal length in an immature male 8·85 inches, greatest breadth 4·15, muzzle to orbit 5·3.

Horns of male thick, curved strongly backwards below, then hooked inwards and forwards above. Horns of female almost equally long, but comparatively thin, slightly curved, and not hooked terminally.

Hab. Dongola and Sennaar.

In concluding our account of the true Gazelles we come, at the end of the list, to a small but attractive group of three species which are closely related to one another, and take each other's places as representatives in the different countries where they have been found. These three Antelopes are certainly nearly allied, and it is by no means improbable that, although all the accessible specimens known to us are distinguishable, intermediate forms will ultimately be found to link them together. It is especially likely that this will prove to be the case with the two western species, *G. dama* and *G. mhorr*. All the three species of this group are exceedingly rare in collections, and we have been able to obtain but very little information about them, and very little material for comparison, the British Museum being badly off for specimens of all of them. It is to be hoped, however, that the prospective opening of the Soudan, by France on one side and England on the other, will lead to an increase of our knowledge of this group of Antelopes, and of the many other interesting forms of the great North-African desert.

We will commence our account of these three Gazelles with the one which inhabits the eastern part of the Soudan, where our own countrymen may soon be expected to meet with it.

The first notice of the existence of a species of this form in North-eastern Africa appears to have been given by Lichtenstein, who read a paper on the Antelopes of Northern Africa before the Academy of Sciences of Berlin on March 11th, 1824. Amongst the four Antelopes discussed in this learned

treatise, which was mainly based upon the specimens sent to the Royal Collections by the well-known travellers Hemprich and Ehrenberg from Dongola and Sennaar, were several representatives of the present species which Lichtenstein not unnaturally referred to the *Antilope dama* of Pallas. The same course was pursued by Hemprich and Ehrenberg themselves, who shortly afterwards published full descriptions and figures of it in their 'Symbolæ Physicæ.' They inform us that they met with specimens of this Antelope in Southern Dongola in the month of July 1822, and hunted it along with the Addax and Leucoryx, which occurred in the same district. They found it plentiful in herds and easy of access, even without the use of horses. Like the other species mentioned, it feeds principally on the acacias. They did not meet with this Antelope until they arrived at 20° N. lat. going south, after which they found it abundant. The Arabs, who much esteem the flesh and sell it when dried, call it "*Addra*." It did not appear to approach the banks of the Nile, but kept entirely to the desert and to the valleys which traverse it, especially to the Chor-el-Lebben.

Not far from the same date another distinguished German traveller and naturalist, Rüppell, whose name we have already had frequent occasion to mention, also met with this Antelope. Rüppell sent his specimens to Frankfort-on-the-Main, where they were described and figured by Cretzschmar on the part of the Senckenbergian Society of Naturalists in 1826. Cretzschmar also referred these specimens to *Antilope dama*; but Hamilton Smith, after examining them in the Senckenbergian Museum, came to the correct conclusion that they belonged to a different species, on which he proposed to bestow the name *Antilope ruficollis*. We must therefore use *Gazella ruficollis* as the correct scientific designation of this animal. A third German naturalist, Heuglin, who has recorded his experiences of this species, tells us that he met with it, generally in pairs or small families, and often mixed up with herds of other Gazelles, in the desert districts of Dongola and Kordofan, where it is known to the Arabs as the "*Adra*" or "*Ledra*." From this native name, Bennett, in his memoir on *Gazella mhor*, to which we shall presently refer, proposed to call the present species *Antilope addra*, but, as has been already stated, Hamilton Smith's name has precedence.

Gazella ruficollis is, we regret to say, represented in the British Museum by two specimens only, neither of which is suitable for exhibition in the

Gallery. One of these is a stuffed female from Sennaar, received from the Stockholm Museum, in exchange, in 1846, and the other an imperfect skin of a male from Kordofan, purchased of a dealer in 1848.

We are not aware that this Gazelle has ever been brought to Europe alive.

Our figure (Plate LXXI.) has been drawn from the stuffed female in the British Museum.

September, 1898.

105. THE DAMA GAZELLE.

GAZELLA DAMA (PALL.).

- Le Nanguer*, Buff. Hist. Nat. xii. p. 213, pl. xxxiv. (1764), whence
Antilope dama, Pall. Misc. Zool. p. 5 (1766); id. Spic. Zool. fasc. i. p. 8 (1767),
 fasc. xii. p. 13 (1777); Müll. Natursyst. Suppl. p. 53 (1776); Erxl. Syst. R. A.
 p. 280 (1777); Zimm. Spec. Zool. Geogr. p. 541 (1777); id. Geogr. Gesch. ii.
 p. 114 (1780); Gatt. Brev. Zool. i. p. 81 (1780); Herm. Tabl. Affin. Anim.
 p. 108 (1783); Schreb. Säug. pl. cclxiv. (1785); Bodd. Elench. Anim. p. 141
 (1785); Gmel. Linn. S. N. i. p. 183 (1788); Kerr, Linn. An. K. p. 308 (1792);
 Donnd. Zool. Beytr. i. p. 623 (1792); Link, Beytr. Nat. ii. p. 98 (1795); Bechst.
 Syst. Uebers. vierf. Th. ii. p. 643 (1800); Shaw, Gen. Zool. ii. pt. 2, p. 359
 (1801); Turt. Linn. S. N. i. p. 112 (1802); G. Cuv. Dict. Sci. Nat. ii. p. 243
 (1804); Desm. N. Dict. d'H. N. (1) xv. p. 334, xxiv. Tabl. p. 32 (1804); Tiedem.
 Zool. i. p. 408 (1808); Licht. Mag. nat. Freund. vi. p. 170 (1814); G. Fisch.
 Zoogn. iii. p. 409 (1814); Afz. N. Act. Ups. vii. p. 220 (1815); Desm. N. Dict.
 d'H. N. (2) ii. p. 189 (1816); G. Cuv. R. A. i. p. 263 (1817); Goldf. Schr. Säug.
 v. p. 1199 (1818); Schinz, Cuv. Thierr. i. p. 394 (1821); Desm. Mamm. ii.
 p. 458 (1822); H. Sm. Griff. An. K. iv. p. 206, v. p. 330 (1827); Less. Man.
 Mamm. p. 375 (1827); J. B. Fisch. Syn. Mamm. p. 463 (1829); Less. Compl.
 Buff. x. p. 288 (1836); Oken, Allg. Nat. vii. p. 1375 (1838); Laurill. Dict.
 Univ. d'H. N. i. p. 616 (1839); Less. N. Tabl. R. A., Mamm. p. 177 (1842);
 Reichenb. Säug. iii. p. 115 (1845).
- Cerophorus (Cervicapra) dama*, Blainv. Bull. Soc. Philom. 1816, p. 75.
Cemas dama, Oken, Lehrb. Nat. iii. pt. 2, p. 741 (1816).
Gazella dama, Gray, Ann. Mag. N. H. (1) xviii. p. 231 (1846); id. Knowsl. Men.
 p. 5 (1850); id. P. Z. S. 1850, p. 114; Sel. List An. Z. S. (8) p. 142 (1883);
 Kohl, Ann. Mus. Wien, i. p. 79, pl. v. fig. 2 (skull) (1886) (partim); Ward,
 Horn Meas. (1) p. 116 (1892), (2) p. 158 (1896).
- Antilope (Dama) nanguer*, Benn. P. Z. S. 1833, p. 2; id. Trans. Z. S. i. p. 7 (1833);
 Gerv. Dict. Sci. Nat. Suppl. i. p. 261 (1840); Less. N. Tabl. R. A., Mamm.
 p. 177 (1842).
- Gazella nanguer*, Fitz. SB. Wien, lix. pt. 1, p. 158 (1869).

Antilope mhorra, var. β , Wagn. Schr. Säug. Suppl. iv. p. 410 (1844), v. p. 404 (1855).
Gazella mhorra, Gray, Cat. Rum. B. M. p. 39 (1872) (partim); Brooke, P. Z. S. 1873,
 p. 648 (partim).

Antilope dama, var. *occidentalis*, Sund. Pecora, K. Vet.-Ak. Handl. 1845, p. 266
 (1847); id. Hornschuch's Transl., Arch. Skand. Beitr. ii. p. 262; Reprint, p. 82
 (1848).

VERNACULAR NAME :—*Nanguer* in Senegal (*Buffon*).

Size about as in *G. ruficollis* and *G. mhorra*. Markings throughout very much as in the next species, *Gazella mhorra*, but the white of the rump-patch, although less than in *G. ruficollis*, where it spreads all over the body, is considerably more extended, uniting on the thighs with the white of the sides of the belly, and therefore cutting off the dark colour of the outer sides of the hind limbs from that of the back. Other characters very much as in *G. mhorra*.

Hab. Senegal and Gambia.

Passing now to the western end of Northern Africa we find this group of Antelopes represented by the "Dama" Gazelle, a species which has been known to naturalists ever since the time of Buffon. By him it was described and figured in the twelfth volume of his 'Histoire Naturelle,' under the name of "*Le Nanguer*," the appellation stated by Adanson to be given to it in Senegal. Upon the "Nanguer" of Buffon, Pallas in 1766 established his *Antilope dama*, so that there can be no question as to *Gazella dama* being the correct name of the representative species of this group in Senegal. But whether Pallas was right in assigning the term "*dama*" of Pliny to the present animal is a matter open to much question. The late Mr. E. T. Bennett has discussed this subject in his article on the Mhorra Antelope published in the first volume of the Zoological Society's 'Transactions,' to which we may refer our readers. But there can be little doubt that the ordinary "*Dama*" of the Romans was not the present animal, but the well-known Fallow-Deer, *Cervus dama*.

For many years the naturalists following Buffon and Pallas gave us no further information concerning this Antelope, and merely copied what their predecessors had said of it. Sundevall, in his well-known treatise on the "*Pecora*," united the three members of this group together under "*Antilope*

dama," designating the forms of Morocco and Senegal as "var. *occidentalis*," and stating that he had examined a specimen of it in the Frankfort Museum. If the locality and the references given by Rüppell in his catalogue of the Senckenbergian Collection are correct, the specimen in that collection must be the "Mhorr" of Morocco, and not the "Nanguer" of Senegal. We are told by Gray ('Gleanings from the Knowsley Menagerie,' p. 5) that the Frankfort specimen was originally received from the Zoological Society of London.

Among the numerous Antelopes procured from the Gambia for the Derby Menagerie by Lord Derby's agent Whitfield were several examples of this species. Dr. Gray, in the letterpress to the 'Gleanings,' tells us that at the time of his writing (April 1850) there was a fine male of *Gazella dama* living at Knowsley, and that a female, procured by the same collector, which died on its passage home, was preserved in the British Museum. This specimen, a skin of an immature animal, is still in the Museum, to which it was presented by the Earl of Derby, and, strange to say, is still the only example of this Antelope in the National Collection.

In 1865 a pair of this Gazelle (as recorded in the Society's 'Proceedings,' 1865, p. 675) were acquired by the Zoological Society of London, from the Zoological Gardens, Antwerp. About the same period Sclater recollects having seen other examples of this Antelope in the Antwerp Gardens, but does not remember to have noticed them in any other of the continental Gardens which he has visited from time to time for many years.

In some MS. notes on the Antelopes of the Gambia which Sir Robert Llewelyn, K.C.M.G., the Governor of the Colony, has kindly sent to Sclater, "the Springbuck," or "Kongko-tong" of the Mandingos, is stated to be "common all over the south bank of the river." This "Springbuck" can be hardly any other Antelope than the present species. If such is the case, it is remarkable that a beautiful animal, so abundant in a British Colony a few days' steam from our shores, should be still so little known in our Museums and Menageries.

September, 1898.





Wolf del. J. Smit lith

The Mhorr Gazelle .
GAZELLA MHORR

Published by R.H. Porter .

Hanhart imp .

106. THE MHORR GAZELLE.

GAZELLA MHORR (BENN.).

[PLATE LXXII.]

- Nanguer*, F. Cuv. H. N. Mamm. (fol.) iv. livr. 67 (1833) (*nec* Buff.).
Antilope (Dama) mhorr, Benn. P. Z. S. 1833, p. 1 (Mogador); id. Tr. Z. S. i. p. 7, pl. i. (1833); Gerv. Dict. Sci. Nat. Supp. i. p. 261 (1840).
Antilope mhorr, Waterh. Cat. Mamm. Mus. Z. S. (2) p. 41 (1838); Rüpp. Verz. Senck. Mus. p. 38 (1842); Wagn. Schr. Säug. Supp. iv. p. 410 (1844) (partim); Reichenb. Säug. iii. p. 116, pl. xxxv. fig. 212 (1845); Schinz, Syn. Mamm. ii. p. 426 (1845); id. Mon. Antil. p. 25, pl. xxvi. (1848).
Nanger mhorr, Lataste, Mamm. Barb. (Act. Soc. Linn. Bord. xxxix.) sep. cop. p. 173 (1885).
Antilope mhoks, Less. Compl. Buff. x. p. 288 (1836).
Gazella mohr, Gray, Ann. Mag. N. H. (1) xviii. p. 231 (1846); id. Knowsl. Men. p. 5 (1850); id. P. Z. S. 1850, p. 114; id. Cat. Ung. B. M. p. 59 (1852); Gerr. Cat. Bones Mamm. B. M. p. 233 (1862); Fitz. SB. Wien, lix. pt. 1, p. 158 (1869); Gray, Cat. Rum. B. M. p. 39 (1872); id. Hand-l. Rum. B. M. p. 108 (1873); Brooke, P. Z. S. 1873, p. 548 (in part.); Kohl, Ann. Mus. Wien, i. p. 78 (1886); Flow. & Lyd. Mamm. p. 342 (1891); Jent. Cat. Mamm. Leyd. Mus. (Mus. Pays-Bas, xi.) p. 168 (1892); Lyd. Horns and Hoofs, p. 235 (1893).
Gazella mohrr, Temm. Esq. Zool. Guin. p. 193 (1853).

VERNACULAR NAME :—*Mhorr*, in Morocco (*Bennett*).

Size large, height of a male not fully adult $35\frac{1}{2}$ inches. General colour dull rufous or rufous-fawn, becoming a deeper and richer rufous anteriorly. Face, cheeks, and chin whitish or whitish-fawn, the forehead beneath the horns and an inconspicuous dark cheek-streak blackish. Neck deep rufous, a conspicuous white spot on its front surface. No dark or light

lateral bands present, nor pygal bands. White of belly extending rather high up on the sides, the line of white passing across the outer sides of the forearms on to the chest, where it contrasts conspicuously with the dark red of the neck. White of rump much as in *G. soemmerringi*, including the tail, and extending angularly forwards on each side into the body-colour, but not uniting with the belly-colour across the outer sides of the thighs. All the boundary-lines between the rufous and white well defined. Knee-brushes small. Tail white, a small brownish or fawn-coloured tuft at its extremity.

Horns of male thick, strongly bent backwards below, recurved upwards and forwards above.

Female. Similar to the male, but horns shorter and thinner.

Hab. South-western Morocco.

The last species of the group, and also of the genus *Gazella*, is the Mhorr, the Moroccan representative of the Dama Gazelle, to which, as we have already stated, it is very closely allied. Indeed, we have not inconsiderable doubts as to their real specific distinctness. Southern Morocco and Senegal approach so nearly together that it is not likely *prima facie* that the Gazelles of their deserts would be specifically different.

The well-known zoologist, Mr. E. T. Bennett, who was Secretary to the Zoological Society of London in its early days, was the first describer of the "M'horr" as distinct from *Gazella dama*, and brought his account of it before a Meeting of that Society on January 8th, 1833. His full memoir on this subject was afterwards published in the Society's 'Transactions,' where it occupies the first pages of the first volume of that standard work.

Bennett's observations were made on two specimens of this Gazelle which were presented, while living, to the Zoological Society by Mr. E. W. A. Drummond-Hay, C.M.Z.S., then British Consul-General at Tangier, for whom they had been procured by Mr. E. W. Willshire, C.M.Z.S., British Vice-Consul at Mogador. Bennett also had before him a third specimen in the shape of an imperfect skin of this Antelope, also presented to the Society by Mr. Drummond-Hay. All these specimens are stated to have been brought "from the territories of the Sheik of Wednoon, twelve days' journey inland from the latter place"; but, in spite of the expression "inland," we suppose "Ouednoon," as it should be more correctly written, to be the valley

of the River Noon in the extreme southern coast district of Morocco, opposite the Canary Islands.

In the article in question, which is accompanied by an excellent coloured figure of the "M'hoor," Bennett informs us that this Antelope "is regarded in the kingdom of Morocco as an exceedingly rare animal," and continues as follows :—

"Mr. Willshire states that the one earliest obtained by him was the first individual of the race which had been seen in Mogador. It is highly esteemed, according to Mr. Drummond-Hay, on account of its producing the bezoars, so precious in Oriental medicine, which are known in Morocco as the Baid-al-Mhorr, or eggs of the M'horr. Mr. Hay conjectures that Baid-Mhorr may possibly be the source whence, rather than from the Persian Pazahar, the name of Bezoar has sprung. It is pretended that two of these calculous concretions are met with in the intestines of every individual of the race, but none were found in that which died in the Society's collection, and which, as is stated by Mr. Spooner and Mr. Langstaff, who examined it after death, agreed in its visceral anatomy with the Antelopes in general."

About the same time as the Zoological Society's specimens arrived in England it would appear that living examples of the same Antelope reached the Jardin des Plantes at Paris. One of these, an immature female, was figured by Geoffroy St.-Hilaire and F. Cuvier on the 375th plate of their 'Histoire Naturelle des Mammifères.' In the letterpress accompanying this plate we are informed that two young living examples (male and female) had been received there, and that the female had lived in good health for two years without changing her colour, only varying in the size of her body and in the shape of her horns. The authors inform us that when the "Nanguers" arrived at Paris they had only very short horns, about 4 or 5 inches in length, which were at that period strongly and uniformly curved towards the front. The male having died when young did not change the character of his horns, but those of the female having had time to develop became recurved behind and divergent one from the other. These Gazelles had neither tear-bags nor knee-brushes. When the figure was drawn the female stood about 2 feet 10 inches in height, but seemed to be not fully grown.

The authors of the 'Histoire Naturelle des Mammifères' refer these specimens to the "Nanguer" of Buffon, and do not say from what country they were received, but from their figure and description there can be no

doubt that they belonged to the *Gazella mhorr* of Morocco and not to the true *G. dama* of Senegal, if these two species are held to be distinct.

The only example of *Gazella mhorr* in the British Museum is the mounted adult male from Morocco presented to the Zoological Society by Mr. Willshire in 1833, and formerly in that Society's collection. It is no doubt the specimen from which Bennett's figure in the 'Transactions' was taken, and is also, we believe, the original of our illustration (Plate LXXII.), which was put upon the stone by Mr. Smit under the direction of the late Sir Victor Brooke. Further information concerning this and other animals of Southern Morocco is much required, but until the present political conditions of that country are altered we are hardly likely to obtain it.

September, 1898.

GENUS VII. AMMODORCAS.

Ammodorcas, Thos. P. Z. S. 1891, p. 207 Type.
A. CLARKEI.

Size medium, about as in middle-sized Gazelles. Neck slender and rather elongated, but not so much as that of *Lithocranius*. Tail long, reaching nearly to the hocks. No Gazelline body-markings present, but the head with typically Gazelline streaks and bands. False hoofs small.

Skull long and low, approaching in shape that of *Lithocranius*, but less modified. Shallow anteorbital fossæ present. Premaxillæ reaching nasals. Premolars $\frac{3}{3}$, the anterior in each jaw unusually small.

Horns of medium length, evenly divergent, curved upwards and forwards throughout their length, except just at their bases. Female hornless.

Range of the Genus. Restricted to Somaliland.

One species only.



J. Smit del et lith

The Dibatag .
AMMODORCAS CLARKII .

Published by R.H. Porter

Hankart imp.

107. THE DIBATAG.

AMMODORCAS CLARKEI (THOS.).

[PLATE LXXIII.]

Cervicapra clarkei, Thos. Ann. Mag. N. H. (6) vii. p. 304 (1891).

Gazelle from Somaliland allied to *Lithocranius*, Sci. P. Z. S. 1891, p. 197.

Ammodorcas clarkei, Thos. P. Z. S. 1891, p. 207, pls. xxi. & xxii. (head and skull); Sci. P. Z. S. 1892, p. 101; Ward, Horn Meas. (1) p. 128 (1892), (2) p. 173 (1896); Lyd. Horns and Hoofs, p. 240 (1893); Sci. P. Z. S. 1892, pp. 101 & 118; Swayne, P. Z. S. 1895, p. 318 (habits); id. Seventeen Trips to Somaliland, p. 310 (1895); Hoyos, Zu den Aulihan, p. 181 (1895); Elliot, Publ. Chicago Mus., Zool. i. p. 124 (1897).

VERNACULAR NAME :—*Dibatag* of Somalis (*Clarke, Swayne, and others*).

Height at withers about 31 inches. General colour of body dark purplish rufous, no dark or light lateral or pygal bands present. Head with handsome sharply-defined Gazelline markings; the central facial band rich fulvous rufous, no darker spot on muzzle; light facial streaks long, sharply defined, and extending to the sides of the muzzle, pure white; areas round eyes and ears also whitish, though not sharply defined, connected with each other and continuous with the white facial streaks. Dark facial streaks present but not prominent. Back of ears dull whitish. Chin and interramia white. Cheeks below white markings, throat, and whole of neck dark purplish rufous, continuous with the back. Belly pure sharply-defined white, but on the chest this colour is broken by two projections running down from the dark throat-colour on each side of the middle line to between the elbows. Limbs, except their inner sides above, coloured like the back, but gradually passing lower down into fulvous instead of rufous. Knee-brushes present but small.

Back of hams white, the white not projecting into the dark body-colour. Tail long, well-haired, but not crested, blackish above and below, except just at its base.

Skull-dimensions in an adult male:—Basal length 7·5 inches, greatest breadth 3·7, muzzle to orbit 4·2.

Horns attaining about 11 or 12 inches in length; their basal halves broadly ringed, their long forwardly-directed terminal halves smooth and evidently corresponding to the short smooth recurved tips of ordinary Gazelline horns.

Female. Similar to the male, but without horns.

Hab. Eastern parts of Central Somaliland, restricted to the Dolbahanta and Marehán countries S.E. of Berbera.

We now conclude the long series of Gazelles with three abnormal forms, each constituting a genus of itself, which, curiously enough, are all restricted to N.E. Africa. As regards the first two of them there can be no question, we believe, of their close alliance to the Gazelles, *Ammodorcas* being, in several respects, intermediate between *Gazella* and *Lithocranius*, and leading on to that most specialized form of the group. About the correct position of the Beira, however, there is considerable doubt, and it is quite possible that a more natural place for it in the Antelopine series may be hereafter discovered.

The Dibatag, or Clarke's Gazelle, was first met with by the sportsman and naturalist whose name it bears in 1890, during his exploring trip into the Dolbahanta and Marehán country south-east of Berbera. Writing to Thomas about his discovery, Mr. T. W. H. Clarke (of Secheron, Battery Point, Hobart, Tasmania) says (see P. Z. S. 1891, p. 209):—

“I saw this Gazelle for the first time on December 17th, 1890, about three hours from ‘Bairwell,’ or about one day from ‘Buroa Well, Haberberhagi's country,’ and afterwards on the road all the way into the Marehan district, 8° N., 47° E. I killed a male, and found one of the horns broken off close to the skull, which had apparently been done a year or so ago.

“They are very graceful animals, with a long neck and well-proportioned head and horns; the body is rather slender, but considerably larger than in *Gazella spekei*, about the size of a female *G. walleri*. The legs are long and slender; the hoofs are not so triangular as those of *G. spekei*, and small for the size of the animal. They have small ears

and a long upper lip, just like those of *G. walleri* or a Giraffe. The horns are of the shape of a sickle, and less than 12 inches in length, the longest, out of the eleven males killed, measuring 11 inches. The tail, from what I remember, is about 12 or 13 inches in length, very thin, and thinly covered with black hair about 1 inch long.

“The colour of the body in this Antelope is like that of the neck, of a kind of pink-fawn, but the belly is whitish and the tail black. The face resembles that of *G. walleri*, only *G. walleri* has no white in front of the eye.

“When running, or rather jumping, these Gazelles look very peculiar; their long neck and head being thrown back and the tail thrown forward, so that there appears to be only a foot between head and tail. The country they are mostly found in is of low thorn-bush and sandy; they do not seem to like the big bushes, though at times they are found there. In this respect they differ from *G. walleri*, this species liking many bushes to go and rest in.

“The new Gazelle is to be found one day’s journey from Buroa Wells, at an elevation of 3100 feet, to the Marehan country (800 feet) (general course about S. by E.), and is there more numerous than any other kind of game, excepting *G. soemmerringi*; but the latter is found only in the open country.

“Several times I observed the new Gazelle and *G. walleri* feeding together, but I never saw more than eight in a bunch, and on that occasion there was a male *G. soemmerringi* with them.”

Mr. Clarke’s skulls of this Antelope, which were at the time without head-skins, having been submitted to Thomas for examination by Messrs. Rowland Ward and Co. (to whom Mr. Clarke had sent for preservation his specimens of Antelopes obtained during this expedition), were, on account of the shape of the horns, not unnaturally supposed to belong to a new species of Reedbuck, and named “*Cervicapra clarkei*”—a mistake which Thomas corrected in his later paper. Very shortly after Mr. Clarke’s specimens had been sent to Europe Capt. Swayne purchased of an Arab in the market at Berbera two pairs of horns of this Antelope with the head-skins attached, and, seeing that they belonged to a new species, sent them to Sclater. Sclater exhibited these specimens at a meeting of the Zoological Society on March 17th, 1891, and pointed out their Gazelline affinities, but finding that they belonged to the same species as that just named by Thomas handed them over to the latter for further examination.

In his paper upon this subject, which was read at the same meeting of the Zoological Society, Thomas took the opportunity of describing the whole series of Mr. Clarke’s Antelopes, which were eight in number. For Clarke’s Gazelle, of which, with the aid of the head-skins and the cleaned skulls, he had no difficulty in recognizing the true affinities, he established the new

generic term "*Ammodorcas*," and added a full description of this remarkable form, illustrated by two plates, one of which, by the kind permission of the Zoological Society, we are enabled to copy in the present work.

Fig. 83.



Head of the Dibatag, ♂.
(From P. Z. S. 1891, pl. xxi.)

As already pointed out, it is evident that in its skull-characters *Ammodorcas* is intermediate between *Gazella* and *Lithocranius*, while in the shape of its horns it is absolutely different from all other Gazelline genera.

Capt. Swayne, who has had the unequalled experience of seventeen visits to Somaliland, writing in 1894, says :—

“I have been singularly unfortunate with this Antelope, never having been in the country where it is found till I went to the Nogal Valley some three years ago. At that time the Jilal, or dry season, was at its height, and all the game was scarce and shy, so I never got a *Dibatag* till June 1893, when on my return journey from Ogádén, across the waterless plateau, I made a détour of several days to the east on purpose to shoot one for my collection.

“I searched for *Dibatag* at Tur, a jungle due south of the Toyo grass plains, the distance being some eighty miles from Berbera, and was lucky in getting one good buck and picking up two pairs of horns. Although I saw a good many, all were wild and shy. This is their extreme western limit, and they never by any chance, I believe, come so far south as the Gólis Range. Farther east, towards Buró, they are more plentiful and less shy.

“*Dibatag* are very difficult to see, their purplish-grey colour matching with the high durr grass in the glades where they are found. The glossy coat, shining, reflects the surrounding colours, making it sometimes almost invisible; and at the best of times its slender body is hard to make out. I have often mistaken female Waller’s Gazelles for *Dibatag*, and once shot one of the former in mistake for the latter. The habits and gait are much the same, save that the *Dibatag* trots off with head held up, and the long tail held erect over the back nearly meeting the head, while Waller’s Gazelle trots away with its head down and its short tail screwed round. Like Waller’s Gazelle the *Dibatag* goes singly or in pairs, or small families up to half a dozen.

“As in the case of Waller’s Gazelle, the *Dibatag* is enabled by its long neck and rather long upper lip to reach down branches of the mimósa bushes from a considerable height. The shape of head and way of feeding of both Antelopes are Giraffe-like, and I have seen both standing on the hind legs, fore-feet planted against the trunk of a tree, when feeding. I have seen *Dibatag* feeding both on thorn bushes and on the durr grass. Both Waller’s and Clarke’s Antelopes can live far from water. The country most suitable for *Dibatag* is jungle of the khansa or umbrella mimósa, alternating with glades of durr grass which grows about six feet high. The females are hornless. The *Dibatag* is a very graceful Antelope, standing higher than an Indian Blackbuck, but weighing probably a good deal less.”

Another well-known explorer of Somaliland, Mr. G. Percy V. Aylmer, kindly sends us the following field-notes on this species:—

“*Ammodorcas clarkei*, the Debbertag of the Somáli, one of the most beautiful and interesting of the rare Antelopes of that country, is, I believe, exceedingly local. From the reports of Messrs. Gillett, Pease, and other travellers, and my own experience, I should roughly describe the range of these Antelopes as contained within North latitude 8° to $9^{\circ} 30'$, and East longitude 44° , to an unknown distance towards the east. Morning and

evening (within the above limits) they may be found feeding in the open grass-covered plains which are dotted with small scrubby bushes, patches of tall durr-grass, and immensely tall white-ant hills. During the heat of the day they retire to the shade of some solitary tree, where the dark mouse-colour of their backs makes them particularly hard to pick out. Here they stand motionless throughout the hot hours, apparently drowsy, but in reality alert, and watching the landscape with the keenest eyes for signs of danger from man, or the deadliest of all their enemies—the leopard. In the opinion of the Midgan (the Somāli hunting tribe) these are the wariest of Antelope, and I have always had great difficulty in getting within shot, partly because of the open nature of their feeding-ground, but principally on account of their watchfulness and keenness of vision at unusually great distances. On one occasion, being lucky enough to get within 100 yards of two, and finding them to be a female and calf, I contented myself with watching; and for upwards of half an hour, whilst they fed, not two consecutive mouthfuls were taken without the head being sharply raised and a suspicious glance taken all round. In preference they feed upon the small bushes, their long necks enabling them to reach up to the young shoots, like Waller's Gazelle, although they appear to choose a less thorny variety. I have met with them occasionally singly, generally in twos or threes, and once only as many as five together. When disturbed they stand rigid, head upraised, ears erect, tail stiffening, and the instant they begin to run the tail (which is unusually long) stands up perpendicularly, presenting, as they gallop away with their springy bounding action, rather the appearance of a yawl's mizzen-mast in a sea-way. Thus they make a particularly difficult mark for the disgusted stalker, who, exhausted by a long and arduous crawl through the scanty cover, probably gets nothing but the flukiest of snap-shots at the coveted specimen.'

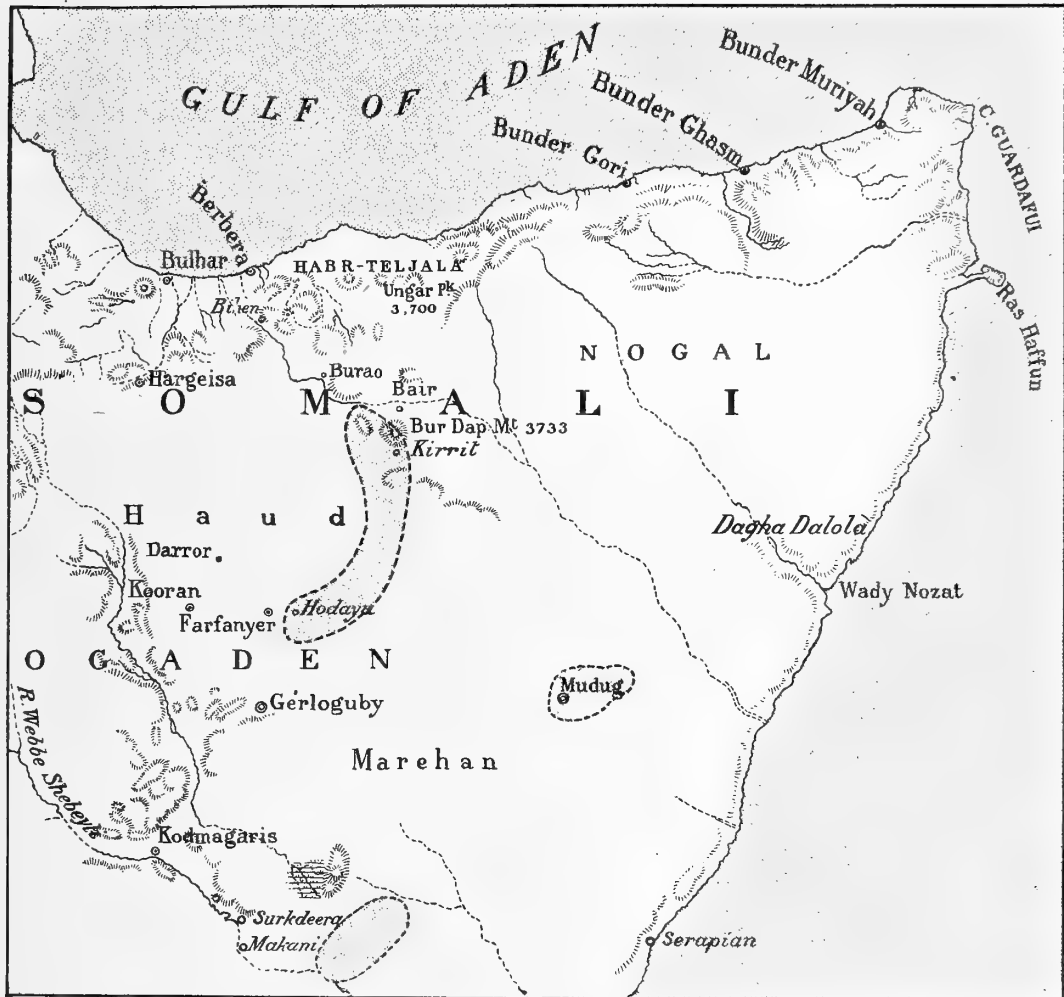
Through the kind intervention of Mr. Pease we have also received some interesting particulars as to a wider range of the "Dibatag" from Lieut. R. Ward Jackson, of the 11th Hussars, who, accompanied by Capt. M. S. Wellby, has recently penetrated far into the eastern interior of the Somaliland peninsula. Mr. Jackson writes as follows:—

"In my journey I first saw *Dibatag* between Bair and Kirrit. They appear to be scattered all over the country between Bair and Hodayu, and I found them most plentiful about 25 miles from Kirrit. There Wellby shot three and wounded a fourth in one day, but, as a rule, I saw two or three each day in a march of about 20 miles.

"Travelling eastward from Hodayu they gradually appeared to grow less plentiful, and the last record I have of having seen one was about 150 miles from Hodayu. After this I saw no more until between Daghā Dalola and Mudug, about 130 miles from the former, in the Mijourten country. Here I was surprised to find them again very plentiful for three days, and I saw a few on the following three days, after which they again ceased. A week afterwards I found them again plentiful in the Marehan country, gradually diminishing in numbers as we travelled south; the last I saw was about 40 miles before we struck the Webbe Shebeyli. On the homeward journey I came

across an odd pair now and then in the south of the Ogaden country. I have marked very roughly (see map, fig. 84) the belts within which I found them most plentiful. I do not remember having seen more than eight together. In the Mijourten and Marehan country I have found them quite close to Barao, and most plentiful in country

Fig. 84.



Map of Somaliland (showing the localities of the Dibatag).

where there was very good grazing of 'gillop,' 'jalaalo,' and a fine feathery grass. The country between Bair and Hodaya resembled the Haud. As regards the description of the *Dibatag*, I can add nothing to that contained in Swayne's 'Seventeen Trips in Somaliland.'"

The specimens of *Ammodorcas clarkei* in the British Museum consist of a head-skin with its skull from Burao Wells, presented by Mr. T. W. H. Clarke (the type of the species), and a stuffed male, the skins of a male and two females and their skulls from the same district, obtained in his second expedition, and presented by the same donor. There are also a skin and skeleton of a female from Darror Wells, on the Haud, presented by Mr. Ford G. Barclay, and the skull of a male from near the Bur Dap Mountain, Central Somaliland, presented by Col. A. Paget.

Our illustration of the male of this Gazelle, with the female in the distance (Plate LXXIII.), has been drawn and put on the stone from the specimens in the British Museum.

[Since this was written we have received from Dr. Matschie, through Herr Oscar Neumann, the interesting information that the Dibatag occurs in the Kilimanjaro district of German East Africa, a considerable extension of its previously known range.]

September, 1898.

GENUS VIII. LITHOCRANIUS.

Type.

Lithocranius *, Kohl, Ann. Mus. Wien, i. p. 79 (1886) L. WALLERI.

Size about as in the larger Gazelles. Form very peculiar, owing to the great elongation of the neck, which gives almost a Giraffe-like appearance to the animal. Limbs also very long; false hoofs quite minute. Colouring of the head less typically Gazelline than in *Ammodorcas*, but a modification of the light lateral body-line present.

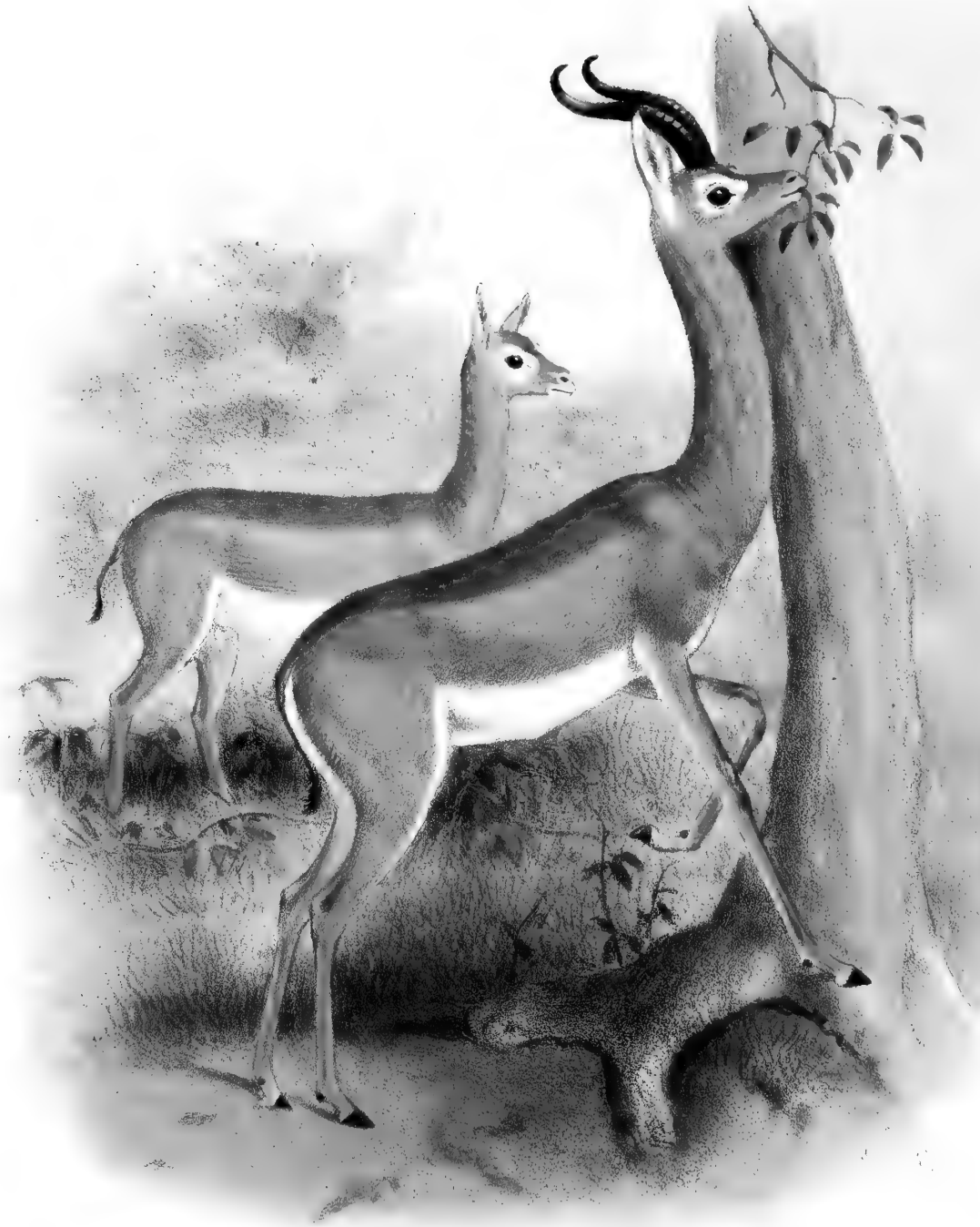
Skull (see fig. 85, p. 231) excessively long and low, the cranial part behind the horns particularly lengthened; the bones of this part very solid and stony. Bullæ low and opaque. A shallow anteorbital fossa present. Premaxillæ not reaching the nasals. Lower jaw slender and delicate. Premolars $\frac{3}{3}$, the anterior one above almost as large as the second.

Horns thick, oval in section, very closely ringed, curved backwards as in many species of *Gazella* for the greater part of their length, their middle portion more or less lyrate, as in *Gazella dorcas*, their tips recurved upwards or forwards. Female hornless.

Range of the Genus. Somaliland and British East Africa.

One species only.

* Misprinted *Litocranius* in the original description. The name is based on the solid stony character of the cranium (*λίθος* = *lapis*).



The Gerenuk
LITHOCRANIUS WALLERI.

Published by R. H. Porter

Unhart imp.

108. THE GERENUK.

LITHOCRANIUS WALLERI (BROOKE).

[PLATE LXXIV.]

Gazella walleri, Brooke, P. Z. S. 1878, p. 929, pl. lvi. (skull); Sci. P. Z. S. 1884, p. 538, pl. xlix. (head and skin); Phillips, P. Z. S. 1885, p. 931; Sci. in James's Unknown Horn of Africa, p. 262, pl. i. (1888); Hunter, in Willoughby's E. Afr. p. 289 (1889); Flow. & Lyd. Mamm. p. 342 (1891); Inverarity, Journ. Bombay N. H. Soc. vi. p. 459 (1891).

Lit(h)ocranius (Gazella) walleri, Kohl, Ann. Mus. Wien, i. p. 79, pl. v. fig. 3, and pl. vi. fig. 1 (skull) (1886) (Somaliland).

Lithocranius walleri, Thos. P. Z. S. 1891, p. 207; Sci. P. Z. S. 1892, p. 101; Swayne, P. Z. S. 1892, p. 305; Ward, Horn Meas. (1) p. 134 (1892), (2) p. 175 (1896); Lyd. Horns and Hoofs, p. 241 (1893); Jackson, in Badminton Big Game Shooting, i. p. 307 (head) (1894); Sci. P. Z. S. 1893, pp. 101 & 118; Swayne, P. Z. S. 1895, p. 305 (habits); id. Seventeen Trips to Somaliland, p. 312 (1895); Matsch. Säug. Deutsch-O.-Afr. p. 132 (1895); Hoyos, Zu den Aulihan, p. 180, pl. x. fig. 4 (1895); Thos. Ann. Mus. Genov. (2) xvii. p. 107 (1896); Rhoads, P. Ac. Philad. 1896, p. 519; Elliot, Publ. Chicago Mus. Zool. i. p. 226 (1897).

VERNACULAR NAME :—*Gerenuk* of Somalis (*Swayne and others*).

Height at withers 39 inches in an old male. General colour of back rich chestnut rufous, sharply bounded on the upperside of each flank by the very distinct light lateral line, which passes below imperceptibly into fawn-colour, much paler than the dorsal colour, no trace of a dark lateral line being present. The fawn-colour also extends on to the crown, all round the neck, on the shoulders, hips, and down the limbs. Central line of face deep rufous; area round eye whitish, sometimes extended forwards as a light final streak towards the muzzle, but more often stopping just anterior to the openings of

the lacrymal glands. Backs of ears pale fawn-colour; area round their bases but little lighter than rest of head. Fawn-colour of throat projecting down on to chest, as in *Ammodorcas clarkei*. Outer sides of limbs pale fawn throughout. Tail about 10 inches in length, rufous-fawn like the body basally above, whitish below, the tip tufted with black; on each side of its base the white of the hams, which is very narrow, runs up as a pointed projection into the dark body-colour.

The skull of an old male measures 8.75 inches in basal length, the greatest breadth being 3.8, and the muzzle to orbit 4.7.

The horns of good specimens attain 15 or 16 inches in length round the curves, but southern specimens, those from East Africa, have not, as a rule, such fine horns as those from Somaliland.

Female. Similar to the male, but without horns.

Hab. Somaliland, and thence southwards to the Tana Valley, and the Kilimanjaro district of British East Africa.

This Antelope was first made known to science by the late Sir Victor Brooke in 1878 in the last of the many excellent articles which he published in the Zoological Society's 'Proceedings.' His description was based on two skulls with horns attached to them which were lent to him for examination by Mr. Gerald Waller, F.Z.S., at whose request they were named by Brooke after Mr. Waller's brother, "who lost his life in Africa."

Although it is not so stated by Brooke (who was presumably ignorant of the fact), Mr. Waller's specimens of this Antelope are now known to have been given to him by Sir John Kirk, at that time H.B.M. Consul at Zanzibar. In reply to enquiries Sir John kindly informs us that these skulls were procured by hunters in his employment on the coast near the River Juba in Southern Somaliland. Sir John subsequently shot specimens of it himself in the same district (where at that period it was very common), and also brought living examples of it away to Zanzibar.

In his description Brooke pointed out that, as is well shown in the accompanying figure (p. 231), which has been copied from the plate that illustrates his paper, the skull of this Gazelle, besides its general depression, stands widely apart from those of all other species of the group in the enormous backward prolongation of the occiput—"an extension gained principally by the great size of the occipital bone and the prominence of the occipital crest"

This divergence was so remarkable that Brooke doubted "whether the species should not constitute the type of a new subgenus." As we shall see later, Brooke's views have been fully justified by what has taken place since a close acquaintance with the structure of this singular Antelope has been acquired.

Fig. 85.



Skull of the Gerenuk.

(From Brooke, P. Z. S. 1878, pl. lvi.)

It was six years after the publication of Brooke's paper before any additional information concerning this strange Antelope was obtained. In November 1884 Sclater brought before the notice of the Zoological Society a series of flat skins of Mammals, prepared by the natives of Somaliland, which had been lent to him for examination by Mr. C. Hagenbeck, of Hamburg. Amongst these were two skins, at first believed to belong to a new Gazelle, but which, after much research and mainly by the aid of a mounted head obtained in Somaliland by the late Mr. F. L. James, he was enabled to prove must belong to the same Antelope on the skull of which

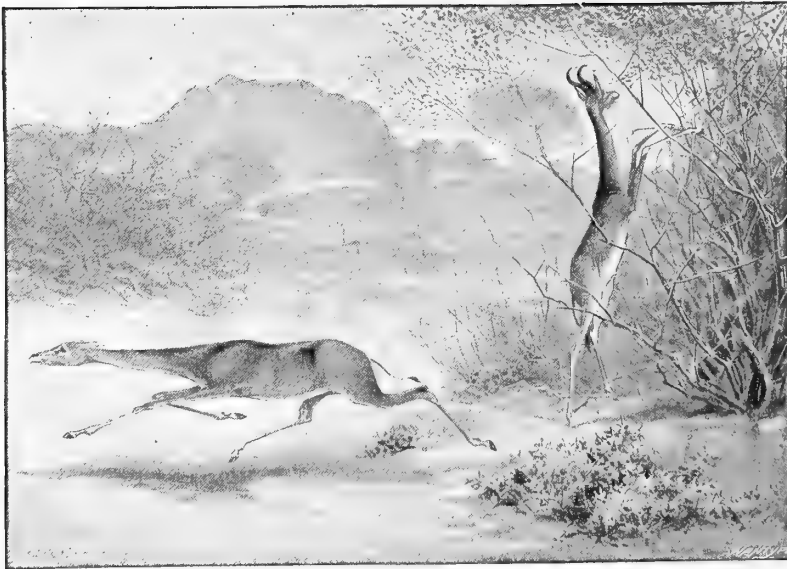
Gazella walleri had been founded. The skins were at once distinguishable by the well-defined dark brown dorsal stripe which, as we now know, forms such a noticeable feature in the present species. Further evidence of the identity of the Somaliland Antelope with *Gazella walleri* was obtained by the comparison of Mr. James's specimen with one of the typical skulls of the last-named species. They differed little, except in the slightly larger size of the northern specimen and in some other minor characters. It was thus first shown that the range of Waller's Gazelle extends to Northern Somaliland, but we now know that the "Gerenuk," as the Somalis call it, is one of the most abundant game-animals of that favoured land.

Capt. Swayne sums up his long acquaintance with this Antelope as follows:—

"The *Gerenuk* is the commonest and most widely distributed of the Somáli Antelopes except the little *Sakáro*, which springs up like a hare from every thicket.

"The long neck of the *Gerenuk*, the large giraffe-like eyes, and long muzzle are

Fig. 86.



Sketch of Gerenuk, ♂ and ♀, in characteristic attitudes.

(From Neumann's 'Elephant-Hunting,' p. 81. Lent by Messrs. Rowland Ward & Co.)

peculiar to it and the *Dibatag* (*Ammodorcas clarkei*). The *Gerenuk* is more of a browser of bushes than a grass-feeder, and I have twice shot it in the act of standing

on the hind legs, neck extended, and fore feet against the trunk of a tree, reaching down the tender shoots, which could not be got in any other way. Thus not only the appearance, but the habits of the *Gerenuk* are giraffe-like. The skull extends far back behind the ears, like that of a camel.

“It is found all over the Somali country in small families, never in large herds, and generally in scattered bush, ravines, and rocky ground. I think it subsists almost entirely on bushes, as it is constantly found in places deserted by Oryx and all other Antelopes because there is no grass. Perhaps the Gadabursi country is the best ground for it, but the *Gerenuk* is almost ubiquitous and need not be specially looked for. I have never seen it in the cedar-forests which crown Gólis, nor in the treeless plains which occur in the Haud. It is not necessarily found near water,—in fact, it is generally met with on stony ground, where there is a sprinkling of thorn-jungle.

“The gait of this Antelope is peculiar, and when first seen a buck will generally be standing motionless, head well up, looking at the intruder, and trusting to its invisibility. Then the head dives under the bushes, and the animal goes off at a long crouching trot, stopping now and again behind some bush to gaze. It seldom gallops, and its pace is never very fast. In the whole shape of the head and neck, with its extended muzzle and slender lower jaw, there is a marked resemblance between the *Gerenuk* and the *Dibatag*. The texture of the coat is much alike in both. The horns of immature buck *Gerenuk* have almost exactly the same shape as those of the *Dibatag*. Their average length when fully grown is about 13 inches. The females are hornless; they sometimes lose or desert their young ones, as I have now and then come on fawns living alone in the jungle. The *Gerenuk* stands a good deal higher than an Indian Blackbuck, but would be of about the same weight.”

Mr. Frederick Gillett, F.Z.S., who accompanied Dr. Donaldson Smith during the first part of his expedition to Lake Rudolph, has kindly drawn up for us the following notes on Waller's Gazelle:—

“This Gazelle is more like Clarke's Gazelle than any other in Somaliland, not only on account of its long neck, but because of its habits. Never is it found out on the open plains, so much frequented by Soemmerring's Gazelle, but it prefers the dense Khansa jungles, or, like Clarke's Gazelle, the high durr-grass of parts of the Haud. Sometimes it is found in company with, or rather in the same neighbourhood as, *Gazella soemmerringi*, in more or less open country amongst the Khansa-bush and hig aloes. It is usually seen in small families of not more than a dozen, but never in herds. It relies on its sharp eyesight and long neck for its safety, standing motionless amongst the bush or grass watching for an enemy. Most of the Somalis dislike its flesh, not so, however, the Lion and Leopard, and many a Waller's Gazelle is stalked and killed by them. Its native name in Somaliland is 'Gerenuk,' and in the Arusa Galla country 'Googoofto.' In the latter country it is very common, inhabiting the jungles frequented by Elephants and Lesser Koodoos. It is the most ubiquitous of all the Antelopes of this part of Africa, and it is a very common sight to see a buck with its fore legs, like a

goat, high up the trunk of a Galol-tree nibbling the small green leaves. The female is hornless, whilst the horns of a good male measure from 14 to 15 inches. Its legs are extremely slender. When disturbed it runs with its long neck stretched out as near the ground as possible, so that it can never be mistaken for a Clarke's Gazelle, as the latter always holds its head erect and its tail well over its back, and springs instead of runs. The young are born, I believe, early in the year; but I have never seen a really young one, although I have been in the country every month in the year except May and June. On December 8th, 1894, I was stalking an Oryx when a female Waller's Gazelle ran almost on to me pursued by a male; they did not see me, but turned and ran back, and then again came towards where I was lying, still without seeing me. After they had gone I crawled on, when for the third time they returned and this time saw me. I remained motionless on one knee; the female retired to a bush, and the male with its neck stretched at its full length came cautiously towards me till within 25 yards, and then gave three or four snorts. As it was the Oryx I was after I now moved and they at once trotted off."

We copy an account of the native mode of capture of this Gazelle from Messrs. Parkinson and Dunbar's narrative of their journey in Northern Somaliland in 1896 (*Geogr. Journ.* xi. p. 25):—

"We found here (on the Bur Dab range) an old man living entirely alone, subsisting on gum and snared game. He was very clever at catching 'Gerenuk,' or Waller's Gazelle, by means of a cord made of the fibre of the 'hig' aloe. At one end of the cord a running noose, 6 inches in diameter, was laid round the rim of a cup-shaped hole scooped in the ground, and supported by a series of small pegs. Near the noose was attached a fine but strong thread, the other end of which was fastened to a springy branch of a tree bent down for the purpose. The noose was prevented from being dragged out of the hole by two pieces of wood laid crosswise. The loose end of the cord was either tied to an adjacent tree or pegged firmly to the ground, and all traces of the trap neatly covered with leaves and sand. The Gazelle is, of course, caught by the leg, and once the noose is drawn tightly round above the hoof there is no escape; but it must need large experience of the haunts of the game to know where to set these gins. The old man had thirty or forty constantly set, and said he got a Gazelle once every four or five days."

Mr. Alfred Pease has kindly summarized his field-notes on the Gerenuk in the following paragraphs:—

"The Gerenuk is the commonest and most evenly distributed of all the Somali Antelopes, if we exclude the little Dik-diks, but it is by no means the least interesting. It is as peculiar as it is beautiful. At rest it is graceful, when running grotesque, and when feeding most curious in its pose. But its colouring of red and purple-grey, its reach of view, and its motions all wonderfully facilitate its power of escaping observation.

At 300 yards I have often had my eye on them feeding, unable almost to distinguish them from their likeness to stems of trees and dead thorn. They are tree-feeders, and their length of leg, body, and giraffe-like necks enable them to crop the leaves from bush-trees at a great height from the ground. When thus occupied in browsing they are often absolutely vertical, and for minutes together motionless, save for the lips and head, which are buried in the foliage. The male alone carries horns, varying in length and circumference, which reach, in fine specimens, $15\frac{1}{2}$ inches measured along the curve. The female is smaller and slighter than the male. On being disturbed they often remain so motionless that it is difficult to detect them in the bush, and when they make off they do so very quickly, and are immediately transformed from tall elegant animals with heads proudly carried to clumsy crouching fugitives with outstretched heads and necks. I have noticed when in flight they generally take a line more or less parallel to the hunter, as if they did not consider it safe to lose all knowledge of their pursuer's whereabouts in the bush. With this object apparently they will usually keep the crest of a ridge or rise till they have put a considerable distance between themselves and their enemy. They go singly or in bands, but most commonly there are two, three, or more together. I have never seen more than fifteen in one band, and in that case twelve out of the fifteen were females. There is no part of Somaliland that I have visited where they are not common. In 1897 I saw some within five miles of Berbera, in 1896 and 1897 in the maritime plains, in the Golis, on the Haud, in distant Ogaden, and far Bourha, but nowhere more numerous than in the Godabürsi country. They are easily killed by anyone who can shoot standing up, as the long-line shot at the perpendicular, even when as narrow as that of a Gerenuk's chest and neck, is a comparatively easy one, and no very nice judgment of range is necessary. Their meat is generally despised by the Somalis, but eaten by the Midgans; but to my own taste it is not very much less nice or more nasty than most other Antelope flesh. The Somalis have an expression '*Gerenuk*,' which is derived from their opinion as to the merits of its flesh, as it is generally considered nasty meat, yet not actually forbidden, and occasionally even relished by individual Somalis. The word is used constantly as an interjection to express dissent, either in chaff or contempt, in the sense: 'That may do for you, but it won't do for me!'

We subjoin Mr. E. N. Buxton's lively account of his experiences with this Antelope, extracted from the second series of '*Short Stalks*':—

"The long-necked '*Gerenuk*' is a bush-feeder, like the Giraffe, and is built on the same lines, except that the males carry curved horns. The body is on the scale of a small Fallow-deer, but such is its length of leg and neck that the head, when the animal is on guard, is held over six feet from the ground. They are generally found in small families of three or four. The bright chestnut back makes it fairly easy to see them even among the bushes. On the other hand, its sharp sight and length of neck give it a conspicuous advantage against pursuers. At the first sign of danger the *Gerenuk* slinks behind the bushes, and peeps over the tops as from a small watch-tower. Imagine the strategical advantage you would have in guerilla-warfare if you

could screw your head on to your umbrella and gently elevate it till it looked over the parapet, especially if your eyes were placed quite at the top. If they think themselves followed, down go their heads nearly to the ground and they retreat at a slouching trot, keeping completely out of sight. If you can manage to catch sight of one of these animals before he sees you, and that is seldom, do not shoot him, but watch him feeding. You will not have such a chance at the Zoo, for this species has never been brought alive to Europe. When he has consumed what he can reach in a normal attitude he rears up and stands on his hind legs, assuming a perfectly erect position. With the fore feet, which are carried level with the cheeks, he holds the boughs down, and assists his balance. If he happens to be facing you, so as to show his white belly, the appearance is particularly odd, being that of a tall brown man clad in a white apron."

It will be recollected that *Lithocranius walleri*, although actually better known to us from Somaliland, was originally discovered in the southern part of its range, in British East Africa. Here, according to Mr. Hunter, it is "very rare in the Kilimanjaro district, though numerous up the Tana River." Lieut v. Höhnel, who accompanied Count Teleki's expedition to Lake Rudolph, informs us that it is common also on the Upper Tana, between Hameye and the mouth of the Mackenzie River, but that none were found on the Guaso Nyiro. Mr. Jackson, in the first volume of 'Big Game Shooting,' writes as follows concerning the habits of this species in British East Africa:—

"The East-African Waller's Gazelle is very much smaller than that found in the Somali country. There is no mistaking this Antelope for any other, on account of its extraordinarily long and thin neck, which in the case of a fully adult buck, killed by myself at Merereni, was only 10 inches in circumference. Two females measured only 7 inches each round the neck. When walking and seen at a distance these animals look not unlike pigmy Giraffes, as they carry their long necks stretched out at an angle. They frequent the open bush fringing the outskirts of dense thickets, into which they at once retreat on being disturbed. Their note of alarm is a low short 'buzz'! This Gazelle is essentially a bush-feeder. At Merereni I once watched a doe feeding on a small-leaved bush not unlike the privet in appearance, and several times I saw her rear up on her hind legs, bend down a branch with her fore legs, and feed on the leaves in this upright position like a goat. This quaint-looking little Antelope, like the Bushbuck, is apt to haunt one particular spot, and may be seen in or quite near to it for weeks together. They are very shy and not easy to stalk, and, as they have a happy knack of hiding behind bushes in the most effective manner, they are not easy to see."

The Gerenuk was well represented in the collection of Mammals obtained

by Mr. D. G. Elliot in the course of his recent expedition to Somaliland, and a series of specimens of this Antelope obtained on that occasion has been mounted in characteristic attitudes in one of the large show-cases of the Field-Columbian Museum at Chicago. Mr. Elliot has kindly sent us some photographs of this interesting group, which show the male, female, and young, and their peculiar manner of feeding.

The Gerenuk is represented in the British Museum by a fine mounted pair obtained by Herr Menges in the neighbourhood of Berbera, from which our illustration of both sexes (Plate LXXIV.) has been prepared by Mr. Smit. There are also four other skins of both sexes, purchased of Herr Menges, and the skin figured by Sclater (P. Z. S. 1884, pl. xlix.), which was presented to him by Herr Hagenbeck, but was likewise originally procured by Herr Menges. In the National Collection there are also a skin and skull of a male of this Antelope from Burao Wells, Somaliland, presented by Mr. T. W. H. Clarke, another skin and skull from the hills south of Berbera, presented by Capt. J. R. Harkness, R.A., and a mounted skeleton from Somaliland, obtained by purchase.

From the southern part of its range the British Museum has one of the original skulls from the River Juba district upon which the species was founded, and three skulls and some separate horns from the extreme south of the Somali coast, obtained by Sir John Kirk.

September, 1898.

GENUS IX. DORCOTRAGUS.

Type.

Dorcatragus, Noack, Zool. Anz. xvii. p. 202 (1894) D. MEGALOTIS.

Size very small, smaller than in any Gazelle. Ears large. Tail short. False hoofs minute; horny part of main hoofs short, but the internal pad to the hoof broad and thick; position of limbs in standing almost as in *Oreotragus*. No Gazelline head-markings, but a dark lateral band present on the sides of the body.

Skull broad and short. Nasals short and premaxillæ long, the structure in this region recalling that in *Madoqua*. Anteorbital region with a very small and shallow lacrymal fossa. Bullæ large and inflated. Premolars $\frac{3}{3}$, the anterior very large.

Horns short, straight or faintly curved forwards, not unlike those of *Raphiceros*, and quite different from those of any true Gazelle. Female hornless.

Range of the Genus. Restricted to Somaliland.

One species only.



Smit del. et lith.

The Beira.
DORCOTRAGUS MEGALOTIS.

Published by R.H. Porter.

Harhart imp.

109. THE BEIRA.

DORCOTRAGUS MEGALOTIS (MENGENS).

[PLATE LXXV.]

Beira, Menges, Peterm. Mitth. xxxi. p. 454 (1885) (Hekebo plateau).

Beira, Sci. P. Z. S. 1892, pp. 102, 118; Swayne, P. Z. S. 1892, p. 308.

Oreotragus megalotis, Menges, Zool. Anz. xvii. p. 131 (1894); Swayne, Seventeen Trips to Somaliland, p. 321 (1895).

Dorcotragus megalotis, Noack, Zool. Anz. xvii. p. 202 (1894); Hoyos, Zu den Aulihan, p. 186 (1895); Elliot, Publ. Chicago Mus. Zool. i. p. 135 (1897) (Hargeisa).

VERNACULAR NAME:—*Beira* of Somalis (*Swayne*).

Size about as in the Steinbok or Grysbok; height at withers 20 inches in an adult male. General colour of neck and back a peculiar purplish grey, very finely grizzled with white, the extreme tips of the hairs being this latter colour. Scarcely a trace of a light lateral band, but a distinct dark one present, brownish, passing quite across the shoulder, and extending behind on to the sides of the rump. Belly not, as is usual, pure white throughout, but only white on the axillæ and groins, the remainder pale yellowish fawn, or even orange-fawn, this colour also extending on to the outer sides of the forearms and thighs; rest of limbs becoming darker fulvous to the hoofs. Head bright fulvous, quite different to the neck; area round eyes white, but no Gazelline facial streaks present. Tail short and rather bushy, coloured like the back, without darker tip.

Measurements of an old male skull:—Basal length 5·35 inches, greatest breadth 3·15, muzzle to orbit 3·2.

Horns ordinarily from 4 to 5 inches in length, the longest in the British Museum collection, one of Capt. Swayne's, attaining 5½ inches.

Hab. Northern Somaliland; hills along the northern edge of the Haud.

On several occasions during the many years in which Sclater's excellent correspondent Captain H. G. C. Swayne, R.E., was engaged on his various explorations and expeditions in Somaliland, he wrote about a "small red Antelope" found in the mountains which had the habits of a "Klipspringer," but, according to native testimony, was of quite a different species. The existence of the same animal had also been recorded as long ago as 1885 under the name "*Behra*," by Herr Josef Menges, in an account of his fourth journey in Somaliland, published in Petermann's 'Mittheilungen.' Herr Menges met with the "*Behra*" on the Hekebo plateau (about 10° S. lat. and 44° 40' E. long.), and had at one time a young living specimen of it in his possession.

After Herr Menges the "*Behra*" or "*Beira*," as it is now usually called, after its Somali name, seems to have been first actually seen by Lieut. E. J. Swayne, of the Indian Staff Corps, Capt. Swayne's brother, when he was in the Gadabursi country in the autumn of 1891. He observed two of them among very rugged hills, but failed to get a shot at them. He described them to Capt. Swayne as being "reddish Antelopes, rather larger than the Klipspringer, with small straight horns, which bounded away among the rocks in exactly the same manner as the Klipspringer."

Capt. Swayne was much excited about this discovery, and promised Sclater to do all he could to procure specimens of the animal. On his last trip to Somaliland he was assured by his Somalis that he would find the "*Beira*" on Waggar Mountain, near the south-eastern extremity of the Golis range, but he had not time to go there. On leaving Berbera, however, Capt. Swayne exhorted his men to proceed to the mountains themselves and to endeavour to procure some specimens of the *Beira*, offering them a handsome reward for good heads and skulls of a male and female, and leaving instructions to his agents there to pay the men and to forward the specimens.

Early in 1894 the much-wished-for skins were obtained by the faithful Somalis and forwarded to Sclater by Captain Swayne. We were proceeding to describe and figure them in the Zoological Society's 'Proceedings,' when we found that we had been anticipated by Herr Menges, who had just

described the species in the 'Zoologischer Anzeiger,' and given it the name "*Oreotragus megalotis*." It has, however, certainly but a very remote connection, except as regards its habits, with the Klipspringer (*Oreotragus*), and Dr. Noack was quite justified in proposing for it the new and appropriate term *Dorcatragus* (δορκὰς, an Antelope, and τράγος, a Goat), which he did in the same periodical shortly afterwards. Dr. Noack based his article upon two specimens, male and female, which he had then lately received from Herr Menges for examination.

The next traveller in Somaliland to encounter this rare Antelope was, we believe, Capt. P. Z. Cox, who, writing to Dr. Günther from Berbera in April 1895, gave an account of the circumstances under which he obtained a female example of the Beira for the British Museum:—

"I was returning from a short trip in the interior, upon duty and pleasure combined—I was about 50 miles from Berbera; the country I was travelling through was level plain, with occasional flat-topped tablelands, with steep sides rising sheer out of the general level of the surrounding country. I was passing the foot of one of these large plateaux on 29th March, with my Somali Shikari, in search of game, and remarked to him that there was a rare Klipspringer said to be found on these plateaux, and that I thought I would scale the steep side and just see what there was at the top.

"Accordingly we toiled up the face of the tableland and reached the top. It was simply a large stretch of perfectly flat ground covered with large, loose, black, burnt-up stones, with an occasional green bush to vary the monotony. The extent of the plateau was about a mile in length by half a mile broad. We had a very tiring tramp over this course, shingle from end to end of it, and just as we reached the further end, where there was a little fringe of green bushes, we espied several Antelope browsing about 300 yards from us. I could not quite make out what they were, and expected them to be some young animals of the Greater Koodoo; but directly my Shikari saw them he said, 'Do you know what those are, Sir? they are "Bahra"; I have only seen them once before, and no sportsman has ever shot them.'

"There was no cover between us and them, and it was impossible to stalk them from where we were, so we made a long detour below the crest of the plateau expecting that we could come up within shot on the other side of the animals; but it was impossible to move without displacing stones and making a noise, and when we emerged above the crest again it was only to see five Antelopes streaming over the plateau in the direction we had just come from. Under such circumstances Klipspringer would have separated and taken to the rocks on the steep sides of the plateau, whereas these animals kept in a herd together and galloped away over the flat just as a herd of Gazelle would do.

"I was much disappointed at not getting a shot, but I was sure they would not leave the plateau, and determined to leave no stone unturned to come up with them. We tramped on in the direction they had gone, and after going about half a mile

caught sight of them again; but they had seen us first, and were going hard at about 250 yards when we saw them. It would have been a very fluky shot, and I held my hand. I could now distinguish four females and one buck, which appeared to have horns exactly like a Gazelle, between 8 and 10 inches long.

“When they were fairly under weigh we got a bush between us and them, and hurried after them as quick as we could. After a few moments, as luck would have it, they all stopped in a bunch and turned round with their heads towards us at about 300 yards. I could not distinguish the buck at the moment, as they were standing among bushes and were not distinct, but I aimed at one which turned partially broad-side and fired. The animal fell dead, and the other four streamed away out of sight. On running up I found that it was a female that I had killed, and I am sorry to say that on grallocking her we found an almost mature embryo inside her. I was unable to preserve this as I had no spirit with me, but the fact shows that the animal killed was an adult.

“I took careful measurements on the spot, and found the height at shoulder 23 inches; distance from the nose to the root of the tail 33; the tail including 2-inch hair $5\frac{1}{2}$; the length of ears in front $6\frac{1}{4}$, and their breadth $2\frac{3}{4}$.”

Sir Edmund Loder has kindly favoured us with the following field-notes on the Beira:—

“Mr. Percy Aylmer heard of this Antelope on the stony foot-hills in Gubau (N. of Hargaisa), and saw it on one of the isolated foot-hills to the south of Gau Libah. Mr. A. E. Pease and I found it on another detached hill about 20 miles west of this. This particular hill was extremely rough and rugged, covered with loose boulders, making walking and silent stalking extremely difficult. This hill was also frequented by Gumbouri (Wild Asses, *Equus somalicus*), which, from their large size, were easily seen. The case was, however, very different with the ‘Baira,’ which, at a comparative short distance, seemed to melt out of sight immediately they stopped moving, and indeed when they were in motion it was rather the moving black shadow cast by a tropical sun that caught the eye than the animal itself. They were observed by us in bands of seven, three, and three. In the two lots of three which I saw there was what I take to be one adult male with each. The only record of height that I can lay my hand on at this moment is that of an adult female, which measured at the shoulder 2 feet 2 inches; probably the male would be an inch higher.

“The whole colour of this Gazelle is very beautiful in its tints of buff, purple, fawn, and grey and white; but what struck us most was their ears and hoofs. The ears, besides being very large and ornamental, are remarkable for the distinct rayed marking on the inside. The hoofs are well worth a special drawing, as they differ from those of any other Antelope with which I am acquainted. They are very much hollowed out, as is very noticeable in the track which they leave. The foot of the stuffed specimen in the Natural History Museum is filled up with some black substance which does not seem to me to be natural.”

The accompanying view of the head is enlarged from a photograph of this Antelope kindly sent to us by Sir Edmund Loder.

Fig. 87.



Front view of the head of the Beira.

During Mr. D. G. Elliot's East-African expedition of 1896, Mr. Akeley, one of his party, obtained two examples of this Antelope on Nasr Hablod Mountain, near Hargeisa, in nearly the same district as that just described by Sir Edmund Loder. These specimens are now in the Field-Columbian Museum at Chicago.

The British Museum contains a mounted specimen of an adult male of the Beira (from which our figure, Plate LXXV., has been prepared by Mr. Smit) and a skin of a female of the same species purchased of Herr Menges, besides the two skins obtained by the Somalis for Capt. Swayne, as above mentioned, which have been presented to the Museum by Sclater. It contains also a skin and complete skeleton of a female of this Antelope presented by Capt. P. Z. Cox, as described above.

September, 1898.



