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ROWLAND WARD'S\\ \title{
ROWLAND WARD'S RECORDS OF RECORDS OF BIG GAME
} BIG GAME
}


SEVENTH EDIIION 1914

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## ROWLAND WARD'S <br> RECORDS OF BIG GAME

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# ROWLAND WARD'S <br> RECORDS OF BIG GAME 

WITH
THEIR DISTRIBUTION, CHARACTERISTICS, DIMENSIONS, WEIGHTS, AND

## HORN \& TUSK MEASUREMENTS

seventh edition

Edited by
R. LYDEKKER, f.r.s.

AND
J. B. BURLACE, f.r.g.s., f.z.s.


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& \text { 白白 } \\
& \text { áa }
\end{aligned}
$$

TO THE

SPORTSMEN OF THE WORLD<br>WITHOUT WhOSE ENTERPRISE THESE RECORDS<br>COULD NOT HAVE REEN COMPILED<br>THIS BOOK IS DEDICATED

## PREFACE TO THE SEVENTH EDITION

There are three main points the great-game sportsman generally wants to ascertain:-Ist, the name of his quarry; 2nd, how it compares in point of size with other specimens of the same species; and, 3 rd, what is the extent of its geographical range. All these he will be able to ascertain from the present work.

As in former editions, the finest known specimens of antlers, horns, tusks, and skins are, so far as possible, recorded. It is to be regretted that one pair of hands and a steel-tape are not responsible for the measurements of all the actual "records." But it has been found impracticable in some instances to verify the measurements of trophies, especially in distant parts of the world; and such records must accordingly be taken on the responsibility of their respective owners or those who have been good enough to measure them. One of the many difficulties in connection with compilations of this nature is due to the circumstance that different measurements of the same specimen are sometimes received, this often arising from the use of a tape or string instead of a steel-measure.

Great care has been taken with regard to the accuracy of the dimensions given ; and, considering the number of measurements, it will be readily understood the task attempted has been one of no ordinary difficulty.

In the case of the horns of freshly killed hollow-horned ruminants an allowance for shrinkage should be made when comparing with older trophies. An average specimen of an Ovis ammon horn, for instance, will frequently shrink half an inch in length and proportionately in girth after it has left the field. Ivory tusks also deteriorate in weight.

Among the deer tribe many difficulties have arisen as to comparison ; and it may be pointed out that although length of antlers is invariably put at the top of the list, other particulars, such as number of tines, general symmetry, spread, and weight of antlers, go in many instances to the making of a good trophy.

A notebook for use on the field will be found in a pocket at the end of this volume.

Acknowledgments are due to a number of sportsmen (especially to Sir Edmund G. Loder) and naturalists all over the world for the help they have afforded.

As in the three previous editions, Mr. Lydekker is responsible for the technical nomenclature and descriptions. Since the text was printed off he has ascertained that Sika is the proper subgeneric name of the deer of the Sika group, and mippon the earliest specific designation of the type species. The amended names of the various members of this group will consequently stand as follows :-

1. Cervus (Sika) mippon, p. 49.
(a) C. uippon typicus, p. 50.
(b) C. nippon manchuricus, p. 50.
2. Cervus (Sika) taüvanus, p. 51.
3. Cervus (Sika) hortulorum, p. 52.

THE EDITORS.

## ABBREVIATIONS AND SIGNS

> - Owner's measurements and particulars, or other known authority. $\begin{gathered}\text { of Male. } \\ \text { I Female. } \\ \text { R, Right horn or antler. L, Left horn or antler. } \\ \text { G.S. Greatest spread. }\end{gathered}$

Measurements are usually on the outside of the longest horn from base to tip; but in Deer from the bottom outside edge of the burr, or coronet, to the highest tip-point, except when notified to the contrary.

Circumference is at the base ; in most Deer above brow-tine, but in the RedDeer and Wapiti group between bez and trez tines.

Length is expressed in inches, when not otherwise stated, and the tape should be laid on the centre of the front curve of antelope horns such as Reedbuck, etc.

Weights taken in the field should be accepted as approximate, and, unless the contrary is stated, are those of adult males.

Heights are in most cases taken at the shoulder of adult males (see p. 5 17).
N.B.-Unless the contrary is stated, the specimens and illustrations are those of males.

## ALPHABETICAL LIST OF ILLUSTRATIONS


Giraffe, Skụll . . . . . II3

Gnu, Head . . . . . . 156
Goa, HeadGoitred Gazelle, Head238Grant’s Gazelle, Skulls and Horns265,267
Guemal, Skull and Antlers ..... 109
Hangul, Skíll and Antlers ..... 32
Heuglin's Gazelle, Head ..... 259
Himalayan Goral ..... 340
Hog-Deer, Head ..... 72
Hunter`s Hartebeest ..... 136
,, , Head ..... 135
Ibex, Head ..... 371
Indian Buffalo, Head ..... 427
.. Elephant, Skull and Tusks ..... 474
.- Gazelle, Head ..... 246
,, Rhinoceros, Horn ..... 462
Jackson's Hartebeest, Skull and Horns . ..... 129
Javan Rhinoceros. ..... 464
,. Rusa, Antlers ..... 68
Kamchatkan Bighorn, Skull and Horns ..... 394
Kashmir Barasingha, Skull and Antlers ..... 32
Head ..... 36
Kennion's Gazelle, Heads ..... 245
Klipspringer, Head ..... I 86
Kongoni, Head ..... 125
Korrigum, Head ..... 137
Kudu, Head ..... 3 I7
Lake Chad Ox, Skull and Horns ..... 447
Lechwe, Head and Fore-quarters ..... 196
Head199
Lesser Kudu, Head ..... 321
Lichtenstein's Hartebeest, Head ..... 133
Lion, Forepart ..... 488
Livingstone's Suni, Skull and Horns ..... 180
Loder's Gazelle, Horns ..... 257
Lord Derby's Eland, IIead ..... 331
Skull and Horns ..... 333
Malay Sambar, Frontlet and Antlers ..... 65
Manchurian Tiger, Skin ..... 496
Marco P'olo's Argali, Skull and Ilorns 404, 405
Markhor, Head (Astor) ..... 358
Skull and Horns (Cabul) ..... 365
(Pir l'anjal) ..... 361
(Sulcman) ..... 364
Marsh-Deer, Antlers ..... 108
Mesopotamian Foallow Deer, Head ..... 76
Milu Deer, Head ..... 79
Mongala Gazelle, Head ..... 262
page
Mongolian Argali, Horns ..... 401
,, Gazelle, Frontlet and Horns ..... 241
Mouflon, Head ..... 414
Mountain Nyala, Skull and Horns ..... 310
Mountain Reedbuck, Skull and Horns ..... 216
Mrs. Gray's Lechwe, Head ..... 200
Mule-Deer, Heads ..... 104, 105
Muntjac, Skulls and Antlers ..... 8o, 82
Musk-Deer, Head ..... 112
Musk-Ox, Head ..... 351
Neumann's Hartebeest, Skull and Horns 128
New Zealand Red Deer, Head ..... 12
Nilgai, Head ..... 301
Nilgiri Tahr, Head ..... 356
North African Red Deer, Antlers . ..... 31
Nubian Ibex, Head ..... 373
Nyala, Horns ..... 308
Oribi, Head . ..... 174
Pala, Head ..... 226
Pallas's Tur, Head ..... 383
Pelzeln's Gazelle, Head ..... 255
Père David's Milu Deer, Head ..... 79
Phillips's Dik-dik, Skull and Horns ..... 170
Pigmy Hippopotamus ..... 451
Prongbuck, Head . ..... 116
Przewalski's Gazelle, Head ..... 240
Puku, Skull and Horns ..... 209
Red Deer, Antlers (Exmoor) ..... 9
,, Antlers in the Castle at Moritz-
burg ..... 27
,, ,, (Old English) '. ..... I 3
,, ,, (Scotch) ..... I
,, ,, (Spanish) ..... 14
Ked-fronted Gazelle, Skull and Horns ..... 260
Reedbuck, Head ..... 213
Reindeer, Antlers . ..... $83,84,86$
Roan Antelope, Head ..... 284
,, ,, Skull and IIorns ..... 284
Rocky Mountain Bighorn, Skull and Horns ..... $3^{89}$
Rocky Mountain Goat, Head ..... 349
Roebuck (Tien Shan), Head ..... 94
Sable Antelope, Head ..... 280
Skul/ and Horns ..... 283
Saiga, Head ..... 232
,, Horns ..... 231
Saikik Gazclle, Skull and Horns ..... 244
Salt's Dik-dik, Head ..... 169
Sambar, Frontlet and Horns ..... 63
,, Head ..... 61
PAGE
Sassaby, Head . . . . . 148
Schomburgk's Deer, Skull and Antlers . ..... 57
Seistan Gazelle, Heads ..... 245
Serow, Head ..... 343
Shapo, Head ..... 407
Sharpe's Steinbok, Skull and Horns ..... 184
Shou, Skull and Antlers ..... 37
Siberian Argali, Head . ..... 399
Sika, Skull and Antlers ..... 49
Sind Wild Goat, Skull and Horns ..... 376
Situtunga, Horns . ..... 312
,, Western, Horns ..... 315
Sœmmerring's Gazelle, Head ..... 269
Somali Hartebeest, Head ..... 123
Spanish Ibex, Skull and Horns ..... 379
Speke's Gazelle, Head . ..... 253
Springbuck, Horns and Head ..... 275, 277
Steinbok, Skull and Horns ..... 183
,, Head ..... I85
Sudani Bohor Reedbuck, Head ..... 222
Sumatran Rhinoceros, Horn ..... 465
Suni, Head ..... 179
Swayne's Dik-dik, Head ..... 170
Tahr, Head . ..... 353
Takin, Head ..... 347
Thamin, Skull and Antlers ..... 60
Thomson's Gazelle, Heads ..... 263
Tiang, Skull and Horns ..... 139
Tibetan Antelopes ..... 233
,, Argali, Head ..... 397
Tien-Shan Ibex, Head. ..... 367
Tiger, Head ..... 493
,, Skin ..... 492
Topi, Head . ..... 141
page
Tora Hartebeest, IIead ..... 121
Tsaine, Head ..... 445
Uganda Kob, Skull and Horns ..... 204
Urial ..... 410
,, Skull and Horns. ..... 409
Vaal Rhebok, Head ..... 2 II
Walrus, Head ..... 513
:, Skull and Tusks ..... 515
Wapiti, Head ..... 41
,, Skull and Antlers ..... 45
Wart-Hog, Tusks and Head. ..... 457, 459
Waterbuck, Frontlet and Horns ..... 188
Western Hartebeest, Head ..... 119
.. Kob, Head ..... 202
,, Tur ..... 381
White-bearded Gnu, Head ..... 153
I 54
White Bighorn, Head ..... 391
White-eared Kob, Head ..... 207
White-maned Serow, Head ..... 346
White Oryx, Head ..... 296
White Rhinoceros, Head ..... 470
,, .. Horns ..... 471
470
w, U, " Der Men
White-tailed Deer, Mexican, Head ..... 103
,, ,, Virginian, Head ..... IOI
Wild Boar, Head ..... 452
,, ,, Tusk ..... 454
Yak, Skull and Horns . ..... 436
Yarkand Stag, Skull and Antlers ..... 35
Yellow-backed Duiker, Head ..... 165

## RECORDS OF BIG GAME



Shot by Mr. Walter Jones.

## The RED DEER (Cervus elaphus).

The red deer of Western Europe is the typical representative of the genus Cervus, in which the antlers of the stags are set on the skull at an oblique angle to the middle line of the forehead, and have a true brow-tine, while they are generally more or less nearly cylindrical. There is always a large bare portion on the muzzle, the face is long, the ears are generally large, and the tail is comparatively short, often extremely so. Although there is almost always a gland and tuft on the hind cannon-bone, usually situated high up, there is none on the hock
itself. The coat may be spotted in the adult, and is almost invariably so in the young.

In the red deer the antlers are subcylindrical and complex, generally with a bez-tine, and always with a trez, the number of points exceeding five, and the crown frequently forming a cup. The tail is relatively long and pointed, and there is an orange-coloured patch on the buttocks, which includes or surrounds the tail. The general colour of the adult summer coat is reddish brown, and that of the winter dress greyish brown, often with a dark dorsal stripe ; stags frequently showing a throat-fringe. The young, in which the ground-colour is of a richer tint, are profusely spotted with white.

Red deer, in the widest sense of the term, are inhabitants of Europe, North Africa, Asia Minor, and Northern Persia. In the typical red deer (C. elaphus typicus) of Sweden, and its representatives in Western, Northern, and Central Europe, the antlers attain their maximum degree of complexity, sometimes having twenty or even more points, although in many Scotch examples the bez-tine is wanting. The Swedish red deer is the typical Cervus elapluzs of Linnæus, in other words, Cervus elaphus typicus. From this race the Norwegian red deer differs by its inferior size, the lighter colour of the summer coat, and the presence of a distinct dark border to the rump-patch. The general colour of the Swedish race is dark reddish brown, almost chestnut, with the legs sooty or blackish brown; while in the Norwegian animal the colour is yellowish brown tinged with grey, the legs being paler and of a brownish slaty grey. The rump-patch is also lighter in the Norwegian race, being reddish yellow with a blackish border, while that of the Swedish red deer is less distinct, sometimes scarcely differing in colour from the flanks. There are also differences in the skulls of the two races, especially noticeable in the case of hinds. The Norwegian red deer has been named Cervus elaphus atlanticus; and the Scotch red deer, C.e. scoticus, is closely allicd. Several races of red deer have been named in Germany, but these may be included under one heading as C. e. germonicus. This is a large deer, with a very light, and usually black-bordered, rump-patch. The Spanish race (C. e. hispanicus), which is smaller, with a greyer coat and narrower skull, is said to lack the abundant neck-fringe of Scotch deer.

The red deer (C. claplues corsicanus) of Corsica and Sardinia is a small race, without a bez-tine to the antlers, and the general colour of the upper-parts dark brown in summer, with the upper side of the tail coloured like the rump-patch, and blackish in the winter. Nearly allied is the North African red deer (C. elapluus barbarus), which is of rather larger dimensions, with a greyish-brown streak down the middle of the back, and small irregular whitish spots on the flanks
and sometimes on the back; traces of such spots being occasionally observable in the summer coat of hinds of the typical race. The beztine seems to be very generally wanting.

The Eastern red deer (C. elaphus maral) is a large race, described on page 28 .

In a red deer killed at Spetchley Park the weight was 419 lbs . gross, and 216 when cleaned; while in one shot at Knowsley many years ago the clean weight was no less than 424 lbs . The height at the shoulder reaches about 4 feet. H.R.H. the Duke of Braganza saw a Continental stag shot which scaled 584 lbs ., and shot a 10 -pointer with a spread of 55 inches.

The late Lord Tweedmouth gave the following dimensions of a fine Scotch stag, shot October 9, i 880 :-

Widest span over all, 39 inches; span inside below cups, 34 inches; span outside below cups, 37 inches.

Right antler.-Length, 39 inches; length of brow, rol inches; of bez, ro inches; of trez, 13 inches. Length of tines in cup, 10, $7,4 \frac{1}{4}$ inches. Circumference at coronet, $8 \frac{1}{2}$ inches; between bez and trez, $7^{\frac{1}{4}}$ inches; above trez, 6 inches.

Left antler.--Length, 38 inches; of brow, 10 inches; of bez, 8 inches; of trez, II inches. Length of tines in cup, 8,6 , and 4 inches. Circumference at coronet, 9 inches; between bez and trez, $7 \frac{1}{2}$ inches ; above trez, $6 \frac{1}{4}$ inches.-Weight, 303 lbs . clean; but stag was much run.

## A.-BRITISH AND IRISH RED DEER (C. elaphus scoticus).

| Length <br> on outside curve. | ference between bez and | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside. | Spread. | Points. | Weight. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 401 $\frac{1}{2}$ | 5 | 22 | 33 | $\ldots$ | $7+7$ | ... | Inverness, 1794 | Col. IV. Hall Walker. |
| 401 | $6 \frac{1}{8}$ | $\ldots$ | ... | $\ldots$ | $8+8$ | $\ldots$ | Glenartney | Mrs. Campbell of Dunstaffnage. |
| ${ }^{1}-40$ | 6 | $\ldots$ | 30 | $\ldots$ | 10 | 203 | Glentilt | Duke of Atholl. |
| -392 | 5 | ... | 25 | ... | $6+6$ | $\ldots$ | Ardverikie | E. J. Wythes. |
| -3912 | $4{ }^{\frac{3}{5}}$ | 26 | 33 | $35^{\frac{1}{2}}$ | $5+5$ | 266 | Kinveachy | Major J. J. Porteous. |
| -39 | 6 |  | 34 | 39 $\frac{1}{4}$ | $6+6$ | 303 | Guisachan | The late Lord Tweedmouth. |
| 39 | 6 | $27 \frac{1}{2}$ | 34 | 393 | $6+6$ |  | ? | Duke of Portland. |
| $-38 \frac{1}{3}$ | $4{ }^{3}$ | .. | 26 | ... | 11 | $\ldots$ | Isle of Rum | Sir George Bullough. |
| $38 \frac{1}{2}$ | $6 \frac{1}{4}$ | $7{ }^{\text {星 }}$ | $19 \frac{1}{2}$ | $30 \frac{1}{2}$ | $9+8$ | $\ldots$ | Glenfiddich | Duke of Kichmond and Gordon. |
| $38 \frac{1}{2}$ | 51 | $\ldots$ | 31 | $\ldots$ | $5+6$ | ... | Strathraich | J. C. Williams. |
| $38 \frac{1}{4}$ | 53 | 14 | $27 \frac{3}{}$ | 33 | $6+5$ | 246 | Meoble | Walter Jones. |
| $38 \frac{1}{4}$ | 6 | 26 | 33 営 | 403 | $7+6$ | $\ldots$ | ? | Duke of Beaufort. |
| 381 | 55 | $\ldots$ | $\ldots$ | $\ldots$ | $5+5$ | $\ldots$ | Kinlochewe | Sir Kenneth Mackenzie, Bart. |
|  |  | wner | measu | ements. |  |  | ${ }^{1}$ Recorded by | y J. G. Millais. |


| Length on out side curve. | $\begin{aligned} & \text { Circum- } \\ & \text { ference } \\ & \text { between } \\ & \text { bez and } \\ & \text { trez. } \end{aligned}$ | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside. | Spread. | Points. | Weight. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $3 S^{\frac{1}{4}}$ | 513 | $\ldots$ | $30 \frac{3}{13}$ | $\ldots$ | $7+7$ | $\ldots$ | ? | The Hon. Mrs. Gordon- |
| 3 S | $4{ }^{\frac{7}{3}}$ | $\ldots$ | 29릴 | ... | $6+6$ | $\ldots$ | Fannich | V. J. Watney. |
| $37 \frac{13}{3}$ | $4{ }^{\frac{7}{5}}$ | $\ldots$ | $2 S_{2}^{1}$ | 36 年 | $6+5$ | $\ldots$ | Barrisdale | W. Parrott. |
| 37 | 5 | ... | 26 | $\ldots$ | $6+5$ | $\ldots$ | Mar | Mrs. E. Ross. |
| $37 \frac{1}{2}$ | $4 \frac{1}{2}$ | $\ldots$ | 301 | $\ldots$ | $5+5$ | $\ldots$ | Wyvis . | R. Shoolbred. |
| $37 \frac{1}{2}$ | $5{ }^{\frac{1}{2}}$ | $\ldots$ | $\ldots$ | $\ldots$ | 10 | $\ldots$ | Conaglen | Lord Morton. |
| $-37 \frac{1}{2}$ | $6 \frac{1}{3}$ | 13 | $28 \frac{1}{2}$ | ... | $8 \div 8$ | $\ldots$ | Glenmoriston | J. M. Grant. |
| $37 \frac{1}{1}$ | 4를 | $\ldots$ | $32 \frac{1}{2}$ | $\ldots$ | $6+6$ | $\ldots$ | Brodick | Marquis of Graham. |
| -37 ${ }^{\frac{1}{8}}$ | 53 | $\ldots$ | 24 | $27 \frac{1}{2}$ | $5+5$ | $\ldots$ | Forfarshire | R. L. Scott. |
| 37 | $4{ }^{\frac{3}{1}}$ | $\ldots$ | 23 | $\ldots$ | $6+6$ | 378 | Brodick | Marquis of Graham. |
| -37 | $4{ }^{3}$ | $\ldots$ | 30 | ... | $5+4$ | $\ldots$ | Lettermorar . | W. A. Dewhurst. |
| $-36 \frac{1}{2}$ | $4{ }^{3}$ | $\ldots$ | 35 | $\ldots$ | $6+6$ | $\ldots$ | Glenmoriston | The Hon. Mrs. GordonCumming. |
| $36 \frac{1}{2}$ | 5 | 34 | 37 | 41 | $5+6$ | $\ldots$ | Glenstrath farrar | W. Radcliffe (shot by the late R. Gordon-Cumming). |
| $-36 \frac{1}{2}$ | ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | Auchnasheen. | Sir Edmund G. Loder, Bart. |
| $-36 \frac{1}{2}$ | $4 \frac{3}{4}$ | $\ldots$ | $31 \frac{1}{2}$ | ... | $6+6$ | ... | Rhidorroch | Countess of Cromartie. |
| $-36 \frac{1}{2}$ | 5 | $\ldots$ | $30 \pm$ | $\ldots$ | II | 280 | Benmore, Mull | Earl of Eglinton. |
| $-36 \frac{1}{2}$ | $4{ }^{3}$ | $\ldots$ | $27 \frac{1}{2}$ | $\ldots$ | 11 | ... | Glomach | The late Col. Baldock. |
| $-36 \frac{1}{2}$ | 5 | ... | 26 | $\ldots$ | $6+6$ | $\ldots$ | Ben Klibreck | J. W. Baxendale. |
| $-36 \frac{1}{4}$ | $4 \frac{1}{2}$ | $\ldots$ | 27 | $\ldots$ | 10 | ... | Affaric . | S. Dennis. |
| $-36 \frac{1}{4}$ | $4 \frac{1}{2}$ | $\ldots$ | $25 \frac{1}{2}$ | $\ldots$ | $6+5$ | 235 | Cluanie | A. H. Straker. |
| 361 | $5 \frac{1}{8}$ | $\ldots$ | 243 | $\ldots$ | $5+5$ | $\ldots$ | Gaick | G. Hargreaves. |
| $-36 \pm$ | $4{ }^{\text {5 }}$ | $\ldots$ | $24 \frac{3}{4}$ | $\ldots$ | $6+6$ | $\ldots$ | Arran | H.R.H. Prince Arthur of Connaught. |
| $36 \frac{1}{8}$ | 5 | $\ldots$ | 22 | $\ldots$ | $6+5$ | $\ldots$ | Kintail . | S. Loder. |
| 36 | 53 | $\ldots$ | 33.1 | $\ldots$ | 5+5 | $\ldots$ | Corrour | Sir J. M. Stirling-Maxwell, Bart. |
| 36 | $4{ }^{\text {星 }}$ | $8{ }_{4}^{7}$ | 28 | 33 | $7+7$ | $\ldots$ | Knoydart | A. S. Bowlby. |
| -36 | 51 | .. | $27 \frac{1}{1}$ | $\ldots$ | $6+6$ | ... | Dunrolin | Duke of Sutherland. |
| 36 | 43 |  | $26 \frac{1}{2}$ | ... | $6+6$ | $\ldots$ | Langwell | Duke of Portland. |
| 36 | 47 | $21 \frac{1}{2}$ | 27 | $\ldots$ | $6+6$ | $\ldots$ | Caenlochan | Mrs. Henry Tate. |
| -36 | 43 | .. | 327 | ... | $5+5$ | ... | Inchbaic | F. L. Davis. |
| 36 | $4 \frac{1}{2}$ | 17. | 28.3 | 31. | 5+5 | 225 | Meoble. | E. M. Crosfield. |
| 35 | 45 | $22 \pm$ | 31. | 34 | $5+5$ | ... | Strathvaich | Do. |


| Length on out side curve． | Circum－ ference between <br> bez an | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest | Spread． | Points．W | Weight． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 36 | $4 \frac{5}{8}$ | 193 | $288^{3}$ | $30 \frac{1}{2}$ | $5+4$ | lbs． | Ardgour | Lord H．Vane Tempest． |
| 36 | 51 | $13{ }^{3}$ | 283 | 323 | $5+5$ | $\ldots$ | Glenkingie | W．M．Christy． |
| 36 | $4{ }^{\text {a }}$ | $\ldots$ | 31 | $\ldots$ | $5+5$ | 308 | N．Uist | W．Brigstock． |
| 36 | $4{ }^{\frac{5}{8}}$ | $\ldots$ | $26 \frac{1}{2}$ | $\ldots$ | $5+6$ | $\ldots$ | Morar ． | W．A．Dewhurst． |
| $-36$ | $5 \frac{1}{8}$ | $\ldots$ | $30 \frac{1}{2}$ | $\ldots$ | $6+7$ | ．．． | Glenquoich | J．E．B．Baillie． |
| －36 | $4 \frac{3}{}$ | $\ldots$ | 27 | $\ldots$ | $2+2$ | 276 | Glenfinnan | F．Fenwick． |
| $-35^{\text {爯 }}$ | $4{ }^{3}$ | $\ldots$ | 26 | ．．． | $6+6$ | ．． | N．Uist | C．H．Dendy． |
| －35 ${ }^{\frac{3}{4}}$ | $4{ }^{\frac{1}{4}}$ | ．． | $32 \frac{1}{2}$ | $\ldots$ | $5+5$ | $\ldots$ | Affaric | L．A．Ballance． |
| －35 ${ }^{\frac{5}{8}}$ | $4{ }^{\frac{5}{8}}$ | 23 | $28 \frac{1}{2}$ | 31 | $4+4$ | ．．． | Dalnamein | C．T．Garland． |
| 359 | 43 ${ }^{\frac{1}{2}}$ | ．．． | 29 年 | $\ldots$ | $6+5$ | $\ldots$ | Garrygualach | $\underset{\substack{\text { Major H．H．G．Fenton－} \\ \text { Newall．}}}{\text { Gent }}$ |
| －351 | $4^{\frac{1}{2}}$ | $\ldots$ | 31 | ．．． | $5+5$ | $\ldots$ | Loch Choire | Duke of Sutherland． |
| －35 ${ }^{\frac{1}{2}}$ | $4{ }^{3}$ | $\ldots$ | $27{ }^{3}$ | $\ldots$ | 12 | $\ldots$ | Ardnamurchan | R．C．Donaldson－Hudson． |
| 35 ${ }^{\frac{1}{2}}$ | 51 ${ }^{\frac{1}{2}}$ | ．．． | $25 \frac{1}{2}$ | $\ldots$ | $6+6$ | 244 | Sutherland | Abel Chapman． |
| －35 ${ }^{\frac{1}{2}}$ | $4{ }^{\frac{3}{4}}$ | $\ldots$ | 27 | $\ldots$ | $5+5$ | $\ldots$ | Branlen | Earl of Derby． |
| 35 ${ }^{\frac{1}{2}}$ | 42 | $11 \frac{1}{2}$ | 261 年 | 30 | $6+6$ | $\ldots$ | Isle of Mull ． | W．Mure． |
| 35 ${ }^{\frac{1}{2}}$ | $4^{\frac{3}{1}}$ | $\ldots$ | $26 \frac{1}{2}$ | $\ldots$ | $10+10$ | ．．． | Glenquoich | Dowager Lady Burton． |
| $35 \frac{1}{2}$ | 43 | $\ldots$ | $24{ }^{\text {稱 }}$ | $\ldots$ | $6+6$ | $\ldots$ | Craiganour | H．Samuelson． |
| $35 \frac{1}{2}$ | $4{ }^{3}$ | ．．． | $31{ }^{\frac{3}{4}}$ | $\ldots$ | $5+5$ | $\ldots$ | Benula | Stanley M．Dennis． |
| $35^{\frac{1}{2}}$ | $4 \frac{1}{2}$ | $24 \frac{1}{2}$ | 293 | $32 \frac{1}{2}$ | $5+5$ | $\ldots$ | Ben Alder | Lord Hythe． |
| －351 | 6 | $\ldots$ | $38 \frac{1}{2}$ | $\ldots$ | $5+5$ | ．．． | Kinlochewe | Sir Kenneth Mackenzie， Bart． |
| $-35 \frac{3}{8}$ | $4 \frac{1}{2}$ | ．．． | 30 | $\ldots$ | $4+4$ | ．．． | Gaick | J．Hargreaves． |
| $35 \frac{1}{4}$ | 5 | 25 | $30 \frac{1}{4}$ | 35 | $6+4$ | $\ldots$ | Coignafern | J．Bradley Firth． |
| 35. | 5 | $\ldots$ | 25 | ．．． | $7+8$ | $\ldots$ | Ardverikie | Sir J．W．Ramsden，Bart． |
| －35 | $\ldots$ | $\ldots$ | $27 \frac{3}{3}$ | $\ldots$ | 14 | ．．． | Glenfeshie | Sir G．A．Cooper，Bart． |
| $35{ }^{\text {星 }}$ | 43 | $\ldots$ | $29 \frac{1}{2}$ | $\ldots$ | $6+6$ | 248 | Invercauld | L．Neumann． |
| －35 ${ }^{\frac{1}{4}}$ | 5 | ．．． | $24^{\frac{3}{7}}$ | $\ldots$ | $6+5$ | $\ldots$ | Eskadale | Major A．Robinson． |
| －351 | $5 \frac{1}{1}$ | $\ldots$ | $27 \frac{1}{4}$ | $\ldots$ | $6+6$ | $\ldots$ | Blackmount ． | Countess of Sefton． |
| －351 | $4^{\frac{7}{3}}$ | $7 \frac{3}{5}$ | 22 | $27 \frac{3}{5}$ | $7+7$ | $\ldots$ | Killiechonate | F．Cooper． |
| －35 | 512 | $\ldots$ | $26 \frac{1}{4}$ | $\ldots$ | $5+5$ | ．．． | Glenfinnan | G．Bainbridge． |
| $-35 \frac{1}{4}$ | $4 \frac{7}{8}$ | $31{ }^{\frac{7}{16}}$ | 30 | ．．． | $6+6$ | $\ldots$ | Deanich，Ross－ | G．P．V．Aylmer． |


| Length on out. side curve. | Circum- <br> ference <br> between <br> bez and <br> trez | Tip to Tip. | Widest inside. | Spread. | Points. | Weight. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| -351 | $5 \ddagger$ | $\cdots$ | 26 | $\cdots$ | $7+7$ | ... | Glenartney | Dowager Countess of Ancaster. |
| -35 $\frac{1}{4}$ | 5 | $\ldots$ | $32 \frac{1}{2}$ | $\cdots$ | $6+6$ | $\ldots$ | Ardnamurchan | C. D. Rudd. |
| 353 | $4^{\frac{1}{4}}$ | $\ldots$ | 33 | $\ldots$ | $4+3$ | $\ldots$ | Caenlochan . | J. J. de Knoop. |
| 35 | $4 \frac{7}{5}$ | $13 \frac{3}{5}$ | $24 \frac{1}{2}$ | 29 | $5+5$ | ... | Glenkingie | W. M. Christy. |
| 35 | $4 \frac{3}{4}$ | 22 | 2 S | $\ldots$ | $7+6$ | $\cdots$ | Talladh-a-Bheithe, Rannoc | E. Weller-Poley. |
| -35 | $\ldots$ | $\ldots$ | $\ldots$ | 34 | 10 | 225 | N. Morar | Major T. W. Gill. |
| -35 | $\ldots$ | $\cdots$ | 29 | $41 \frac{1}{4}$ | $7+6$ | $\cdots$ | Monymusk | Sir Arthur Grant, Bart. |
| -35 | $4^{\frac{3}{4}}$ | $\ldots$ | 381 | ... | $5+4$ | $\cdots$ | Invermark | Earl of Dalhousie. |
| 35 | 4 $\frac{1}{2}$ | $12 \frac{3}{4}$ | $24 \frac{5}{8}$ | 27 | $6+6$ | $\cdots$ | Glenbruar | A. M. Thomas. |
| 35 | 43 | $\ldots$ | $29 \frac{1}{2}$ | $\cdots$ | $6+5$ | $\cdots$ | Glenartney | V. Fleming. |
| ${ }^{1}-35$ | $5^{\frac{3}{4}}$ | 26 | $33 \frac{1}{2}$ | $37 \frac{1}{2}$ | 12 | $\ldots$ | Guisachan | The late Lord Tweedmouth. |
| 35 | 4 $\frac{1}{2}$ | $19 \frac{1}{4}$ | 26秷 | $28 \frac{1}{2}$ | $5+5$ | ... | Glenkingie | Sir Henry Hoare, Bart. |
| -35 | $4 \frac{3}{1}$ | ... | 29 | $\cdots$ | $4+4$ | $\cdots$ | Ledgowan | L. A. Ballance. |
| $34 \frac{3}{1}$ | $4 \frac{1}{4}$ | 133 | 26 | 281 | $5+5$ | $\ldots$ | Dibiedale | H. Hinton. |
| 343 | $4 \frac{3}{1}$ | $\ldots$ | $32 \frac{1}{4}$ | $\cdots$ | $6+6$ | $\ldots$ | Glenborrodale | Captain N. Money. |
| $34 \frac{3}{4}$ | $4 \frac{1}{7}$ | 31 | $36 \frac{3}{5}$ | $38 \frac{1}{4}$ | $4+3$ | $\cdots$ | Ledgowan | H. B. Moser. |
| $34{ }^{\frac{3}{4}}$ | $4 \frac{1}{4}$ | 232 | 29 | $31 \frac{1}{2}$ | $5+4$ | $\ldots$ | Kildermorie | H. Graeme. |
| $-34 \frac{1}{2}$ | $4 \frac{7}{5}$ | $\cdots$ | $33 \frac{1}{2}$ | $\ldots$ | $5+5$ | $\cdots$ | Fannich | V. Watney. |
| $-34 \frac{1}{2}$ | 5 | $\cdots$ | 251 | $\ldots$ | $7+S$ | $\ldots$ | Cluanie | A. H. Straker. |
| ${ }^{1} 3+\frac{1}{2}$ | $4 \frac{1}{4}$ | 261 | 31 | $33 \frac{1}{4}$ | $5+5$ | $\ldots$ | Dalnaspidal | Mrs. Hall Walker. |
| $34^{\frac{1}{2}}$ | $4 \frac{1}{2}$ | $\ldots$ | 23 | $\ldots$ | $6+6$ | $\ldots$ | Glentanar | Ean Cecil. |
| $3+\frac{1}{2}$ | $5 \frac{1}{2}$ | 18 | $26 \frac{1}{4}$ | 34 | $6+5$ | $\ldots$ | ? | W. Brodrick Cloete. |
| $34 \frac{1}{2}$ | 54 | 371 | $34 \frac{1}{2}$ | $\ldots$ | 12 | $\ldots$ | Braemore | Sir John Fowler, Bart. |
| $34 \frac{1}{2}$ | $4 \frac{1}{1}$ | 181 | 27 | $\ldots$ | $6+5$ | $\ldots$ | N. Morar | J. R. Mutchison. |
| $34 \frac{1}{2}$ | 4.3 | ... | 33 | $\ldots$ | $6+5$ | $\ldots$ | Isle of Skye | W. II. Lindsay. |
| ${ }^{2}-34 \frac{1}{2}$ | 5 | $\ldots$ | $\cdots$ | 341 | 12 | $\underset{\text { (clean) }}{231}$ | Glentilt | Duke of Atholl. |
| 34.4 | $4{ }^{\text {星 }}$ | 13 | 25 | 27 | $3+3$ | ... | Glenfeshic | P. K. Smilcy. |
| $34 \frac{18}{3}$ | 45 | 22 | 283 | 315 | $6+4$ | 204 | Cluanie | St. George Littledale. |
| 34.7 | $4 \frac{1}{5}$ | $\ldots$ | $26 \frac{1}{8}$ | ... | $6+5$ | $\ldots$ | Mamore | F. Bibly. |
| $34 \frac{1}{1}$ | 4 | $\ldots$ | 29 | $\ldots$ | $9+8$ | $\ldots$ | Ardverikie | Viscount Iveagh. |
| $-34 \frac{1}{6}$ | $4 \frac{1}{4}$ | $\cdots$ | 26 | $28 \frac{1}{4}$ | $4+4$ | ... | Wyvis . | J. F. Wilkin. |

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The antlers of one of the red deer in Mr．C．Lucas＇s park at Warnham Court，Sussex，in 1889，had 35 points；1890， 34 points；1891， 38 points ；i 892， 47 points，and weighed 17 lbs．；1893， 44 points， $16 \frac{1}{2} \mathrm{lbs}$ ．

| Length on out side curve． | b．－Irish Specimens（zvild and park）． |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Circurn－ ference between trez． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside． | Outside spread． | Points．Weight． | Locality． | Owner． |
| ${ }^{1}-42 \frac{1}{2}$ | ， | $\cdots$ | ．．． | ．．． | $\begin{array}{ll}  & \text { lbs. } \\ 12 & 315 \end{array}$ | Colebrooke | The late Sir Douglas Brooke，Bart． |
| －41 | 6 | $17 \frac{1}{2}$ | 23 | ．．． | $10+9 \quad 325$ | Do． | Do． |
| －40 | 52 | 28 | $29 \frac{1}{2}$ | ．．． | $8+8355$ | Do． | Do． |
| 395 | $5 \frac{1}{1}$ | $14 \frac{1}{2}$ | 263 | ．．． | $7+7 \quad 375$ | Do． | Do． |
| 38 | $5 \frac{1}{2}$ | $15 \frac{1}{4}$ | $26 \frac{1}{4}$ | 324 | $7+7$ | Do． | W．Campbell． |
| 38 | $5{ }^{5}$ | $9{ }^{\text {星 }}$ | $23 \frac{3}{5}$ | $\ldots$ | $8+8$ | Roscommon | Earl of Kingston． |
| $37 \frac{1}{2}$ | 53 | 23 辤 | $28 \frac{1}{2}$ | 34를 | $6+5380$ | Muckross | A．Vincent． |
| $35 \frac{3}{1}$ | $5{ }^{\frac{3}{4}}$ | $\ldots$ | 35 | ．．． | $5+5 \quad 264$ | Glenveagh | W．E．Laurie． |
| 359 | 5 | ．．． | $20 \frac{3}{7}$ | $\ldots$ | $7+7$ | Muckross | Ralph Sneyd． |
| 35 | 5 | 22 | $30 \frac{1}{4}$ | 367 | $6+5343$ | Roscommon | Earl of Kingston． |
| 35 | $4{ }^{\frac{3}{4}}$ | ．．． | 30 | $\ldots$ | 9 | Ireland | Hon．A．Charteris． |
| －35 | $4{ }^{\frac{7}{5}}$ | $25 \frac{1}{4}$ | 30 | $37 \frac{1}{8}$ | $6+6 \quad 260$ | Glenveagh | A．Arthur． |
| 35 | $5 \frac{1}{8}$ | 19 | 26. | $\ldots$ | $6+5 \quad 282$ | Powerscourt ． | Viscount Powerscourt． |
| 347 | 5 | $\ldots$ | 29 | $\ldots$ | $7+6 \quad 348$ | Glenveagh | G．W．Hartley． |
| 34 | $4 \frac{1}{2}$ | 253 | $28 \frac{1}{2}$ | ．．． | $6+6\left\{\begin{array}{c} 3, \\ \text { he fell } \\ \text { hell } \\ 280 \text { clean } \end{array}\right.$ | Powerscourt ． | Viscount Powerscourt． |
| 34 | $4 \frac{3}{4}$ | $\ldots$ | $31 \frac{1}{2}$ | $\ldots$ | $6+5 \quad 372$ | Muckross | Ralph Sneyd． |
| 34 | $4 \frac{1}{8}$ | $13 \frac{1}{8}$ | 25 | $\cdots$ | $5+5$ | Colebrooke | Major J．M．Rogers． |
| $33 \pm$ | 5 | 24 | $29^{\frac{1}{2}}$ | 34.1 | $8+7 \quad 360$ | Muckross | A．Vincent． |
| 33 | 4 星 | ．．． | 24 | $\ldots$ | 5＋5 346 | Glenveagh | Col．W．Hall Walker． |
| 33 | 5 | 20 | 281 | $\ldots$ | 5＋5 $\mathbf{2 8 1}^{1}$ | 1） 0. | W．W．Ashley． |
| $32 \frac{1}{2}$ | 5 | $\ldots$ | 24. | ．．． | $7+6 \quad 422$ | Glena | Earl of Kenmare． |
| $32 \frac{1}{4}$ | 4.7 | ．．． | 32.8 | $\ldots$ | $5+6$ | Killarney | （i．Douglas． |
| 317 | 5 | 25 年 | 31量 | $\ldots$ | $5+6$ | Donegal | Col．W．Hall Walker． |
| 31 量 | 4 | ．．． | 218 | $\cdots$ | $7+7 \quad \ldots$ | Muckross | Lord Mayo． |
| 31 年 | $4 \frac{1}{2}$ | 15 | 25. | 29.7 | $5+4 \quad \ldots$ | Io． | F．G．Menzies． |
| $31 \frac{1}{2}$ | 5 | $14 \frac{3}{3}$ | $25 \%$ | 27 䍃 | $6+5 \quad 276$ | Io． | C．E．Russell． |
|  | －O | ＇m | me |  |  | ais＇s British | and their Horns． |



Head of Exmoor Red Deer. Mr. R. A. Sanders.
c.-West of England Specimens.

| Length outside curve. |  | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside. | Outside spread. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ${ }^{1} 41$ | 51 | $21 \frac{1}{2}$ | $32 \frac{1}{4}$ | ... | $5+5$ | Exmoor | Sir John Heathcoat-Amory, Bart. |
| 40 | $5{ }^{\frac{7}{8}}$ | 10 | 28 | 38 | $7+6$ | Do. | Do. |
| 39 | 53 | ${ }^{1} 5^{3}$ | 281 | ... | $6+6$ | Do. | R. A. Sanders. |
| 39 | $5{ }^{\frac{3}{6}}$ | $13 \frac{1}{4}$ | $27 \frac{1}{1}$ | $34 \frac{3}{4}$ | $4+4$ | Do. | P. F. Hancock. |
| $38 \frac{1}{2}$ | $5 \frac{1}{5}$ | $17 \frac{7}{8}$ | $31 \frac{1}{2}$ | $\ldots$ | 6+6 | Quantock Hills | Earl Fortescue ; killed in 1885. |
| $38 \frac{1}{2}$ | 5 | 22.1 | 3013 | $\cdots$ | $7+7$ | Exmoor | C. Nelder ; killed in 1803. |
| 381 | 6 | 84 | 24 | 32 | $6+6$ | Kiloe | Hon. Mrs. Stanley. |
| $37 \frac{3}{4}$ | 5 | 7 | 2912 | 34 | $5+5$ | ? | J. James. |
| $37 \frac{1}{2}$ | 51 | $27 \frac{1}{2}$ | $35 \frac{5}{8}$ | 48 | $6+5$ | Exmoor | Sir John Heathcoat-Amory, Bart. |
| 374 | $4^{\frac{3}{4}}$ | 20 | $31 \frac{3}{4}$ | 36 | $6+5$ | Quantock | E. A. V. Stanley. |
| 37 | 5 | 23 | $33^{\frac{1}{2}}$ | $39^{\frac{3}{4}}$ | $6+7$ | $\begin{aligned} & \text { Bembridge } \\ & \text { Wood } \end{aligned}$ | Capt. H. H. Amory. |


| Length outside curve． | $\begin{aligned} & \text { Circum- } \\ & \text { ference } \\ & \text { between } \\ & \text { bez and } \\ & \text { trez. } \end{aligned}$ | $\begin{aligned} & \text { Tipto } \\ & \text { Tip. } \end{aligned}$ | Widest | Outside spread． | Points． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 36 管 | 6 | $21 \frac{1}{2}$ | 2 27 | ．．． | $6+7$ | Exmoor | Lord St．Audries；killed in 1893． |
| ${ }_{3}^{6 \frac{1}{2}}$ | $5{ }^{\text {g }}$ | 12 | 235 | $30 \frac{1}{2}$ | $7+6$ | Stoodleigh | Ian H．Amory． |
| $-36 \frac{1}{2}$ | ． | 19 | 283 | 39 | $6+6$ | Haddon | M．Greig． |
| 36 | $4 \frac{8}{4}$ | 10 | $24 \frac{3}{8}$ | $30 \frac{1}{4}$ | $9+7$ | Exmoor | R．A．Sanders． |
| 36 | $5 \frac{1}{3}$ | $12 \frac{1}{5}$ | 23 | $29 \frac{1}{2}$ | $6+5$ | Do． | Capt．H．H．Amory． |
| 36 | 5 | $14 \frac{3}{4}$ | 26 | $34 \frac{1}{2}$ | $7+6$ | Do． | M．Greig． |
| $35^{\frac{3}{4}}$ | 5 | 157 | 27 | 33 | $6+6$ | Do． | Hon．G．Bampfylde． |
| $35^{\frac{1}{2}}$ | 5 | 205 | $27 \frac{1}{2}$ | $\ldots$ | $6+6$ | Do． | Earl Fortescue ；killed in 1812． |
| $35^{\frac{1}{2}}$ | 5 | 14 星 | 27 星 | 34 | $6+6$ | Cudden Hoyes | Capt．H．H．Amory． |
| 35 | 5 | 15 | 27 | $\ldots$ | $6+5$ | Exmoor | Com．G．F．Inglefield，R．N． |
| 35 | $4^{\frac{7}{5}}$ | $25 \frac{1}{2}$ | $32 \frac{3}{4}$ | $\ldots$ | $5+6$ | Do． | Sir C．T．D．Acland，Bart．；killed in 1893. |

d．－English and other Park Specimens．

| $\begin{aligned} & \text { Length } \\ & \text { on } \\ & \text { outside } \\ & \text { curve. } \end{aligned}$ | Circum－ <br> ference <br> between <br> bez and <br> trez． | Tip to Tip． | Widest inside． | Spread． | Points． | Weight （clean）． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 45 | $7 \frac{1}{3}$ | $\ldots$ | $\ldots$ | $\ldots$ | II＋II | ．．． | Warnham | C．J．Lucas． |
| ${ }^{1} 44$ | $5^{\frac{3}{4}}$ | $23 \frac{1}{4}$ | $33 \frac{1}{2}$ | 519 | $12+9$ | $\ldots$ | Woburn | Duke of Bedford． |
| 43䍃 | $5 \frac{1}{2}$ | $24 \frac{1}{4}$ | 351 | 39 | $6+6$ | ．．． | Windsor | His Majesty the King． |
| 42太 | $6 \frac{3}{4}$ | $\ldots$ | $\ldots$ | 40 | 12 | $\ldots$ | Meibury，Dorset | Earl of Ilchester． |
| $42 \frac{1}{2}$ | 58 | ．．． | 27 | ．．． | II +10 | $\ldots$ | Ashridge Park | Earl Brownlow． |
| $41 \frac{1}{4}$ | $5^{\frac{3}{2}}$ | $18 \frac{3}{4}$ | 2S至 | 373 | $9+8$ | $\ldots$ | ？ | Lord Hastings． |
| ${ }^{1} 415$ | 5 | $22 \frac{3}{4}$ | 32 | $\ldots$ | $7+6$ | $\ldots$ | Langley Park | J．G．Millais． |
| 408 | 52 | I 8 量 | 31 | 41 | $5+5$ | $\ldots$ | ？ | R．V．Berkeley． |
| $40 \frac{1}{2}$ | 5星 | ．．． | $\ldots$ | $\ldots$ | $10+8$ | $\ldots$ | Vaynol | J．Whitaker． |
| ＋40 | 5 | $\ldots$ | $34{ }^{3}$ | $\ldots$ | $8+7$ | 330 | Caithness－shire | T．Pilkington． |
| 40 | $\ldots$ | $\ldots$ | 39 | $\ldots$ | 32 | $\ldots$ | Warnham ． | J．G．Millais． |
| 40 | 4 | 25 | $33 \frac{1}{2}$ | $40 \frac{1}{2}$ | $6+7$ | $\ldots$ | ？ | W．Cooper． |
| $239 \frac{1}{2}$ | 5. | 231 | 26星 | 353 | $5+5$ | ．．． | Woburn | Duke of Bedford． |
| ${ }^{3} 39$ | 53 | $\ldots$ | 25． | $\ldots$ | $5+6$ | $\ldots$ | Ditchley Park | Viscount Dillon． |
| －39 | 5 $\frac{1}{2}$ | ．．． | $23 \frac{1}{2}$ | $\ldots$ | $\ldots$ | $\ldots$ | Bushey l＇ark． | R．Shoollbred． |
| 39 | 5.1 | $18 \frac{1}{2}$ | 27.3 | $33 \frac{1}{2}$ | $6+6$ | $\ldots$ | ？ | W．Cooper． |
| 39 | $4{ }^{\text {崖 }}$ | 18.1 | $28 \frac{1}{2}$ | 37 | $8+8$ | ．．． | Osmaston | Sir Peter Walker，Bart． |
| $-384$. | 5 | 17 | $27 \frac{1}{4}$ | $32 \frac{1}{2}$ | $6+6$ | ．．． | Whittlebury ． | Sir Edmund G．Lorler， hart． |
| $37 \frac{1}{2}$ | 53 | 22 | 293 | $41 \frac{1}{2}$ | $8+7$ | $\ldots$ | Stowe | H．K．J．le Inc d＇Orléans． |
|  | －Owner | ＇s meas | rements． <br> Killed | y King | James I．in | 1 Shed a 1608. | mblers． | emi-feral. White Stag. |


| Length on outside curve． | Circum． ference between bez and trez． | Tip to Tip． | Widest inside． | Spread． | Points． | Weight （clean）． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ＊ $37 \frac{1}{2}$ | 5 | ．．． | 29 ${ }^{\frac{1}{2}}$ | $42 \frac{1}{4}$ | $6+7$ | ... | Warnham | C．J．Lucas． |
| $-37 \frac{1}{2}$ | $7 \frac{1}{2}$ | 2913 | $27 \frac{1}{2}$ | $36 \frac{1}{2}$ | $10+9$ | $\ldots$ | Welbeck | Duke of Portland． |
| ${ }^{1} 37 \frac{1}{2}$ | $5 \frac{3}{5}$ | ．．． | 33年 | $\ldots$ | $6+7$ | $\ldots$ | Ditchley Park | Viscount Dillon． |
| －37 | 63 | $18 \frac{1}{2}$ | 24 | 43 | $20+19$ | $\ldots$ | Warnham | C．J．Lucas． |
| 37 | 6 | 26 | $33 \frac{1}{2}$ | $\ldots$ | $\mathrm{II}+\mathrm{I} 3$ |  | Do． | Do． |
| $36 \frac{1}{4}$ | $4 \frac{3}{1}$ | 19 | $29 \frac{1}{4}$ | $32 \frac{1}{2}$ | $4+4$ | $\ldots$ | Wood Norton | H．R．H．le Duc d＇Orléans． |
| $35 \frac{1}{2}$ | 5 | 223 | $28 \frac{3}{4}$ | $33 \frac{1}{4}$ | $6+6$ | $\ldots$ | Do． | H．R．H．the Comtesse de Paris． |
| $35 \frac{1}{2}$ | 5 | $7 \frac{1}{2}$ | 20 | 25 | $6+6$ | $\cdots$ | ？ | H．S．O＇Brien． |
| 35 | $5 \frac{1}{4}$ | $19 \frac{1}{2}$ | $24 \frac{1}{4}$ | 2912 | $10+9$ | $\ldots$ | ？ | Hon．M．Egerton． |
| $34 \frac{1}{2}$ | 7 | 32 |  | $52 \frac{1}{4}$ | II +15 | $\cdots$ | Warnham | C．J．Lucas． |
| $34 \frac{1}{4}$ | 412 | 22 | 273 | 34－$\frac{1}{2}$ | $6+6$ | $\ldots$ | Windsor | G．L．Harrison． |
| 34 | 4交 | $\cdots$ | 23 | $\ldots$ | $6+6$ | $\ldots$ | Stowe | H．R．H．the Comtesse de Paris． |
| 34 | 55 | 213 ${ }^{3}$ | 2812 | $\ldots$ | $7+7$ | $\ldots$ | Dorset | Earl of Ilchester． |
| 34 | 6 | 24－1 | 32 | 371 | $10+10$ | $\ldots$ | ？ | Earl of Warwick． |
| $233 \frac{1}{2}$ | 5 | $20 \frac{1}{4}$ | 24. | $3 \mathrm{I} \frac{1}{2}$ | $5+5$ | $\ldots$ | Surrenden | W，Winans． |
| $33^{\frac{1}{2}}$ | $4 \frac{7}{8}$ | $\ldots$ | 33 | ．．． | $6+6$ | ．．． | Stowe ． | H．R．H．le Duc d＇Orléans． |

Some of the above measurements are recorded by Mr．J．G．Millais in British Deer and their Horns．
－Owner＇s measurements． 1 Killed by King James I．in r6io． 2 White Stag．＊Semi－feral．
e．－Ancient British and Irish Specimens．

| Length on outside curve． | Circum－ <br> ference between bez and trez． | Tip to Tip． | Widest inside． | Spread． | Points． | Wbere found． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $-47 \frac{1}{2}$ | 8 | 35 | $\ldots$ | $\cdots$ | $5+8$ | Manchester Ship Canal excavations | Sir R．M．Brooke，Bart． |
| 46 | 52 | 1 8 景 | $311 \frac{1}{4}$ | $37 \frac{1}{2}$ | $9+8$ | Achvarasdal ． | T．Pilkington． |
| $40 \frac{1}{4}$ | $5 \frac{1}{2}$ | $21 \frac{1}{2}$ | 27 | $38 \frac{1}{2}$ | $\ldots$ | Forfarshire | Sir Edmund G．Loder，Bart． |
| 40 | $7 \frac{1}{2}$ | $22 \frac{1}{4}$ | $28 \frac{1}{2}$ | 43 ${ }^{\frac{1}{4}}$ | $12+9$ | Combermere | Duke of Westminster． |
| $38 \frac{1}{2}$ | 5 | 18 | 30 | $39 \frac{1}{4}$ | $8+6$ | Ireland | Viscount Powerscourt． |
| $38 \frac{1}{2}$ | 61 | 30 | $36 \frac{1}{4}$ | 453 ${ }^{\frac{3}{3}}$ | $7+5$ | N．Wales | Sir R．Williams－Bulkeley， Bart．（See illustration．） |
| －37 | $5 \frac{1}{2}$ | 23年 | $\ldots$ | $39 \frac{1}{4}$ | $13+8$ | Co．Leitrim | J．Ormsby Lawder． |
| $36 \frac{1}{2}$ | 5 | 24 | 25 | 351 | $8+8$ | Ireland | Viscount Powerscourt． |
| 36 | 512 | 23 | 27 | $37 \frac{1}{2}$ | $10+9$ | Kerry，Ireland | Sir Edmund G．Loder，Bart． |
| $35 \frac{1}{3}$ | $5 \frac{1}{4}$ | $18 \frac{1}{2}$ | $25^{\frac{1}{2}}$ | $32 \frac{1}{2}$ | $7+7$ | Lincolnshire | C．W．Tindall． |
| 351 | $5 \frac{1}{4}$ | 261 | $32 \frac{3}{8}$ | $42 \frac{1}{2}$ | I3＋II | South Ireland | Sir Victor Brooke＇s Col－ lection． |
| 33 | $5 . \frac{1}{4}$ | 23 | 28 | 41 | $7+6$ | Cardigan Bay | H．Marshall． |
| $30 \frac{1}{2}$ | 5 | $10 \frac{1}{2}$ | 20 | $24 \frac{3}{4}$ | $9+8$ | ？ | Duke of Bedford． |

－Owner＇s measurements．


Head of New Zealand Ked Deer．Shot by Mr．H．E．Hodgkinson．
f．－Neze Zealand Specimens（introduced）．

Length Circum．
Length
on out．ference
side between curve．bez and
trez．

Widest
Widest Spread．Points．Weight．
inside．

Locality．
Owner．

| 48 | $6 \frac{1}{3}$ | $7 \frac{1}{4}$ | 32 爯 | 404 | $6+5$ | ．．． | Rakaia． | C．Williams． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $47 \frac{1}{2}$ | 7 | ．．． | ．．． | 371 | $6+6$ | $\ldots$ | Do． | G．Garrard． |
| －46 | 51 | $\ldots$ | 373 | 42 | $6+6$ | $\ldots$ | N．Otago | －H．E．Hodgkinson． |
| －46 | 51 | ．．． | 31 | $38 \frac{1}{2}$ | $6+6$ | ．．． | Do． | －Melville Gray． |
| －45 | 6 | ．．． | 27 爯 | 36 | $6+6$ | ．．． | Do． | －H．E．Hodgkinson |
| 45 | 5量 | $16 \frac{1}{2}$ | 31 | 40 星 | $6+7$ | $\ldots$ | Do． | ．P．F．Hadow． |
| －45 | 5 | $\ldots$ | $\ldots$ | 34 | 6＋6 | $\ldots$ | Do． | －Major Cliff． |
| －45 | $5 \frac{1}{2}$ | ．．． | $\ldots$ | $37 \frac{1}{2}$ | 13 | $\ldots$ | Do． | －J．Forbes． |
| $44^{\frac{1}{2}}$ | 5 | 87 | 30 | 363 ${ }^{\frac{3}{4}}$ | $6+6$ | ．．． | Do． | ．H．M．Cliff． |
| －44． | 53 | ．．． | $33^{\frac{1}{2}}$ | $37 \frac{1}{2}$ | $7+7$ | $\ldots$ | Do． | －C．D．Hodgkinson． |
| $44 \pm$ | 5 | ．．． | ．．． | 39 㝵 | $7+6$ | $\ldots$ | Do． | －P．F．Hadow． |
| －44 | $5{ }^{\frac{1}{2}}$ | $\ldots$ | $\ldots$ | 40 | 15 | $\ldots$ | Do． | A．Cowie． |
| －44 | $5 \frac{1}{2}$ | ．．． | $\ldots$ | 38 | $5+6$ | ．．． | Do． | －A．E．Leatham． |
| $43^{\frac{1}{2}}$ | 5\％ | $\ldots$ | 30 | 37 | $7+7$ | $\ldots$ | Do． | －C．E．Lucas． |
| －43 | 5 | $\ldots$ | ．．． | $38 \frac{1}{2}$ | $6+6$ | ．．． | I） 0. | －J．Horn． |
| －43 | $5 \frac{1}{2}$ | ．．． | $\ldots$ | 33 | $7+7$ | $\ldots$ | Do． | －J．Grindells． |
| 42 年 | 5\％ | 22 | 32.1 | $40 \frac{1}{1}$ | $7+7$ | ．．． | Do． | －W．H．Milburn． |
| $-42 \frac{1}{2}$ | 5 | ．．． | ．．． | $37 \frac{1}{2}$ | $6+6$ | ．．． | Do． | －R．E．Clouston． |
| 427 | 5 | $\ldots$ | $29 \frac{1}{2}$ | ．．． | $6+6$ | ．．． | Do． | G．N．Horlick． |
| －42 | $4{ }^{3}$ | $\ldots$ | 32 | $\ldots$ | $6+6$ | $\ldots$ | Do． | －D．Fraser． |
| －42 | $5{ }^{3}$ | ．．． | $38 \%$ | 50 | $7+7$ | ．．． | Do． | J．Faulks． |



Circum-
on out-
side ference between Tip to side
curve. bez and
trez.

Widest Spread. Points. Weight. Locality. inside

Owner.

| 42 | $5 \frac{1}{2}$ | $24 \frac{5}{8}$ | $33 \frac{1}{2}$ | 371 | $6+5$ | $\ldots$ | ? | A. D. Whatman. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| -41 ${ }^{\frac{3}{4}}$ | $5 \frac{1}{4}$ | $\ldots$ | $\ldots$ | $38 \frac{3}{4}$ | $7+8$ | $\ldots$ | N. Otago | . H. E. Hodgkinson. |
| -41 $\frac{1}{2}$ | 5 | $\ldots$ | $\ldots$ | $37 \frac{1}{2}$ | $6+7$ | $\cdots$ | Do. | - J. Forbes. |
| $-41 \frac{1}{2}$ | $5 \frac{1}{1}$ | $\ldots$ | $\ldots$ | $36 \frac{1}{2}$ | $6+6$ | $\ldots$ | Do. | - The late B. Armytage. |
| $-41 \frac{1}{2}$ | 5 ${ }^{\frac{1}{2}}$ | $\ldots$ | ... | $34 \frac{3}{4}$ | $7+6$ | $\ldots$ | Do. | - Melville Gray. |
| $-41 \frac{1}{2}$ | $5 \frac{1}{1}$ | $\ldots$ | 35 | ... | $5+4$ | $\cdots$ | Do. | - H. F. Wallace. |
| $-41 \frac{1}{1}$ | $5 \ddagger$ | $\ldots$ | 332 | $39^{\frac{1}{2}}$ | $7+7$ | $\ldots$ | Do. | . C. D. Hodgkinson. |
| -4I | 5 | $\ldots$ | ... | 391 | $6+7$ | $\ldots$ | Do. | . R. M. Morten. |
| -4I | $6 \frac{1}{4}$ | $\ldots$ | $\ldots$ | $36 \frac{1}{2}$ | $6+5$ | $\ldots$ | Do. | - J. S. Handyside. |
| -4I | 6 | $\ldots$ | $\ldots$ | 38 | $5+4$ | $\ldots$ | Do. | . D. Bell. |
| -4I | $5 \frac{3}{3}$ | $\ldots$ | $\ldots$ | 38 | I 8 | $\ldots$ | Do. | Baron von Kusserov. |
| -4I | 6 | $\ldots$ | $\ldots$ | 37 | $7+6$ | $\ldots$ | Do. | - C. R. Westmacott. |
| $-40 \frac{1}{2}$ | 6 | $\ldots$ |  | 38 | $5+5$ | $\cdots$ | Do. | - R. Nicholson. |
| $40 \frac{1}{3}$ | $5^{\frac{1}{4}}$ | $31 \frac{3}{4}$ | $37 \frac{1}{2}$ | 40 | $6+6$ | $\ldots$ | Do. | . Capt. I. Macdougall. |
| $-39 \frac{1}{2}$ | $5^{\frac{1}{2}}$ | $\ldots$ | ... | $29 \frac{1}{2}$ | $10+10$ | $\ldots$ | Do. | . J. Faulks. |
| -39 | 7 | $\ldots$ | $30 \frac{1}{2}$ | $35^{\frac{1}{2}}$ | $6+6$ | $\cdots$ | Wairarapa | - C. P. Skenett. |
| $38 \frac{3}{4}$ | $5 \frac{1}{1}$ | 15 | 26 | $31 \frac{1}{2}$ | $6+6$ | .. | Do. | - E. N. Senior. |
| $38 \frac{1}{2}$ | $6 \frac{1}{4}$ | ... | $\ldots$ | 33 | $6+6$ | $\cdots$ | Do. | . A. Pilkington. |
| $38 \frac{1}{2}$ | $6 \frac{1}{2}$ | $\ldots$ | 28 | 36 | 17 | $\ldots$ | Do. | - E. W. Bunny. |
| $-38$ | 5 | $\ldots$ | $\ldots$ | 33 | $6+6$ | $\ldots$ | Do. | E. C. Studholm. |
| $37^{\frac{3}{4}}$ | $5^{\frac{1}{2}}$ | $15 \frac{3}{4}$ | $21 \frac{1}{4}$ | 26 | $5+5$ | $\cdots$ | Otago . | - P. M. Stewart. |
| $36 \frac{1}{2}$ | $5^{\frac{1}{2}}$ | 181 | $29 \frac{1}{2}$ | $32 \frac{3}{4}$ | $5+5$ | $\cdots$ | Wairarapa | . A. Murray. |

Antlers of Ancient British Red Deer, belonging to Sir Richard Williams-Bulkeley, Bart.


Head of Spanish Red Deer, shot by H.R.H. Prince Arthur of Connaught.

## B.--SPANISH RED DEER (C. elaphus hispanicus).

## Length $\underset{\text { ference }}{\text { Circum- }}$ on ference outside between curve. bezand trez.




1 A mountain hearl. There are two races in Spain. Hy far the largest are those of the "sierras " (or mountains), where good heads run from 30 to 40 inches. The stags of the "cotos " (or wooded plains) seldom reach, and rarcly exceet, 30 inches in antler-length, and the heaviest weighed 205 lls. cleath.

| $\begin{aligned} & \text { Length } \\ & \text { on } \\ & \text { outside } \\ & \text { curve. } \end{aligned}$ | ference bez and trez． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside． | Spread． | Points． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| －321 | ．．． | $\ldots$ | $\ldots$ | ．．． | 13 | Plains of Andalucia | W．J．Buck． |
| －31 $\frac{1}{2}$ | $4 \frac{9}{18}$ | ${ }_{18} 8_{1}{ }^{5}$ | $24 \frac{1}{1 \frac{1}{6}}$ | 303 | $7+7$ | Valle de Viejas ． | Duke of Arion． |
| －3I | $4^{\frac{1}{1} \frac{5}{6}}$ | ${ }_{18} 8_{1} \frac{5}{5}$ | $24 \frac{1}{4}$ | 34 ${ }^{\frac{1}{2}}$ | $9+7$ | Montes de Toledo | Do． |
| －31 | $4{ }_{8}^{5}$ | 28 | $\ldots$ | $\ldots$ | 15 | Coto Doñana | P．Garvey． |
| －29 | 53 | $\ldots$ | 25 | ．．． | 12 | Andalucia ． | Abel Chapman． |

C．－NORWEGIAN RED DEER（C．elaphus atlanticus）．

| Length outside curve． | $\begin{aligned} & \text { Circum- } \\ & \text { ference } \\ & \text { between } \\ & \text { bez and } \end{aligned}$ | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside． | Spread． | Points． | Weight． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $-34 \frac{1}{4}$ | $6 \frac{1}{2}$ | $\ldots$ | ．．． | $34{ }^{\frac{5}{8}}$ | $\ldots$ | $\ldots$ | Norway | J．S．Brunn． |
| －34 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 7 | $\ldots$ | Do． | J．IH．Thomas． |
| 31 辤 | $4{ }^{\text {爯 }}$ | $\ldots$ | 251 | $\ldots$ | $6+5$ | $\ldots$ | Do． | A．Brassey． |
| $31 \frac{1}{2}$ | 4 ${ }^{\frac{1}{2}}$ | $\ldots$ | $24 \frac{1}{2}$ | $\ldots$ | $5+5$ | $\ldots$ | Do． | Sir H．Seton－Karr． |
| $31 \frac{1}{2}$ | $4{ }^{\text {号 }}$ | $\ldots$ | 28 | $\ldots$ | $4+3$ | $\ldots$ | Do． | E．M．Denny． |
| 31 | $5{ }^{\frac{1}{2}}$ | $27 \frac{1}{4}$ | $24 \frac{1}{8}$ | $33 \frac{3}{}$ | $8+4$ | $\ldots$ | Do． | －J．H．Thomas． |
| 30 | 5 | $\ldots$ | 29 |  | 12 | 280 | Do． | E．M．Denny． |
| 30 | 4 | 29 年 | $30 \frac{8}{4}$ | 33 | $5+4$ | $\ldots$ | Do． | Sir H．Seton－Karr． |
| $29 \frac{1}{4}$ | $4 \frac{5}{5}$ | 26 | 301 | $\ldots$ | $6+5$ | $\ldots$ | Do． | －G．L．Denman． |

－Owner＇s measurements．

The Carpathian red deer，as represented in the Marmoros Forest， appear to be in some degree intermediate between the western and eastern races，having the short face and red－brown summer coat of the former，but tending to blackness on the under－parts as in the latter．West Carpathian deer，at any rate，may however be in－ separable from C．e．germanicus．In Marmoros there is a second deer， the Polish，or wandering stag，reported to be an immigrant from Galician Poland，which has been regarded as a dwarf form of the maral．In the Bukowina district of the Galician Carpathians there occurs a large grey stag in the plains and a smaller and darker one in the mountains．


Skulls and Antlers of Carpathian Red Deer killed on the estate of the late Prince Henry of Liechtenstein at Tartarow, Galicia.


Skull and Antlers of Carpathian Red Deer shot by the late Prince Menry of Liechtenstein at Tartarow, Galicia, 1 S95. Length of antler, 46 inches. Weight, 20 lbs .14 oz .

| Number of points. | Weipht avoirdupois. | $\begin{aligned} & 1,-\mathrm{cm} \mathrm{th} \\ & \text { alous } \\ & \text { curve. } \end{aligned}$ | $\begin{aligned} & \text { Circum- } \\ & \text { ference of } \\ & \text { burr. } \end{aligned}$ | (inctim- <br> ference above inur. | Circumfer ence aluse midelle point. | Circumfer. ance below crown. | Circumference between licz and tre\% | 'Tip to "lip. | Witlest inside. | Spreat. | Weight of star. Its. | - Iocality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 10 | $\begin{array}{ll} \text { llos } & 02 \\ 23 & 01 \end{array}$ | 535 | 9.8 | 83 | $7{ }^{\frac{1}{6}}$ | 78 | ... | $\ldots$ | $\ldots$ | $\ldots$ | 11 sc 526 | Cemplen, Ilungary | Count Ge\%a Amdrassy. |
| $-15$ | over 20 lbs. | 5316 | 11. ${ }^{\text {P }}$ | 10 | $\ldots$ | $15!$ | 10 | $\ldots$ | $\ldots$ | $\ldots$ | 453 | Galicia . | H.R.H. D. Miguel, Duke of 1’raganza. |
| II | $\ldots$ | 521 | ... | $\ldots$ | $\ldots$ | ... | $6{ }_{6}^{5}$ | 148 | $34 \frac{1}{2}$ | 40 | $\ldots$ | Transyluania | Rhys Williams. |
| $-15$ | 205 | 52 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $7 \cdot 25$ | $\ldots$ | $32 \cdot 75$ | 45 | 504 | Galicia | 1: N. Buxton. |
| $-15$ | 19 I | $51{ }_{18}^{3}$ | 10 \% | S $\frac{1}{4}$ | 616 | S ${ }^{1}$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | Unghvar | Count Béla Széchényi. |
| -14 | 230 | 51 | I I | S ${ }_{2}$ | 7 | 9 | 7.20 | 27 | 38 | 47 | 519 | Zemplen Comitat | Count Gieza Andrassy. |
| ${ }^{1} 14$ | 210 | 51 | 11鹪 | $9{ }^{1}$ | 64 | $7{ }^{\frac{1}{2}}$ | $7 \frac{1}{4}$ | 2 S | 39 | 50 | $\cdots$ | Ilungary . | Sir Edmund G. Loder, Bart. |
| -16 | $\cdots$ | $50_{1}{ }^{\circ}$ | $\mathrm{II}_{1}{ }_{6}^{6}$ | $\ldots$ | $\ldots$ | $\ldots$ | $\cdots$ | $\cdots$ | $\ldots$ | $\ldots$ | $\ldots$ | Do. | Count Gièza Andrassy |
| -2I | 213 | $50 \cdot 4$ | $\ldots$ | $6 \cdot 08$ | $\ldots$ | $\ldots$ | $\cdots$ | 30 | $\ldots$ | $55 \cdot 9$ | $\cdots$ | l'ilis Mountains | Duke of Ratibor. |
| $-14$ | 20 S | 50 | II 14 | $9 \cdot \frac{1}{2}$ | $71^{18}$ | $6 \frac{1}{4}$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 418 | Ilungary - | Archduke Frederick. |
| $-1$. | $\ldots$ | 50 | $\ldots$ | ... | $\ldots$ | $\ldots$ | 6 | 42 | 40 | $\ldots$ | $\cdots$ | La Mandria | J. I. S. Whitaker. |
| $-18$ | $\ldots$ | 50 | $\cdots$ | $\ldots$ | $\ldots$ | $\ldots$ | $7{ }^{\frac{1}{2}}$ | $\ldots$ | $\cdots$ | 4 S | $\ldots$ | Galicia | Rudolph Pick. |
| -10 | $\ldots$ | 50 | $10 \frac{1}{4}$ | 75 | $\cdots$ | $6 \frac{1}{4}$ | $\cdots$ | $\cdots$ | $\ldots$ | $\ldots$ | $\ldots$ | Ilungary . | Count Béla Széchényi. |
|  |  |  |  |  |  |  |  | $\ldots$ | 398 | $\ldots$ | $\cdots$ | Radauc | Prince Lulu Kohan. |
| -14 21 | 31 alld an | $49 \%$ 49. | $\cdots$ 10.2 | $\ldots$ | $\ldots$ | $\cdots$ | $\cdots$ | $\ldots$ | 37 |  | $\ldots$ | Poland | J. G. Millais. |
| 21 | ... | 49. | 10.8 | $\ldots$ | $\ldots$ | 9.7 |  |  |  |  | 433 | Hungary | Count Rudolf Erdödy. |
| $-16$ | 200 | $49 \cdot 6$ | 10.8 | $9 \cdot 3$ | 7-11 | $9 \cdot 7$ | 6.5 | $55 \cdot 4$ | $43 \cdot 11$ | ... | 433 |  |  |
| -1S | $\ldots$ | $49 \frac{1}{8}$ | $10 \frac{1}{4}$ | $9 \frac{1}{16}$ | $6 \frac{15}{15}$ | $9 \frac{1}{8}$ | $\cdots$ | $\ldots$ | $\cdots$ | $48 \frac{7}{8}$ | 354 | Do. | Count Joseph Iloyos. |
| 13 | ... | 49 | ... | $\ldots$ | 63 | $\cdots$ | $\ldots$. | 21 $\frac{3}{4}$ | 33 | $42 \frac{1}{2}$ | $\ldots$ | Carpathians | P. B. Vander Byl. |
| -12 | 210 | 49 | $10 \frac{3}{10}$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | Itungary | Prince Philip of Saxe-Coburg and Gotha. |
| -20 | 253 | $48 \cdot 8$ | $\cdots$ | $\cdots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\cdots$ | $\ldots$ | $\ldots$ | S.W. Hungary | Prince Hugo Windischgraetz. |
| 14 | ... | $48 \frac{1}{2}$ | ... | $\because \cdot$ | : | $\cdots$ | 6 星 | 34 | 30 | $37 \frac{1}{2}$ | $\cdots$ | Carpathians | Lieut.-Col. L. Marshall. |

The late Prince John of
Liechtenstein．
H．R．H．the Duke of Save－

部


 Duke of Portland． Antal Réh．
Count Esterhazy．
 Head－keeper Ganovszlky． Count Francis Nádasdy． Count László Májláth． J．G．Millais．

 Count Max Hoys．
 Count Jenö Vichy． Count Mittrovszky． The late Prince Henry of
Liechtenstein．
需姿



－ロ ト（








| Number of points, | Weicht awoindupois. | lengeh along citrie. | Circmaference of hur. | Circum. terence abowe bure | Circumference athove middle point. | Circumfercuce behow crown. | (ircumference between bez and tre\%. | Tip to Tip. | Widest inside. | Spread. | Weight of stag. | Iocality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 心 |  | $4{ }^{6}$ | ... | 9 | ... | ... | ... | ... | 36 | 60 | H.s. $\cdots$ | Gotha | II.R.1I. the I)uke of SaxeCoburg and Gotha. |
| 13 | ... | 46 | $\ldots$ | $\ldots$ | $\ldots$ | ... | 7.1 | $\cdots$ | 29! | 37 | $\ldots$ | Carpathians | Irince Alteuburg. |
| 18 | ... | . 46 | 10 | ... | ... | ... | $\ldots$ | ... | 35 | 543 | $\ldots$ | Bukowina . | Count Erlach. |
| 10 | ... | $45^{8}$ | $10^{3}$ | 95 | ... | $6: 3$ | ... | $\ldots$ | $\ldots$ | ... | ... | Hungary | Count Limil S\%échényi. |
| $-10$ | .. | 453 | 10 | $8_{5}^{5}$ | . | $7 \frac{1}{8}$ | $\ldots$ | ... | ... | ... | ... | Do. | Allert Tuhász. |
| 10 | 19 1015 | 4518 | 1118 | 97 | $7{ }^{10}$ | 711 | $\ldots$ | ... | ... | $\ldots$ | $\ldots$ | Do. | Count Michacl Esterhazy. |
| 14 | 19 11? | 4510 | 10.5 | 92 | $71^{16}$ | 8.1 | ... | ... | $\ldots$ | $\ldots$ | $\ldots$ | Do. | Archduke Joseph Augustus. |
| 16 | 19 S | 4516 | 1 I | $9{ }_{1}{ }_{6}{ }^{6}$ | 611 | $7 \frac{7}{8}$ | $\ldots$ | $\ldots$ | ... | ... | ... | Do. | Head-kecper Ganovszky. |
| $-17$ | $23 \frac{1}{2}$ | $45^{\frac{1}{2}}$ | II | $9{ }^{3}$ | 7 | S | $7 \frac{1}{4}$ | 413 | $42 \frac{1}{2}$ | 49 | $\ldots$ | Do. | Sir Edmund G. Loder, Bart. |
| $-1.4$ | ... | $45^{3}$ | $9 \frac{1}{1}$ | S5 | 63 | 73 | ... | 154 | . ${ }$ | 32 | ... | Do. | Dr. Allert von Stephani. |
| 24 | $23+$ | $45{ }^{5}$ | 105 | S5 | 7妾 | 712 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | Do. | Count T. Eltz. |
| 12 | 20 S | $45{ }^{\text {\% }}$ | 916 | $6_{16}{ }^{\text {\% }}$ | 611 | 712 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 572 | Do. | Count Béla Széchényi. |
| 12 | 206 | 4516 | $11 . \frac{1}{2}$ | 915 | $7 \frac{1}{8}$ | 64 | ... | $\ldots$ | $\cdots$ | $\ldots$ | 640 | Do. | Archduke Joseph Augustus. |
| -20 | 17.05 | +5:27 | 10.04 | S.07 | $7 \cdot 28$ | $7 \cdot 48$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | Do. | Count George Erdöldy. |
| 14 | 19 S | $45 \frac{1}{4}$ | $10_{1}{ }^{\frac{1}{6}}$ | S3 | 6114 | 614 | $\ldots$ | ... | ... | $\ldots$ | 433 | Do. | Archduke Joseph Augustus. |
| 15 | $\ldots$ | 45 ${ }^{\text {a }}$ | $9{ }^{7}$ | ... | ... | ... | ... | 238 | $34 \frac{1}{4}$ | $\cdots$ | ... | Rumania | Prince Demeter Ghika, |
| -22 | 2810 | $45^{\frac{1}{8}}$ | 12 | 95 | 7 | 1419 | S ${ }^{3}$ | 2916 | $34 \frac{1}{4}$ | ... | ... | Hungary | Prince Montenuovo. |
| -14 | ... | 45 | 9 | $7^{\frac{1}{2}}$ | 512 | 9 | 6 | IS ${ }^{\text {P }}$ | 342 | $4 \mathrm{I}_{3}^{18}$ | ... | ? | W. H. Wilson. |
| -II | ... | 45 | S $\frac{1}{2}$ | 73 | $\ldots$ | ... | 54 | $21 \frac{1}{2}$ | 33 | 4 I | . | Galicia | Prince E. Demidoff. |
| I. 4 | $\ldots$ | $44 \frac{7}{8}$ | 104 | $9{ }^{7}$ | ... | $5{ }^{\text {\% }}$ | ... | ... | ... | ... | $\ldots$ | Hungary . | Archduke Frederick. |
| I4 | ... | $44^{\frac{3}{4}}$ | $\ldots$ | $\ldots$ | $\cdots$ | $\cdots$ | 6 | 30.4 | 294 | 39 | $\ldots$ | Do. | Hon. Walter Rothschild. |
| 22 | $20 \quad 4 \frac{1}{2}$ | 44를 | $12{ }^{3} 8$ | $10 \frac{1}{4}$ | $7{ }^{16}$ | 64 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 418 | Do. | Arclıduke Frederick. |

Sir Edmund G．Loder，Bart．
（See illustration，page 24．） Count Béla Széchényi．
 S．W．II un－Archduke Frederick．
Gary
N．Hungary Prince Philip of Saxe－Coburg Prince Philip of Saxe－Coburg
and Gotha．
Count Michael Esterhazy．
Carpathians Count Michael Esterhazy． Jeno Kind．
Count Fer．Nádasdy．
J．Hamilton Leigh．
Count Rudolf Erdödy．
 Count Tassilo Festetics． A．vol André． Count Tassilo Festetics．
Count B．Keglevich． Count B．Keglevich．
Count László Májláth． Count László Májláth．
Count Henry Fiunfkirchen． Count Henry Fiinfkirchen．
G．Jankovich． Count Rudolf Erdödy． Count Bombelles．
Archduke Frederick．
Prince E．Demidoff． $\quad$ Do．
Hungary
Sesawski
Dohha
IIungary


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号 N．Hungary ！
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| 455 | Agarév, S.W. Hungary. Hungary | Count Tassilo Festetics. Archduke Joseph Augustus. |
| :---: | :---: | :---: |
| $\ldots$ | Do. | St. George Littledale. |
|  | Gotha | H.R.H. the Duke of SaxeCoburg and Gotha. |
|  | Moravia | G. D. Whatman. |
| ... | Germany | Sir Edmund G. Loder, Bart. |
| ... | Hungary | A. von André. |
| $\ldots$ | Do. | A. N. Hall. |
| 433 | Do. | Prince Philip of Saxe-Coburg and Gotha. |
| $\ldots$ | S.W. Hungary | Count Tassilo Festetics. |
| $\ldots$ | Hungary . | The German Emperor. |
| $\ldots$ | Russia | H.R.H. Prince Arthur of Connaught. |
| $\ldots$ | Upper <br> Austria. | J. Hamilton Leigh. |
|  | Tenuta la Mandria. | H.R.H. the Duc d'Orléans. |
| $\underset{\text { (clean) }}{342}$ | Rominten, N.E.Germany. | II.I.M. the German Emperor. |

[^1]

Antlers of Carpathian Red Deer in the Collection of Sir Edmund G. Loder, Bart.


Carpathian Red Deer heads belonging to His Imperial Majesty the Emperor of Austria.
Eastern R'd Deer heads in the possession of Mis Imperial Majesty the Emperor of Austria.

| Specimens from the I'lains of ITungary. |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1. ength. |  |  |  | Widest |  | Circumference |  |  |
| 13ate. | Tijs. | Outside curve. | furr to highest point. | Tip to Tip. | Inside. | Outside. | of $A$ ntler. | of P'urr. | Locality. |
| 24 th september 1874 | $6+7$ | $41 \frac{1}{2}$ | $35{ }^{3}$ | 21.1 | 33 | 313 | 71 | $\ldots$ | Szent Kiraly. |
| aSth ," , | $6+6$ | 408 | 34 | 15 | 283 | 32 | 53 | $\ldots$ | Do. |
| 6 6th October is6s | $6+7$ | $40 \frac{1}{2}$ | 36 | $35^{\frac{1}{2}}$ | 351 | 42.1 | $6 \frac{7}{8}$ | 9 | Balat. |
| ,, .. 1873 | $7+10$ | 398 | $35^{1}$ | $29 \frac{1}{8}$ | 327 | 33 ${ }^{\frac{1}{2}}$ | 57 | $88_{8}^{7}$ | Szent Kiraly. |
| 7th ., ,. | $8+6$ | 391 | 36 | 21.4 | 27 | $35^{\frac{1}{8}}$ | $6 \frac{1}{2}$ | $\ldots$ | Do. |
| ", ", , | $7+$ S | 37.4 | 34 | 258 | 318 | 41 | 6 | $\ldots$ | Do. |
| Specimens of the Mountain Form. |  |  |  |  |  |  |  |  |  |
| Sth August IS92 | $5+5$ | ${ }^{1} 41 \frac{7}{8}$ | 33 | $12 \frac{1}{8}$ | 278 | $23 \frac{7}{5}$ | 7 | 8 | Irachberg (Upper |
| 1st October ${ }_{\text {I S }} \mathrm{SS}_{5}$ | $4+4$ | $41 \frac{1}{8}$ | 2 S | 18 | $32 \frac{1}{2}$ | ... | $4 \cdot 7$ | ... | Graben, Styria. |
| 3oth September $\mathrm{ISS}_{5}$ | $5+4$ | 373 | 314 | 248 | 313 | 2 S | 6 | $\ldots$ | Taschl, do. |
| 2nd October ISSI | 10 +7 | 364 | 304 | 274 | $31{ }^{\frac{7}{8}}$ | $40 \frac{1}{2}$ | $7{ }^{\frac{1}{2}}$ | $\ldots$ | Mïrssteg, do. |
| $3 \mathrm{rd} \quad, \mathrm{MSS} 4$ | $6+6$ | 36 | 31 年 | $14{ }^{3}$ | 27 | ... | $6{ }_{8}^{7}$ | $\ldots$ | Grasleiten, do. |
| $5{ }^{\text {th }}$, $1 \mathrm{SSO}_{9}$ | $7+S$ | 348 | 33 | $14{ }^{3}$ | 23 3 | 25.3 | 6 | $\cdots$ | Graben. |




Antlers of German Red Deer. From a specimen in the Castle at Moritzburg. After Dr. A. B. Meyer.

Ancient Continental Specimens.

| $\begin{aligned} & \text { Length } \\ & \text { (on curve) } \end{aligned}$ | Circumference. | Tip to Tip. | Spread. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| -474 | 9 | $\ldots$ | 75 ${ }^{\frac{8}{3}}$ | $14+14$ | ? | H.M. the King of Saxony, Moritzburg. |
| $-46 \frac{1}{2}$ | 83 above trez | 5 ft .21 | $\ldots$ | 22 | ? | Count Erbach-Erbach. |
| ... | $\cdots$ | $\ldots$ | inside | 22 | Switzerland | Do. |
| $39 \frac{1}{2}$ | $6 \frac{1}{2}$ | 22 | $\underset{39}{3 I \frac{1}{2}}$ | $6+6$ | Germany . | - Viscount Powerscourt. |

[^2]

Skull and Antlers of Eastern Red Deer shot in the Western Caucasus by Mr. St. George Littledale.

Length of Antler, 45 in .

## E.-EASTERN RED DEER or MARAL (C. elaphus maral).

In this race of the red deer, which may intergrade with some of the western races by means of the Carpathian form, the height at the shoulder reaches to about $4 \frac{1}{2}$ feet, and the build is stouter, the neck thicker, and the face in the hinds longer and more pointed than in typical red deer. The summer coat of immature animals is very generally marked with numerous yellowish spots, and at all ages is much less red than in the British race, being, in fact, grey in September. The colour of the winter coat is dark slaty grey on the back, with the rump-patch of a very bright yellow, and a large amount of black on the shoulders, thighs, and under-parts; this blackness of the under-parts also characterising the summer coat. The large and massive antlers are generally less complex than those of the western races, the number of points being seldom more than eight on a side, and frequently only six; while the bez-tine, which may be wanting, is often shorter than the long and
upwardly curved brow-tine, and the fourth tine is generally more distinct from the crown. The average weight is given as about 560 lbs .

The typical locality of the maral is the Caspian provinces of Northern Persia, whence this or allied races extend into the Crimea, Asia Minor, and so on into Transcaucasia, the Caucasus, and probably Circassia. It is noteworthy that specimens from the Caucasus have shorter faces than those from Northern Persia, and thus approximate to the western types. Sportsmen call this race the Hungarian red


Antlers of Eastern Red Deer from the Caucasus, in the Collection of Sir Edmund G. Loder, Bart.
deer, but this is scarcely legitimate, as Hungary is not the typical locality. (For other specimens, see p. I 8 et seq.) The Crimean red deer have very massive, few-tined antlers.

| Length on outside curve. | Circumference. | Tip to Tip. | Widest inside. | Spread. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $48 \frac{3}{2}$ | 64 | 34 | 36 | $42 \frac{1}{2}$ | $8+6$ | Asia Minor | H. O. Whittall. |
| $48 \frac{1}{2}$ | 6 | 30 | $4{ }^{1 \frac{1}{2}}$ | ... | $5+6$ | $\begin{aligned} & \text { Ichater Dagh, } \\ & \text { Crimea } \end{aligned}$ | H.R.H. the Duke of SaxeCoburg and Gotha. |
| 481 | $7{ }^{\text {星 }}$ | (single | antler) | $\cdots$ | 12 | Asia Minor | British Museum (Lord A. Hay). |
| 4 S | $7 \frac{1}{4}$ | $\cdots$ | ... | $\ldots$ | $\cdots$ | Caucasus | St. George Littledale <br> (Liverpool Museum). |




North African Red Deer: Sir Edmund G. Loder's Specimen.

## F.-N. AFRICAN RED DEER (C. elaphus barbarus).

For characters, see page 2.

Length on outside side
curve.

Circum-
ference between bez and trez.

| $38 \frac{7}{8}$ | $5 \frac{3}{8}$ | $27 \frac{1}{2}$ | 28 | 36 | $6+5$ | North Africa | . Sir Edmund G. Loder, Bart. |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :--- | :--- |
| $36 \frac{1}{2}$ | $4 \frac{3}{4}$ | $22 \frac{7}{8}$ | $28 \frac{3}{4}$ | $\ldots$ | $4+4$ | Do. | . British Museum. |
| $30 \frac{1}{2}$ | $3 \frac{3}{4}$ | $\ldots$ | $\ldots$ | $\ldots$ | $4+3$ | $?$ | Duke of Bedford. |
| $24 \frac{1}{4}$ | $3 \frac{3}{4}$ | $20 \frac{3}{4}$ | $21 \frac{1}{2}$ | $\ldots$ | $4+4$ | Tunis . | . Major R. Rankin. |



Skull and Antlers of Hangul or Kashmir Barasingha. Shot by Mr. P. B. Vander Byl.

## The HANGUL or KASHMIR BARASINGHA (Cervus cashmirianus).

In this very distinct species the first, or brow, tine arises at a considerable distance above the burr, or coronet, of the antlers, instead of close to it, as in the red deer; the bez-tine is usually longer than the brow; the total number of points is generally only five a-side, although a third tine may occasionally be added to the normal terminal pair, thus forming an imperfect cup; and the beam of each antler is much curved in towards the middle line of the head. The terminal fork is placed obliquely. The tail is short, and not included in the light patch on the rump, which is very small; and the tuft on the hind cannon-bone is situated lower down than in the red deer. In winter the general colour of the coat is brown, brownish ash, or liver-colour, with the hairs speckled; the light area on the inner side of the buttocks being dirty white, with a blackish line on the inner sides of the thighs, the upper side of the tail black, and the lips, chin, and inner surface of the ears white or whitish. In the fawns the spotting is stated to remain much longer than in the red deer. In the pairing season the old stags squeal like wapiti, instead of roaring in red-deer fashion.

The hangul inhabits the forest-districts of the north side of the vale of Kashmir and some of the neighbouring valleys, at elevations ranging from 9000 to 12,000 feet in summer, but descending to about

5000 feet in winter. The height at the shoulder varies from about 4 feet to 4 feet 4 inches; the average weight being about 450 lbs .

The pale-coloured C. macneilli, of Sze-chuan, and C.m. kansuensis, of Kan-su and Yun-nan, are nearly related deer.

The finest pair of antlers appears to be one given by Raja Gulab Singh many years ago to Colonel King, then commanding the 14th Hussars, at whose death they passed to Captain Prettyjohn of the same regiment. What became of these antlers the late Mr. A. O. Hume, who measured them at Meerut in 1852 or 1853 , could not ascertain. The record stands, R. 52 , L. $53 \frac{1}{2}$, measured along the curve inside. Girth, io inches at burr and 7 half-way between bez and trez tines. They were a wide-branching, symmetrical pair.

| Length on out side curve | $\begin{aligned} & \text { Circum- } \\ & \text { ference } \\ & \text { betveen } \\ & \text { bez and } \\ & \text { trez. } \end{aligned}$ | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $-53{ }^{\frac{1}{2}}$ | 7 | $\ldots$ | $\ldots$ | ... | $\ldots$ | See above. |
| 48 | $6 \frac{1}{3}$ | 14 |  | $6+5$ | Lidar Valley, Kashmir | K. S. Laurie. |
| $47^{\frac{1}{2}}$ | 6 | 22 | 39 | $6+6$ | Kashmir | P. B. Vander Byl. (See illustration, p. 32.) |
| -47 | $7{ }^{\text {\% }}$ | 21 | 36 | $7+5$ | Do. | Bombay Natural History Society. |
| 47 | $6 \frac{3}{4}$ | $2.1 \frac{1}{4}$ | $36 \frac{3}{4}$ | $5+5$ | Do. | Sir Edmund G. Loder, Bart. |
| 47. | 61 | 30 | $35^{\frac{1}{2}}$ | $8+8$ | Do. | Duke of Wellington. |
| 47 | 6 | 20 | $34 \frac{3}{4}$ | $6+5$ | Do. | Lieut.-Col. H. R. Cook. |
| 46 | $5{ }^{5}$ | 13 | $34{ }^{\frac{3}{4}}$ | $5+5$ | Do. | Capt. W. F. Brayne. |
| $45^{\frac{7}{3}}$ | 8 | 35 | 41 | $6+6$ | Do. | British Museum (Hume Collection). |
| 458 | 6 | 253 | 36 | $8+8$ | Do. | Sir Victor Brooke's Collection. |
| $45^{\frac{1}{2}}$ | $6 \frac{1}{4}$ | $16 \frac{1}{2}$ | 34 | $6+5$ | Do. | Brig.-Gen. E. H. Molesworth. |
| $45 \frac{1}{4}$ | $5{ }^{\frac{5}{3}}$ | $17 \frac{1}{4}$ | 34 | $5+5$ | Do. | P. Radclyffe. |
| 45 | $6 \frac{3}{4}$ | 19 | 34 | $6+6$ | Do. | Lieut. - Gen. Sir R. PoleCarew. |
| 45 | $5{ }^{\frac{1}{4}}$ | 23 年 | 36 | $6+6$ | Do. | J. V. E. Lees. |
| 45 | 61 | 23 | 40 | $4+4$ | Do. | Capt. H. F. Bidder. |
| $44^{\frac{3}{4}}$ | $5^{\frac{1}{2}}$ | $17 \frac{1}{2}$ | 33 | $6+6$ | Do. | Col. A. E. Ward. |
| $-444^{\frac{3}{4}}$ | 6 | 20 | 43 | $5+5$ | Lidar Valley | Queen's Own Corps of Guides. |
| -445 | 612 | $31 \frac{1}{2}$ | $44 \frac{3}{4}$ | $5+5$ | Kishenganga Valley | Do. |
| $44^{\frac{1}{2}}$ | 6 | $27 \frac{3}{4}$ | 383 | $4+4$ | Sind Valley, Kashmir | J. V. Phelps. |
| 44 | $7{ }^{\frac{1}{4}}$ | $30 \frac{3}{4}$ | $40 \frac{7}{8}$ | $5+5$ | Do. | Major P. H.G. Powell-Cotton. |
| 44 | $6 \frac{3}{4}$ | 23 | $36 \frac{1}{2}$ | $5+5$ | Do. | Naval and Military Club. |


| Length on ous． curve． | Circum－ ference between bez and trez． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside． | Points． |  | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $4+$ | 6 | 27 | 36 | $5+5$ | Kashmir | ． | Hon．Walter Rothschild． |
| $4+$ | 63 | $34 \frac{1}{2}$ | $47^{\frac{1}{2}}$ | $5+5$ | Do． | ． | －Major V．Rickard． |
| 4. | $5{ }^{\text {3 }}$ | IS | 31 | $5+5$ | Do． | ． | C．E．Bryant． |
| $43{ }^{3}$ | 61 | 253 | $37 \frac{3}{4}$ | $6+5$ | Do． |  | Capt．A．E．Cathcart． |
| 43 年 | $6 \frac{1}{4}$ | 11 | 32 䍃 | $7+6$ | Do． |  | A．Danson． |
| $43{ }^{3}$ | $5^{\frac{7}{3}}$ | $18 \frac{1}{2}$ | 29 | $5+5$ | Do． | ．． | C．H．Smith． |
| $43^{\frac{1}{2}}$ | $6 \frac{1}{2}$ | 19 | 31 | $5+5$ | Do． |  | Sir J．Prestcott Hewett． |
| $43^{\frac{1}{2}}$ | 6 | $10 \frac{3}{4}$ | $32 \frac{1}{2}$ | $7+6$ | Do． | ． | A．Williams． |
| $43 \frac{1}{2}$ | 6 | 315 | 38 | $5+5$ | Do． |  | Sir R．Douglas Powell，Bart． |
| $43^{\frac{1}{2}}$ | 6 | $15{ }^{\frac{1}{2}}$ | 293 | $7+7$ | Do． |  | Capt．C．M．Truman． |
| ＋3 ${ }^{\frac{1}{2}}$ | 5 | $15 \frac{1}{4}$ | 317 | $6+6$ | Do． |  | Capt．A． $\mathrm{M}^{\mathrm{c}} \mathrm{B}$ ．Woodside． |
| 43 | $7{ }^{\frac{1}{2}}$ | $23 \frac{1}{2}$ | $37 \frac{1}{4}$ | $5+5$ | Do． | ．． | R．E．Mess，Roorkee． |
| 43 | $5 \frac{1}{2}$ | 34 | $41 \frac{1}{2}$ | $5 \div 4$ | Do． | － | His Majesty the King． |
| 43 | $5{ }^{7}$ | $26 \frac{1}{5}$ | $37 \frac{7}{8}$ | $6+5$ | Do． | ． | Martyn Kennard． |
| 43 | 53 | 19 妥 | $34 \frac{1}{2}$ | $6+6$ | Do． | ． | Major F．W．H．Walshe． |
| 423 | $5^{\frac{1}{2}}$ | 18 | 33 呈 | $6+5$ | Do． | ．． | Major R．Baker－Carr． |
| 42 爯 | $5{ }^{\frac{1}{2}}$ | $17 \frac{1}{4}$ | $33 \frac{3}{\text { 崖 }}$ | $5+6$ | Do． | ． | Major－Gen．H．D＇U．Keary． |
| 423 | 6 | 15 | 323 | $5+5$ | Do． | ．． | Major C．A．Vivian． |
| $42 \frac{1}{2}$ | 61 | $1{ }^{1} \frac{1}{2}$ | －26皇 | $5+5$ | Do． | ． | Capt．A．H．Wilson． |
| 42 | 5 | $13 \frac{1}{2}$ | $26 \frac{1}{2}$ | $5+5$ | Do． | ．． | E．L．Phelps． |
| 42 | $5{ }^{\frac{1}{2}}$ | 20 | $35^{\frac{1}{2}}$ | $6+5$ | Do． | ．． | W．A．Conduitt． |
| 42 | 6 | 22 | 34 | $5+5$ | Do． | ．． | Major IV．Furnivall． |
| 413 | 6 | 23 | 364 | $6+6$ | Do． | ．． | F．V．B．Witts． |
| 418 | 5 | $23 \frac{1}{2}$ | 35 | $5+5$ | Do． | ．． | －Major Kingsley Foster． |
| 41䍃 | 6 | $18 \frac{1}{2}$ | $31 \frac{1}{2}$ | $6+5$ | Vo． | ． | 11．A．Attenhorough． |
| 41爯 | $5 \frac{1}{2}$ | 12.1 | 29.3 | $5+5$ | Do． | ． | Major R．A．N．Tytler． |
| $41 \frac{1}{2}$ | 6 | 25.3 | 3612 | $5+5$ | Do． | ． | －Col．F．II．Ilancock． |
| $41 \frac{1}{2}$ | $6 \frac{1}{2}$ | 36 | $41 \frac{1}{2}$ | $5+5$ | Do． | ．． | C．Arthur． |
| 418 | 5 | 23 | $33^{\frac{1}{2}}$ | $6+5$ | Do． | ． | Capt．H．C．II．O＇brien． |
| 417 | 6 | ${ }^{1} 5^{5}$ | 29 | $7+6$ | Io． | ．$\cdot$ | I＇．W．Cobloold． |
| 415 | $5 \frac{1}{2}$ | $\ldots$ | $\cdots$ | $6+3$ | Do． | － | Lady Jenkins． |
| 41 | 5 | $23 \frac{1}{2}$ | 35 | $5+5$ | Dr ． | ．． | Hon．II．G．O．Bridgeman． |



Skull and Antlers of Yarkand Stag. From specimen bequeathed by Mr. A. O. Hume to the British Museum.

## The YARKAND STAG (Cervus yarcandensis).

This stag, which inhabits the Tarim Valley and Maralbashi in Eastern Turkestan, differs markedly from the hangul by the large and well-defined light rump-patch, which includes the tail, and by the general colour being light rufous fawn. The antlers are usually 5 -tined, but by the development of a third snag to the crown may become (as in the figure) 6 -tined. They differ from those of the hangul in that the terminal fork is placed at right angles to the middle line of the head so as to look directly forwards. The fifth
tine, which is generally inclined inwards, is larger than the fourth, and the whole upper part of the antlers is often bent forwards in the manner of those of the shou.

| $\begin{aligned} & \text { Length } \\ & \text { on } \\ & \text { outse } \\ & \text { curre. } \end{aligned}$ | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest | Spread. | Points. | Locality: | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +12 | 6 | $31 . \frac{1}{4}$ | $31 \frac{1}{4}$ | $4+$ | $6+6$ | Maralbashi. | British Museum. |
| $40 \frac{1}{4}$ | $5^{\frac{1}{2}}$ | 23 ${ }^{\frac{3}{4}}$ | $35^{\text {尔 }}$ | $\ldots$ | $5+5$ | Do. | British Museum (Hume Collection). |
| 40 | $5^{\frac{1}{2}}$ | 25. | 31 | $\ldots$ | $6+5$ | Do. | E. L. Phelps. |
| $39 \frac{1}{2}$ | 6 | $2+\frac{1}{2}$ | 25 | $\ldots$ | $7+6$ | Do. | British Museum (Hume Collection). See illustration. |
| $39 \frac{1}{1}$ | 53 | $16 \frac{1}{2}$ | 283 | ... | $6+6$ | Do. | The late David $\begin{gathered}\text { T. } \\ \text { Hanbury. }\end{gathered}$ |



Kashmir Barasingha Head.


Skull and Antlers of Sikhim Shou. From a specimen bequeathed by Mr. A. O. Hume to the British Museum.

## The SHOU (Cervus wallichi).

A very large stag with antlers, at least in the Sikhim race, of the general type of those of the hangul, but larger, and with the beam bent suddenly forwards at the trez-tine, so that the upper half overhangs the face, the number of points being usually five. The browtine is less constantly longer than the bez, the fifth tine is large and inclined inwards, and the terminal fork looks almost directly forwards. In the typical race, which inhabits the neighbourhood of the Mansarowar Lake, Tibet, the white rump-patch is large, but it is smaller in the true shou (C. wallichi affinis), which inhabits the upper
part of the Chumbi valley and some of the neighbouring valleys in Bhutan. An identical or nearly allied deer is also found in the Tsan-po basin, near Lhasa.

| Length on outside curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 553 | $6 \frac{1}{2}$ | $17 \frac{1}{1}$ | 403 | $7+6$ | Tibetan Frontier | . British Museum (Hume Collection). See illustration. |
| $55^{\frac{3}{4}}$ | 67 | $26 \frac{1}{8}$ | 44 | $5+5$ | Do. | British Museum (B. H. Hodgson). |
| 54 年 | $6 \frac{5}{8}$ | 215 | $37 \frac{1}{\ddagger}$ | $5+5$ | Do. | British Museum (Dr. Campbell). |
| 547 | $7 \frac{3}{4}$ | $10 \pm$ | $35^{\frac{1}{2}}$ | $5+5$ | Do. | . His Majesty the King. |
| 53 | $6 \frac{7}{3}$ | 30 | 453 | $4+5$ | Do. | . British Museum (Hume Collection). |
| -52 $\frac{1}{2}$ | 7 | $18 \frac{1}{2}$ | 38 | $5+5$ | Do. | - Sir Edmund G. Loder, Bart. |
| 52 | 8 | $\ldots$ | $\ldots$ | $\ldots$ | Do. | Hon. Walter Rothschild. |
| 50 | $6 \frac{1}{4}$ | 213 | $35^{\frac{1}{4}}$ | $8+6$ | Do. | II. J. Elwes. |
| $49 \frac{1}{2}$ | $7 \frac{1}{2}$ | 38 | 45 $\frac{1}{2}$ | $5+5$ | Do. | Col. I. Biddulph. |
| -49 ${ }^{\frac{1}{2}}$ | $\cdots$ | $39 \frac{1}{2}$ | $\cdots$ | $5+4$ | Do. | Bombay Natural History Society. |
| $-48$ | 6 | 30 | $42 \ddagger$ | $5+5$ | Chumbi Valley . | Lord Curzon. |
| $-48$ | $6 \frac{3}{4}$ | 303 | ${ }^{1} 39$ | $5+5$ | Tibetan Frontier | H. J. Elwes. |
| 48 | $6 \frac{3}{3}$ | 17 | $34 \frac{1}{2}$ | $6+5$ | Do. | H.R.II. the Duc d'Orléans. |
| $47^{\frac{7}{8}}$ | 58 | $30 \frac{3}{8}$ | $40 \frac{1}{2}$ | $5+5$ | Do. | - British Museum. |

- Owner's measurements.

1 Spread.

## THOROLD'S DEER (Cervus albirostris).

Thorold's deer is of the same approximate dimensions as the hangul, from which it is readily distinguished by the more flattened antlers, which have no bez-tine, and do not curve inwards, but are suddenly bent backwards at the point of origin of the trez; the total number of points being either five or four. Equally distinctive are the pure white muzzle and chin ; the white inner surface of the ears; the reversal of the hair on the middle of the back, so as to form a kind of hump on the withers with the points of the hairs directed towards the neck; the low position and large size of the gland-tuft on the hind cannon-bone; and the shortness of the tail, which is included in the very large straw-coloured area of the buttocks. The general colour of
the coat is uniformly dark brown, with the hairs, which are remarkable for their coarse and brittle nature, minutely speckled. The antlers are smooth and white nearly throughout.

The Tibetan plateau, north of Lhasa, is the home of this fine species of deer, which was originally described by the late Colonel Przewalski under the scientific name given above. Subsequently two examples were obtained by Dr. W. G. Thorold, to the north-east of Lhasa, at an elevation of between 13,000 and 14,000 feet, which, under the impression that they indicated a new species, were named C. thoroldi by Dr. W. T. Blanford.

| Length on outside curve. | Circum. ference. | Tip to Tip. | Widest inside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 47 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | N. of Lhasa | British Museum. |
| $38 \frac{1}{2}$ | $4 \frac{5}{8}$ | 37 | 27 | $5+4$ | Central Tibet | Hon. Walter Rothschild. |
| 38 | 54 | 28 | 31 | $5+5$ | Do. | British Museum. |
| ${ }^{1}-36$ | $4^{\frac{1}{2}}$ | 32 | 32 | $5+5$ | ? | Indian Museum. |

## The WAPITI DEER (Cervus canadensis).

Wapiti are large deer of the red deer group easy of recognition by the form of their antlers, which are of great size, carrying, when fully developed, more than five tines, curving backwards, and being much flattened in the upper half. They always have the bez-tine developed, but their most characteristic feature is the great size of the fourth tine, which is larger than any of the others, and, with the fifth, which is also long, forms a nearly regular fork; the fourth, fifth, and sixth tines being situated almost in the plane of the portion of the beam immediately below them, so that they more or less completely hide one another when viewed from the front aspect. The brow-tine rises close to the burr, and is nearly as long as the bez. The tail is extremely short; the light rump-patch is very large and includes the tail ; the neck and under-parts are blackish ; and the general colour of the summer coat is yellowish brown on the upper-parts.

Wapiti (known in America as elk) range from North America to North-eastern and Central Asia, the typical form being the Rocky Mountain wapiti. The height at the shoulder is about 5 feet 4 inches, and the weight from 700 to 1000 lbs .

## －－ROCKY MOUNTAIN WAPITI（C．canadensis typicus）．

Distribution．－N．America，east of the Rockies，inclusive of that range．

|  | $\begin{gathered} \text { Circum- } \\ \text { ference } \\ \text { between } \\ \text { bez and } \\ \text { trez. } \end{gathered}$ | Circum． <br> ference of burr． | $\begin{gathered} \text { Tip to } \\ \text { Tip. } \end{gathered}$ | Widest inside of horn． | Widest outside． | Points． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $6+\frac{1}{2}$ | S | ．．． | $3{ }^{1 \frac{1}{2}}$ | 45 | 52 | $7 \div 6$ | ？ | Sir Edmund J． Loder，Bart． |
| $63 \frac{1}{2}$ | 8 | $\ldots$ | 39 | $45^{\frac{1}{2}}$ | 52 | $7+7$ | Wyoming | H．A．C．Darley． |
| $62 \frac{1}{2}$ | s | 13 年 | ．．． | $46 \frac{1}{2}$ | $55^{\frac{1}{2}}$ | 17 | Do． | J．G．Millais． |
| 62 | －3 | $\ldots$ | 331 | 50 \％ | $\ldots$ | $7+7$ | Snake River， Colorado | Ernest Farquhar． |
| 61 | S | $\ldots$ | $35 \frac{1}{4}$ | $45^{\frac{1}{2}}$ | $53{ }^{\frac{7}{8}}$ | $6+6$ | Bighorn Nits．， Wyoming | Sir H．Seton－Karr． |
| 61 | S | $\ldots$ | $36 \frac{1}{2}$ | $46 \frac{1}{2}$ | 55 | S + S | Do．． | Viscount Powers－ court． |
| 61 | S | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $8+7$ | Do． | Prince Ghika．Nicolas |
| $60 \frac{1}{2}$ | S ${ }_{4}$ | $\ldots$ | $\ldots$ | 55 | $\ldots$ | $7+6$ | Do． | E．Grant． |
| 60옥 | $7 \frac{1}{4}$ | $\ldots$ | 43 | 461 | $\ldots$ | $6+6$ | Do． | Major C．C．Ellis． |
| 60 | 8 年 | ．．． | 36 | $37 \frac{1}{2}$ | 45 | $6+6$ | Do． | W．Winans． |
| 5912 | 7 | ．．． | 38 | $48 \frac{1}{2}$ | 52 | $8+7$ | Do． | L．E．Sackville |
| $59 \frac{7}{3}$ | $S_{\frac{1}{2}}$ | 13 | $37 \frac{1}{4}$ | 47 | ．．． | S + S | S．E．Wyoming ． | His Majesty ，the King． |
| 59 s | S $\frac{1}{2}$ | $16 \frac{1}{7}$ | $\ldots$ | 43 | 53 | $7+6$ | ？ | J．G．Millais． |
| 59 | $6 \frac{1}{2}$ | $\ldots$ | $30 \frac{1}{2}$ | $45^{\frac{1}{2}}$ | 51 年 | $6+6$ | Rocky Mts． | T．J．Burrough． |
| 59 | $7{ }^{3}$ | $\cdots$ | 39 | 46 | 53 | $9+7$ | Wyoming ． | Sutton Timmis． |
| $58 \frac{1}{2}$ | $\mathrm{br}^{9}$ | 9 between brow and bez． | ．．． | $46 \frac{1}{2}$ | $50 \frac{1}{2}$ | $10+7$ | Do． | Lord Hythe． |
| 58 | ．．． | $9{ }^{1 \frac{1}{6}}$ | 42 | $47 \frac{1}{4}$ | $\ldots$ | $7+6$ | Do． | A．II．Straker． |
| 58 | $7{ }^{\text {7 }}$ | ．．． | $43^{\frac{1}{2}}$ | 49 | $\ldots$ | $9+S$ | Do． | W Moncreiffe． |
| 575 | 7 | ．．． | 36 | $43^{\frac{1}{2}}$ | 47 | $6+6$ | ？ | R．Fleming Crooks． |
| 57 $\frac{1}{2}$ | $6 \frac{7}{8}$ | $\ldots$ | 24 | 355 | $\ldots$ | $6+6$ | Montana | Capt．Abcly． |
| 579 | $\cdots$ | $9{ }^{\text {¢ }}$ | 32 | 42.1 | $\cdots$ | $7+7$ | Do． | Sir Humphrey de Trafforl，liart． |
| 57 | $6{ }^{3}$ | 10 | 52！ | 55 | 5712 | $6+6$ | Do． | T．D．M．Cardeza． |
| 57 | 73 | $\ldots$ | $\ldots$ | $\cdots$ | $\cdots$ | $7+7$ | Uo． | Count F．Trautt－ manslorff． |
| 57 | $7 \frac{1}{8}$ | 15 | 53 | 49른 | 61 | $8+9$ | Montana | Sir Edmund G． Loder，Bart． |
| 57 | 7 ${ }^{\frac{1}{4}}$ | $\ldots$ | $35^{\frac{1}{8}}$ | $41^{\frac{1}{5}}$ | $\ldots$ | $6+6$ | Yellowstone Park | British Museum． |
| $56 \frac{1}{2}$ | 73 | $\cdots$ | 37 | $39^{\frac{1}{2}}$ | $43^{\frac{1}{2}}$ | $7+6$ | ？ | Duke of Bedford． |
| 565 | 63 | ．．． | 34 | 49 | ．．． | $6+6$ | Montana | Andrew Jameson． |
| 56 | 7 | $\ldots$ | 31 | 39 | $42 \frac{1}{2}$ | $6+7$ | Wyoming ． | J．V．Colby． |

Head of Rocky Mountain Wapiti.
Length
on
Circum-
ference
outide
between
curve.
bez and
trez.


## OWNER'S MEASUREMENTS.

| Length outside curve. | Circumference between bez and trez. | Circumference of burr. | Tip to Tip. | Widest inside. | Widest outside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 66 | ... | $\ldots$ | $\ldots$ | $\ldots$ | 60 | $6+6$ | Wyoming | J. Darley. |
| 65 | 75 | $\cdots$ | $\cdots$ | $\ldots$ | 40 | $7+7$ | Laramie Plains, Wyoming | Schoverling, Daly, and Gales. |
| 643 | ... | 93 | $41 \frac{1}{2}$ | 49 | ... | $6+7$ | Wyoming. | Col. J. J. Harrison. |
| $64 \frac{1}{7}$ | 8 | $\ldots$ | ... | 48 | $\ldots$ | $7+7$ | N.W. Wyoming | A. Rogers. |
| 633 | 81 | $\ldots$ | $49 \pm$ | $48 \frac{1}{2}$ | ... | $7+9$ | North Prong | Frank Cooper. |
| $63 \frac{1}{2}$ | 85 | ... | $34 \frac{1}{2}$ | $50 \frac{1}{2}$ | 64 | $6+6$ | Wyoming . | J. C. Phillips. |
| $59 \frac{1}{2}$ | $\cdots$ | $10 \frac{1}{2}$ | $\ldots$ | $37 \frac{1}{2}$ | 59 | $\cdots$ | Bighorn Mts. | Sir Savile Crossley, Bart. |
| $58 \frac{1}{2}$ | 812 | $\ldots$ | $\cdots$ | 4412 | ... | $6+6$ | Do. | J. D. Cobbold. |
| $58 \frac{1}{2}$ | $8 \frac{1}{4}$ | $\ldots$ | 48 | $\ldots$ | 50 | $6+6$ | ? | F. B. Tolhurst. |
| 58 | ... | 10 | 41 | $\ldots$ | $49^{\frac{1}{2}}$ | $7+7$ | Do. | American National Collection. |
| 58 | $10 \frac{1}{2}$ | 12 | $\ldots$ | $\ldots$ | $\cdots$ | $7+8$ | ? | P. F. Collier. |

## B.-WEST AMERICAN WAPITI (C. canadensis occidentalis).

Apparently very closely allied to the typical Rocky Mountain race, but with the head, neck, and limbs blacker in the winter dress. The antlers show considerable tendency to cupping and palmation, and in some cases the portion above the fifth tine is aborted. The range of this form extends from British Columbia and Vancouver to Oregon.

| Length on outside curve. | $\begin{aligned} & \text { Circum- } \\ & \text { ference } \\ & \text { between } \\ & \text { bez and } \\ & \text { trez. } \end{aligned}$ | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside. | Widest outside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 52 | S $\frac{1}{2}$ | 37 | 40 | $\ldots$ | $6+6$ | Vancouver . | Barclay Bonthron. |
| $51{ }^{\frac{3}{4}}$ | $6 \frac{3}{1}$ | 35 | $36 \frac{1}{2}$ | 394 | $6+6$ | Do. | J. M. Hanbury. |
| $-49 \frac{1}{4}$ | $6 \frac{1}{2}$ | 38 | $46 \frac{1}{4}$ | $\ldots$ | $10+7$ | Do. | A. E. Leatham. |
| 48 | 71 | 323 | 36.1 | $34 \frac{1}{2}$ | $6+7$ | Do. | W. R. Thompson. |
| 47 | $6 \frac{3}{4}$ | 37 | 34 | $4{ }^{\frac{1}{2}}$ | $8+7$ | Do. | J. M. Hanbury. |
| -45 | $7 \frac{1}{4}$ | 37 | 37 | $\cdots$ | $7+8$ | Do. | Clive Phillipps-Wolley. |
| -45 | $6 \frac{3}{4}$ | 37 | 39 | 42 | $6+4$ | Do. | J. C. Phillips. |
| $-44 \frac{1}{2}$ | $\ldots$ | $33^{\frac{1}{2}}$ | 28 | 32 | $6+6$ | Do. | Capt. C. R. E. Radclyffe. |

Two other forms of wapiti have been described from North America, namely, C. canadensis merriami, of the White Mountains, Arizona, and C. cancdensis nannodes, of the San Joaquin Valley, California. The latter is a small, pale-coloured race, with much white on the ears, a small rump-patch, and the front of the legs and feet golden fulvous.


Skull and Antlers of Tien Shan Wapiti, shot by Mr. P. Church at Tarbagatai.

## C.-TIEN-SHAN WAPITI (C. canadensis songaricus).

Judging by the mounted specimen in the British Museum and numerous examples of the antlers, this race differs from the typical wapiti by the rump-patch being narrower, more orange in colour, and not including the middle line of the tail, which is coloured like the back. There is more black on the borders of the rump-patch, the thighs, and the flanks, and the general colour is greyer. The antlers are very large and have the fourth tine shorter and stouter. This wapiti inhabits the Tien-Shan range in the neighbourhood of Kulja; it was first described by Dr. Severtzow under the name of C. maral, var. songarica, and subsequently by Dr. Blanford, on
the evidence of detached antlers obtained by the Second Yarkand Mission，as C．custiphamus．Weight（W．Winans），S37 lbs．

$$
\begin{aligned}
& \text { Lengrh } \\
& \text { on } \\
& \text { outside } \\
& \text { curve. }
\end{aligned}
$$

| 60 | S $\frac{1}{2}$ | $62 \frac{1}{4}$ | ＋512 | 70 | $10+9$ | Tien Shan | Capt．J．N．Price Wood． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 561 | $7{ }^{\text {2 }}$ | $37^{\frac{1}{2}}$ | $37^{\frac{1}{2}}$ | $40 \frac{1}{2}$ | $6+6$ | Do． | G．L．Harrison． |
| ${ }^{1}-55$ | S | ．．． | ．．． | $\ldots$ | $6+7$ | Bought at Kashgar | Earl of Northbrook． |
| 54 |  | 49 | $+6 \frac{3}{4}$ | $50 \frac{1}{2}$ | $7+6$ | Tien Shan | P．Church． |
| －53 | $\stackrel{9}{\text { burr }}$ | $\cdots$ | $\cdots$ | $\cdots$ | $8+6$ | ？ | American National Collec－ tion． |
| 53 | $6{ }^{3}$ | $30 \frac{1}{2}$ | 39 | 46 | $6+6$ | Tien Shan | J．V．Phelps． |
| 53 | $6 \frac{7}{8}$ | $+6$ | 41 | 49 | $8+8$ | Dó． | Duke of Bedford． |
| 52 | $6 \frac{1}{4}$ | $24+\frac{1}{2}$ | 3118 | ．．． | $8+7$ | Do． | Capt．J．F．Turner． |
| 52 | 6 | ＋5 | $40 \frac{1}{1}$ | 45 | $6+6$ | Do． | Capt．the Hon．G．H． Douglas Pennant． |
| 51 | $6 \frac{1}{2}$ | 39 年 | $40 \frac{3}{4}$ | $50 \frac{1}{8}$ | $6+5$ | Do． | A．Ezra． |
| 51 | $6 \frac{3}{4}$ | $43^{\frac{1}{4}}$ | ＋4 ${ }^{\frac{1}{3}}$ | 463 | $7+6$ | Do． | St．George Littledale． |
| 51 | $6 \frac{1}{2}$ | $44 \frac{1}{2}$ | 38 | 49 | $10+8$ | Do． | C．C．Tower． |
| 51 | S | $4+\frac{1}{2}$ | 51 | 55 | $8+7$ | Do． | Col．H．Appleton． |
| 503 | $6 \frac{1}{2}$ | $4 \mathrm{I}^{\frac{3}{4}}$ | $42 \frac{1}{2}$ | 45 | $6+6$ | Do． | C．H．Bury． |
| 50 | $6 \frac{3}{1}$ | 39 | 43 | 51 | $6+6$ | Do． | Lord Osborne Beauclerk． |
| 50 | $6 \frac{1}{2}$ | 26 | 35 | 38 | $7+6$ | Do． | A．Bayley－Worthington． |
| ＋912 | 71 | 28 | 33 | $4{ }^{1 \frac{1}{2}}$ | $8+7$ | Do． | T．P．Miller． |
| $49 \frac{1}{4}$ | 65 | 453 | 54 | 55 | $6+6$ | Do． | Capt．J．N．Price Wood． |
| －49 | ．．． | 423 | $\ldots$ | 48 | $6+6$ | Do． | Lt．－Col．H．M．Biddulph． |
| ＋8き | $6 \frac{1}{2}$ | $39 . \frac{1}{4}$ | 422 | 45 ${ }^{\frac{1}{2}}$ | $6+6$ | Do． | Major A．D．Greenhill－ Gardyne． |
| ＋7． | 6 星 | 42 F | 44 | $47 \frac{1}{2}$ | $6+6$ | Do． | Lieut．－Col．G．E．P＇ereira． |
| 47 | 63 | $24{ }^{\text {事 }}$ | $32 \frac{1}{2}$ | 41 | $7+6$ | ？ | Col．H．G．C．Swayne． |
| $46 \frac{1}{2}$ | 6 | 35 | $40 \frac{1}{2}$ | 43 | $6+6$ | ？ | S．W．Carpenter． |
| $46 \frac{1}{2}$ | 7 | 372 | 39 爯 | 44 | S＋7 | Tien Shan | I＇．F．Iladow． |

## D.-BAIKAL WAPITI (C. canadensis sibiricus).

Antlers less massive and lighter coloured than those of the TienShan race, with the fourth tine inclined outwards instead of inwards, and having only a slight bend at the tip, and with the beam at this point curving gradually inwards and backwards, so that the backward inclination is less marked than in the latter. Typically from the Sayansk and Baikal Mountains west of Lake Baikal. Also known as C. c. asiaticus.

|  | Circum. ference. | Tip to Tip. | Widest inside. | Spread. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $50 \frac{3}{4}$ | 6 | $29 \frac{1}{2}$ | $38 \frac{1}{2}$ | ... | $8+7$ | ? Altai | Duke of Bedford. |
| $48 \frac{1}{2}$ | 73 | $\ldots$ | single | horn | 7 | ? | British Museum. |
| $46 \frac{1}{4}$ | $6 \frac{1}{4}$ | 34 | $40 \frac{1}{2}$ | $\ldots$ | $6+6$ | Upper Yenisei Valley | J. C. Phillips. |
| 451 ${ }^{\frac{1}{2}}$ | 61 | $34 \frac{1}{4}$ |  | 47 | $5+5$ | ? Altai | H. J. Elwes. |
| 45 | 6 | $51 \frac{1}{2}$ | $\ldots$ | $\ldots$ | $6+6$ | Upper Yenisei Valley | Sir Edmund C. Loder, Bart. |
| 43至 | $6 \frac{1}{4}$ | 37 | 35 | $\ldots$ | $6+6$ | Do. | Dublin Museum. |

## E.-BACTRIAN WAPITI (C. canadensis bactrianus).

Named on the evidence of a specimen formerly living in the Zoological Gardens at Moscow, which was at first regarded as related to the shou, although its wapiti-affinities were subsequently revealed by specimens from Chenkend, Turkestan, the head of one of which is now mounted in the British Museum. The colour is very light grey, and the dark markings on the lips differ from those of other wapiti. Has also been named C. hagenbecki.

Distribution.-Chenkend and adjacent districts. The antlers of the British Museum specimen are somewhat malformed, and have therefore not been measured.

| Length <br> on <br> outside <br> curve. | Circum. <br> ference. | Tip to <br> Tip. | Widest <br> inside. | Spread. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 40 | 6 | 264 | $\ldots$ | $\ldots$ | $6+4$ | Turkestan | . |

## F.--MANCHURIAN WAPITI (C. canadensis xanthopygus).

Antlers of a shorter and stouter type than in the Tien-Shan wapiti, with the fourth tine relatively smaller in immature specimens, and the portion above it less developed at all ages. In the 5 -tined antlers of sub-adult stags the tips of the fourth and fifth tines curve towards one another like crabs' claws. General colour in winter brownish grey, in summer bright reddish brown, with the dark winter mane and under-parts of other wapiti. Also known as C. bedfordi.

Distribution.-Northern Manchuria in the Upper Ussuri district.

| $\begin{aligned} & \text { Length } \\ & \text { on } \\ & \text { outside } \\ & \text { curve. } \end{aligned}$ | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Wident inside. | Spread. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $41{ }^{13}$ | $6 \frac{3}{4}$ | 23 | 33 | $\cdots$ | $6+6$ | $\underset{\text { Tailey }}{\text { Upper }}$ Yenisei | J. C. Phillips. |
| $40 \frac{1}{2}$ | $6 \frac{1}{4}$ | 23 | 32 爯 | 353 | $7+6$ | Do. | Sir Edmund G. Loder, Bart. |
| $-38 \frac{1}{2}$ | 75 | $\ldots$ | $\ldots$ | ... | $6+6$ | ? | American National Collection. |
| $33 \frac{1}{2}$ | 5 | 23 | 263 | 28.1 | $6+5$ | N.E. Manchuria | A. J. A. Douglas. |
| 33 | 5 | 25 | $2+$ | $26 \frac{1}{2}$ | $5+5$ | Do. | Capt. H. L. Archer-Houblon. |
| $33 \frac{1}{7}$ | 54 | $18 \frac{1}{2}$ | 213 | $\ldots$ | $6+6$ | ? | II. J. Elwes. |
| 32. | $5 \frac{1}{1}$ | $26 \%$ | $26 \frac{3}{8}$ | 297 | $7+5$ | ? | Do. |
| $3{ }^{\text {星 }}$ | 6 | 17 | 253 | 29 | $8+7$ | ? | Duke of Bedford. |

- Owner's measurements.
luehdorf's Wapiti ( $C$. luehdorfi) appears to have been founded on aged individuals of this race. The type specimens came from Trans. baikalia, and were probably brought from the Bureatish Steppe of Northern Manchuria.

The Obi Wapiti (C. c. biedermanni) comes from Lake Teletzh at the source of the Obi, and Barnoul, lower down the same valley.


Skull and Antlers of Japanese Sika. From a specimen in the Collection of Sir Edmund G. Loder, Bart.

The SIKA DEER (Cervus [Pseudaxis] sica).
The Japanese sika deer is the typical representative of a group of deer in which the antlers are shorter and simpler than is usually the case in the red deer group, and have generally four tines, including a trez, but lacking a bez. The coat is spotted, at least in summer, and there is a black-bordered white area in the region of the tail, which is relatively long. They constitute the subgenus Pseudaxis. In the typical species the tail is white at the tip, but black above for at least some part of its length; and the gland on the hind cannon-bone is covered with white hairs. The coat is chestnut-red with numerous white spots in summer, and browner, with no (or only indistinct traces of) spots in winter. These deer are distributed over Northern China, Manchuria, Japan, and the Liu Kiu Islands, where they are represented by two or three races differing chiefly in size. In the Japanese deer (C. sica typicus), which inhabits Japan and Northern China, the height at the shoulder varies from about 2 feet 8 inches to 2 feet 10 inches, whereas in the Manchurian deer (C. sica manchuricus) it reaches 3 feet 3 inches. The Liu Kiu race is not yet named. Both the Japanese and the Manchurian races have been acclimatised in English and Irish
parks．Weight（W．Winans），i So lbs．－I2 stone clean（Marquis of Waterford）．

A．－JAPANESE SIKA（C．sica typicus）．

| Length on out． curve． | Circum． ference． | $\begin{gathered} \text { Tip to } \\ \text { Tip. } \end{gathered}$ | Points． | Locality： |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| －2S3 | $3 \frac{1}{2}$ | IS ${ }^{\frac{1}{4}}$ | $4+4$ | Japan | － | －T．C．Phillips． |
| $26 \frac{1}{2}$ | $3{ }^{3}$ | $19 \frac{1}{4}$ | $4+4$ | ？ |  | British Museum． |
| $25 \frac{1}{2}$ | 5 | 173 | $4+4$ | Japan | － | Sir Victor Brooke＇s Collection． |
| 253 | $4 \frac{1}{3}$ | $20 \frac{1}{4}$ | $4+4$ | Do． | ． | Sir Edmund G．Loder，Bart． |
| 2312 | $4 \frac{3}{5}$ | $\ldots$ | $4+4$ | Bred in England | ． | W．Winans． |
| $22 \frac{1}{2}$ | 4 | 16 | $5+4$ | Do． | － | H．R．H．the Duc d＇Orleans． |
| 12218 | $3 \frac{3}{5}$ | $12 \frac{1}{2}$ | $4+3$ | Bred in Ireland |  | Marquis of Lansdowne． |
| 22 | 4 | $16 \frac{3}{4}$ | $5+4$ | I） 0 ． |  | －Sir Victor Brooke＇s Collection． |
| $21 \frac{1}{2}$ | 33 | 13 爯 | $4+4$ | Do． | ． | Hon．Walter Rothschild． |
| $20 \frac{1}{8}$ | 312 | 12 量 | $4+4$ | Bred in England | － | H．R．H．the Duc d＇Orleans． |
| 20 | $3{ }^{\frac{1}{3}}$ | 123 | $4+3$ | Do． | ． | W．Winans． |
| $19 \frac{1}{4}$ | 32 | 173 | $4+4$ | Bred in Ireland． | ． | －V．Brooke． |
| $17 \frac{1}{4}$ | 3 | $16 \frac{1}{4}$ | $4+4$ | Woburn | － | Duke of Bedford． |
| 16 | $3 \frac{1}{2}$ | 13 3 ${ }^{\frac{1}{2}}$ | $3+3$ | Bred in Ireland． | ． | －C．E．Russell． |
| 165 | 3 | $9{ }^{\text {\％}}$ | $4+3$ | Do． |  | －Hon．John Ward． |
| ${ }^{2} 15 \frac{1}{2}$ | $2 \frac{3}{1}$ | $14 \frac{1}{4}$ | $4+4$ | Do． | ． | ．Marquis of Hamilton． |

[^3]
## B．－MANCHURIAN SIKA（C．sica manchuricus）．

| Jength on out－ side curve． | Circum－ ference． | $\begin{gathered} \text { Tip to } \\ \text { Tip. } \end{gathered}$ | Points． | Weight． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $-26$ | $4 \frac{1}{4}$ | $13 \%$ | $4+4$ | $\ldots$ | Manchuria | I＇aris Museum． |
| 23 | $3 \frac{1}{2}$ | $18 \frac{1}{1}$ | $4+4$ | ．．． | I） 0. | Duke of Iedford． |
| 23 | $5 \frac{1}{1}$ | 15. | $3+4$ | $16411)$ | $1) \%$ | W．Winans． |
| 201 | $3 \frac{1}{2}$ | If， | $4+4$ | $15311 \%$ 。 | Ios． | $1) \mathrm{O}$ |

Tength

## The FORMOSAN SIKA (Cervus [Pseudaxis] taëvanus).

Nearly allied to the typical sika, but distinctly spotted in winter, when the coat retains more or less of the rufous summer-tinge. The dark line down the middle of the back is very strongly marked, there is a more distinct black bar above the white tail-patch, and the limbs are shorter and the body proportionately longer. The height at the shoulder is about 2 feet II inches. This species is confined to the mountains of the island of Formosa.



Head of Dybowski's Sika.

## DYBOWSKI'S SIKA (Cervus [Pseudaxis] hortulorum).

In addition to its larger size (between 3 feet 7 inches and 4 feet at the shoulder), this species is distinguished from the Manchurian sika by the hairs covering the gland on the hind cannon-bone being of the same colour as the rest of the coat in summer and only slightly grizzled in winter, and by the tip of the tail being apparently white. The head and neck are bluish grey, and in immature animals whitish spots persist in winter, although these disappear completely at this season in fully adult bucks, in which the coat becomes very long and shaggy, especially on the throat and neck. Hinds are more brightly coloured in winter than the stags, and retain distinct spotting. This deer was named C. hortulorum by Consul Swinhoe from an immature buck and doe taken at the sack of the Summer Palace, P'ekin, and was afterwards obtained in the wild state in the Ussuri district of North-eastern Manchuria, when it received the name of C. dybowskii. In the typical Manchurian race ( $C$. hortulomm typicus) there is no dark line down the back; but this is present in the smaller southern race (C. hortulorum kopschi, of the Yang-tsi valley.

| Length on outside curve. | Circumference. | Tip to Tip. | Widest inside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $34 \frac{1}{ \pm}$ | 5 ${ }_{\text {星 }}$ | $34 \frac{1}{2}$ | 25 ${ }^{\frac{1}{2}}$ | $5+5$ | ? | British Museum (Duke of Bedford). |
| 323 | $5^{\frac{1}{2}}$ | $23 \frac{7}{\frac{7}{3}}$ | 223 | $4+4$ | N.E. Manchuria | - A. I. A. Douglas. |
| $31 \frac{1}{2}$ | $5{ }^{1}$ | $27 \frac{1}{8}$ | 263 | $4+4$ | Do. | Sir Edmund G. Loder, Bart. |
| 27 | 4 ${ }^{\frac{1}{8}}$ | $23 \frac{1}{2}$ | 20 | $4+4$ | Manchuria | Hon. Walter Rothschild. |
| 26 | $3{ }^{3}$ | IS | $15^{\frac{1}{2}}$ | $4+4$ | Do. | E. P. Tennarit. |
| $32 \frac{1}{4}$ | $4^{\frac{1}{2}}$ | $16 \frac{1}{2}$ | 23 ${ }^{\frac{1}{2}}$ | $4+4$ | (Shed antlers) . | Duke of Bedford. |
| 32 | $4^{\frac{1}{4}}$ | 27 | $24 \frac{3}{3}$ | $4+4$ | Do. | Do. |
| $31 \frac{1}{2}$ | 42 | $18 \frac{1}{2}$ | ... | $4+4$ | N.E. Manchuria | Hon. Walter Rothschild. |
| $29 \frac{5}{8}$ | $4 \frac{3}{5}$ | $27 \frac{3}{4}$ | 21 | $5+5$ | Do. | - WV. Banlis. |
| $27 \frac{1}{2}$ | $4 \frac{3}{5}$ | $16 \frac{1}{2}$ | 194 | $4+4$ | Do. | - A. Hardcastle. |
| 26 | $4^{\frac{1}{2}}$ | $\cdots$ | $\cdots$ | $5+4$ | (Shed antlers) . | W. Winans. |



Dybowski's Stag in summer coat, with the antlers in velvet.
Photographed by the Duchess of Bedford.


Head of Barasingha.

The BARASINGHA or SWAMP-DEER (Cervus [Rucervus] duvauceli).
This species belongs to the rucervine group, in which the antlers lack a bez-tine, and apparently also a trez; the beam being regularly forked, and each branch again dividing, so that there are at least four tines. The gland on the hind-leg is absent or represented by a tuft.

In the swamp-deer the antlers are smooth and flattened, with a long brow-tine rising almost at right angles to the beam, which is undivided for about half the total length of the antler, and then splits into a fork, each branch being usually simply forked, but sometimes divided in a


Head of Barasingha, from the Central Provinces, with antlers approximating to the Thamin type.

From the Proceedings of the Zoological Society for 1899 .
more complicated manner. General colour bright rufous brown, often speckled near the back. Height at shoulder, from 3 feet 8 inches to 3 feet 10 inches; weight, about 400 lbs .

Distribution.-India, exclusive of Ceylon.

| Length on outside curve curve． | Circum－ ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside． | Points． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $4{ }^{1}$ | 61 | 351 | 3 S | $S+5$ | Central Provinces | Capt．W．W．Hancock． |
| 41 | $5{ }^{3}$ | 32 | $37 \pm$ | S＋7 | Do． | Col．C．B．Wood． |
| 41 | 5 ${ }^{\frac{1}{2}}$ | （one a brol |  | $6+6$ | Do． | Major C．S．Cumberland． |
| 391 | 5 | $35^{\frac{1}{2}}$ | 373 | $5+6$ | Do． | Do． |
| 383 | $5^{\frac{1}{2}}$ | （shed an | ntlers） | $6 \div 5$ | Do． | C．F．Egerton． |
| 3 S | $4{ }^{3}$ | $2 S^{5}$ | $33^{\frac{1}{2}}$ | $6+6$ | Do． | J．A．McKee． |
| 38 | $5{ }^{\frac{1}{2}}$ | $35 \pm$ | $36 \frac{1}{2}$ | $7+7$ | Do． | R．J．Purcell． |
| $-38$ | ．．． | 43 | $\ldots$ | $6+6$ | Do． | J．D．Inverarity． |
| $-37 \frac{1}{2}$ | $4{ }^{\frac{3}{4}}$ | 2 S | 31 | $5+5$ | Do． | Bombay Natural History Society． |
| 373 | 5 | 23 年 | $28 \frac{1}{2}$ | $7+6$ | ？ | Sir Edmund G．Loder，Bart． |
| $36 \frac{3}{4}$ | 6 | $27 \frac{1}{2}$ | $\ldots$ | $8+6$ | ？ | Major Lord Charles M．Nairne． |
| 361 | $4^{\frac{1}{2}}$ | 32 | $20 \frac{1}{3}$ | $5+5$ | ？ | Mrs．Macan． |
| 361 | $5^{\frac{1}{2}}$ | $31{ }^{\frac{1}{4}}$ | 34 | $8+7$ | Kheri | Capt．H．Pelham Burn． |
| $36 \frac{1}{4}$ | $5{ }^{\text {a }}$ | 29 妾 | $26 \frac{1}{2}$ | $7+5$ | ？ | Capt．H．F．Salt． |
| $-36 \frac{1}{4}$ | 5 | 21 | 25 | $6+5$ | Nepal | R．E．Mess，Roorkee． |
| 36 | 5 | $26 \pm$ | $28 \pm$ | $6+5$ | ？ | Major T．M．Ward． |
| 36 | 5 | $29 \frac{3}{4}$ | 33 ${ }^{\frac{3}{5}}$ | $6+5$ | Nepal | British Museum（B．H． Hodgson）． |
| 36 | 4 ${ }^{\frac{1}{2}}$ | 47 | 47 | $6+6$ | Central Provinces | Col．C．B．Wood． |
| －36 | ．．． | 29 | ．．． | $6+6$ | Nepal | J．D．Inverarity． |
| $-36$ | 54 | $32 \frac{1}{2}$ | ．．． | $7+7$ | ？ | Major W．Anstruther Gray． |
| $35^{\frac{1}{2}}$ | 5 | $30 \frac{1}{8}$ | 32 䍃 | $5+5$ | ？ | Lieut．－Col．R．Gordon． |
| 35\％ | $4{ }^{\frac{7}{3}}$ | 27 | 29.8 | ．．． | ？ | Sir Victor Brooke＇s Collection． |
| 35. | $4 \frac{1}{2}$ | 29.1 | 32. | $6+5$ | ？ | Capt．H．J．D．Broughton． |
| $35 \pm$ | 5 | $22 \pm$ | $\ldots$ | $7+6$ | Nepal | H．C．V．Hunter． |
| 35 | $4{ }^{\text {a }}$ | $27 \frac{1}{2}$ | 30.2 | $5+5$ | Tarai | Licut．－Col．E．B．Cook． |
| 35 | $5^{\frac{1}{2}}$ | $31 \frac{1}{2}$ | 34.1 | S＋6 | Central Provinces | Major K．Baker－Carr． |
| 35 | 5 | 291 | $32 \frac{1}{2}$ | $6+6$ | Do． | British Museum． |
| $34 \frac{1}{2}$ | $4{ }^{3}$ | 32 | ．．． | $6+5$ | ？ | Sir Guy Fleetwood Wilson． |
| 34 | $4 \frac{1}{2}$ | $22 \frac{1}{2}$ | 25 等 | $S+7$ | ？ | Capt．S．F．A．Hurt． |
| 33 \％ | 5 | $25 \frac{1}{3}$ | 307 | $8+6$ | ？ | Duke of I＇encrenda． |
| 33 | 5 | 30 | $30 \%$ | $4+4$ | ？ | G．P．Cosens． |



Skull and Antlers of Schomburgk's Deer. From a specimen in the British Museum, presented by the late Mr. Rowland Ward.

## SCHOMBURGK'S DEER (Cervus [Rucervus] schomburgki).

La-ong or La-on, Siamese.
Allied to the preceding, but the antlers smooth, rounded, and more complex ; the brow-tine very long, frequently forked, and arising nearly at right angles to the beam, which is very short, compressed, and regularly forked, with each of the main branches about equally developed and again forking in a similar manner to terminate in long cylindrical tines. General colour uniform dark brown. Height at shoulder, about 3 feet 5 inches.

Distribution.-Siamese territory east and west of the Menam River; also Cambodia west of the Menam River south of Paknampho, and in swamps occasionally on the east ; in fact, chiefly the inland districts east of the Menam River in Northern Siam.

| $\begin{aligned} & \text { Length } \\ & \text { on } \\ & \text { outsive } \\ & \text { curve. } \end{aligned}$ | Circum. ference. | Tip to Tip. | Widest inside. | Points. |  | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 33 | $5:$ | $57 \frac{1}{4}$ | 351 | I I +9 | Siam | . . | British Museum (Rowland Ward). |
| $-3=\frac{1}{8}$ | $5 \frac{1}{1}$ | $27 \frac{3}{4}$ | 29 | $12+11$ | Do. | - . | Sir Edmund G. Loder, Bart. |
| -3 I 古 | $6!\frac{1}{2}$ | 24 | 27.1 | $13 \div 10$ | Do. | - . | Bombay Natural Mistory Society: |
| $-30 \frac{1}{2}$ | ... | $\ldots$ | $\ldots$ | $10 \div 12$ | Do. | . . | American National Collection. |
| 302 | 5 | 15.5 | 33 | $10+10$ | Do. | . . | British Museum. |
| $29 \frac{3}{\frac{3}{1}}$ | $4{ }^{\frac{3}{4}}$ | $2 S^{3}$ | 315 | $10+11$ | Do. | . . | Do. |
| $29 \frac{1}{2}$ | 6 | $19 \frac{1}{2}$ | 27 | $6+7$ | Do. | . . | J. Carr Saunders. |
| $2 S_{2}^{1}$ | 51 | 11 | 293 | $\mathrm{II}+9$ | Do. | . . | Sir Victor Brooke's Collection. |
| $-2 S \cdot 5$ |  | $9^{\prime} 5$ | $2 S \cdot 5$ | $10+9$ | Do. | . . | Indian Museum. |
| 2 S | $4 \frac{1}{2}$ | 193 | 295 | $10+6$ | Do. | - • | Sir Edmund G. Loder, Bart. |
| 27 | $5{ }^{-\frac{3}{4}}$ | 20 | 27爯 | $10+9$ | Do. | . . | J. W. Ford. |
| $26 \frac{3}{4}$ | $6 \frac{1}{4}$ | IS | 301 | $10+8$ | Do. | . . | J. C. Phillips. |
| $26 \frac{1}{2}$ | $5 \frac{1}{4}$ | 23 | $32 \frac{1}{2}$ | I I +9 | Do. | . . | G. L. Harrison. |
| 201 | 4 | $17 \pm$ | 20 | $6+6$ | Do. | . . | Hon. Walter Rothschild. |

- Owner's measurements.


## The THAMIN or ELD'S DEER (Cervus [Rucervus] eldi).

Although belonging to the same group as the two preceding species, this deer is readily distinguished by the peculiar form of the antlers. These are rounded and rough, with a long curved brow-tine, forming a continuation of the curve of the beam, which is set at right angles to the pedicle; the beam unbranched for some distance, much curved, and finally forked, with the outer prong more subdivided than the inner. Height at shoulder, about 4 feet 3 inches; weight, from 2 Io lbs. to 245 lbs . There are threc races of this specics. First, the Burmese thamin (C. cldi typicus), ranging from near Manipur through Burma to the Malay Peninsula, in which the antlers are rounded throughout, and the coat is uniformly umber-brown. Secondly, the Manipur thamin (C. eldi cornipes), in which the under surface of the fetlock is horny instead of hairy. Thirdly, the Siamese thamin (C. eldi platyceros), from Siam and Hainan, in which the tips of the antlers are flattened with a number of small snags, and the coat is redder, with yellowish spots. Swamp-deer from the Central Provinces show a remarkable approximation in the form of their antlers to the present species, as shown in the figure on page 55 .

Length on outside Circum- Tip to
curve, not
including ference. brow-tine.

| $4^{2}$ | 5 | 24 | 29 | $3+2$ | Burma | A. H. Collins. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 41 | $5 \frac{1}{2}$ | $27 \frac{5}{8}$ | 36 | $5+5$ | Upper Burma . | Maj.-Gen. O. E. P. Lloyd. |
| -4I | $5 \frac{1}{4}$ | 30 | 36 | $5+7$ | Do. | Col. G. H. Evans. |
| $40 \frac{1}{2}$ | 5 | 251 | $34 \frac{1}{2}$ | $7+6$ | Do. | A. B. Roberts. |
| $40 \frac{1}{4}$ | 5 | 30.1 | $36 \frac{3}{4}$ | $6+5$ | ? | C. B. Smales. |
| 40 | 51 | $21 \frac{3}{4}$ | 2 S | $5+5$ | Upper Burma . | Maj.-Gen. H. D'U. Keary. |
| 40 | $5 \frac{1}{2}$ | 21 | 321 | $6+5$ | Do. | Col. H. Appleton. |
| $-39 \frac{3}{4}$ | 5 | $25 \frac{1}{2}$ | $35^{\frac{1}{2}}$ | $7+6$ | Do. | S. E. F. Jenkins. |
| $39 \frac{5}{8}$ | 5 | $20 \frac{1}{4}$ | $30 \frac{1}{2}$ | $6+6$ | Burma | Col. J. W. A. Morgan. |
| ${ }^{1} 39$ 产 | 5 | 315 | $36 \frac{5}{8}$ | $\stackrel{20}{\text { (small points) }}$ | Siam | Sir Edmund G. Loder, Bart. |
| $-39^{\frac{1}{2}}$ | 5 | 29 ${ }^{\frac{3}{4}}$ | 37 | 12 | Burma | Major E. W. M. Purvis. |
| $-39 \frac{1}{2}$ | $\ldots$ | $21 \frac{1}{2}$ | 33 | $\ldots$ | Do. | Lieut.-Col. H. de H. Haig. |
| -39 | $7 \frac{1}{2}$ | $22 \frac{1}{2}$ | 29 | $10+10$ | Manipur . | Lieut. - Col. H. S. Wood. |
| -39 | 5 | 41 | ... | $5+5$ | Lower Burma | W. O. Hannyngton. |
| 387 | $6 \frac{1}{4}$ | $25 \frac{1}{2}$ | $30 \frac{3}{8}$ | $16+19$ | ? | British Museum. |
| $38 \frac{1}{4}$ | $6 \frac{1}{4}$ | 24 | $30 \frac{3}{4}$ | $6+5$ | Manipur | British Museum (Hume Collection). |
| $38 \frac{1}{4}$ | 5 | $21 \frac{1}{2}$ | 297 | $7+7$ | Burma | P. Grace. |
| 38 | $4{ }^{\frac{5}{8}}$ | $29 \frac{1}{1}$ | $36 \frac{3}{4}$ | $5+5$ | Pegu | G. R. Radmore. |
| 38 | $4 \frac{1}{2}$ | $20 \frac{1}{2}$ | 32 | $5+4$ | Burma | H. F. Hall. |
| 37 | 5 | $23 \frac{3}{4}$ | 31 $\frac{1}{2}$ | $4+4$ | Do. | Major C. S. Cumberland. |
| 37 | 6 | $\ldots$ | $37 \frac{1}{4}$ | $\cdots$ | Do. | Capt. J. A. F. Field. |
| 363 | $4{ }^{\frac{3}{4}}$ | 16 | 27 | $4+4$ | Do. | Major L. E. Hoplins. |
| 363 | $4{ }^{3}$ | 22 | 27 | $7+5$ | Do. | Capt. M. E. Lloyd. |
| $36 \frac{1}{2}$ | $4^{\frac{1}{2}}$ | $22 \frac{5}{3}$ | $29 \frac{1}{2}$ | $5+4$ | Do. | H. Twyford. |
| $36 \frac{1}{2}$ | $4 \frac{1}{2}$ | 242 | 283 | $5+4$ | Do. | W. S. Powell. |
| 36 | $4 \frac{1}{2}$ | 23 | 31 | $10+9$ | Do. | Capt. H. W. Marsden. |
| 36 | $4 \frac{3}{4}$ | $29 \frac{1}{4}$ | $31 \frac{1}{4}$ | $4+3$ | Manipur . | Capt. L. P. Haviland. |
| 36 | 5 | $\cdots$ | $\ldots$ | $4+4$ | ? | Duke of Bedford. |
| 36 | $4^{\frac{1}{2}}$ | 25 | $33^{\frac{1}{4}}$ | $7+5$ | ? | L. G. Nunes. |
| 36 | 5 | 31年 | 37 | $6+4$ | Burma . | Sir Robert Harvey, Bart. |
| 3512 | $4^{\frac{1}{2}}$ | $22 \frac{1}{4}$ | 31 ${ }^{\frac{1}{4}}$ | $6+6$ | Kyaikto, Lower Burma | J. W. Clough. |

Length
on outside Circuin- Tip to
curve, not ference. Tip. including brow-tine



Skull and Antlers of Thamin. From a Burmese specimen.

OWNER'S MEASUREMENTS.
Extreme length
of right antler
round the out- Circum- Tip to Widest Number of side curve, high.ference. lip. span. Joints. est print, to tip
of brow-tinc.



Head of Sambar.

The SAMBAR DEER (Cervus [Rusa] unicolor).
The typical representative of the rusine group of deer, in which the antlers are rounded and three-tined, the bez and apparently the trez being wanting, and the summit of the beam forked. The relatively long tail is bushy, the tear-gland and the pit in the skull for its reception are large, and the upper ends of the nasal bones of the skull expanded. In the typical sambar the height reaches to 5 feet at the shoulder. Antlers large and rough, with the brow-tine given off at an acute angle to the beam, and the two terminal tines of nearly equal length. Hair coarse and shaggy, uniformly dark umber-brown, with some chestnut on the buttocks, in the adult. Face-glands very large, and capable of being turned inside out. Ears large, and the tail relatively long and bushy. Young uniformly coloured or spotted.

Distribution.-The wooded districts of India, Ceylon, the Malay countries, the Philippines, Formosa, Bonin Island, and parts of China.

## A.-INDIAN SAMBAR (C. unicolor typicus).

Size very large, young uniformly coloured ; weight, about 600 lbs ., when cleaned 4 I 5 lbs .

A pair of antlers, from the Central Provinces, measured 48 inches along the curve inside (= nearly 50 inches on outside curve) ; they were sent to Mr. A. O. Hume by Mr. R. Blewitt.

Distribution.-The wooded districts of India and Ceylon.

| Length outside curve | Circum ference above brow-tin | $\begin{aligned} & \text { Tip to } \\ & \text { Tipp }_{\text {Tip }} \end{aligned}$ | Widest inside. | Points. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $50 \frac{1}{5}$ | $7 \frac{1}{2}$ | 24 | $3 \mathrm{~S} \frac{1}{2}$ | $3+3$ | Bhopal |  | Col. H. H. Shahzada |
| 4 S | 7 | Single <br> speci |  | 3 | Khandesh |  | R. H. Madan. |
| -473 | $\ldots$ | ... | $28 \frac{1}{2}$ | $\ldots$ | Cent. Provinces . |  | A. P. Perceval. |
| $-46 \frac{5}{5}$ | ... | 49 | ... | $3 \div 3$ | Do. |  | R. Wordsworth. |
| $46 \frac{1}{2}$ | 6 | 363 | 415 | $3+3$ | Do. |  | Duncan J. A. Campbell. |
| $46 \frac{1}{2}$ | 612 | IS | 29 | $3+3$ | United Provinces |  | A. V. Willcox. |
| $46 \frac{1}{2}$ | 63 | $24 \frac{1}{8}$ | $30 \frac{7}{5}$ | $3+3$ | Cent. Provinces . |  | British Museum (Hume Collection). |
| $-46 \frac{1}{2}$ | $\ldots$ | 45 | $\ldots$ | $\ldots$ | Garhwal |  | R. M. Nash. |
| 46 | 9 | ... | $\ldots$ | $\ldots$ | ? |  | C. J. Lucas. |
| $45^{\frac{1}{2}}$ | 7 | 174 | $28 \frac{3}{2}$ | $3+3$ | ? |  | E. R. Loder. |
| $-45 \frac{1}{1}$ | 71 | 38 | $42 \frac{1}{2}$ | $3 \div 3$ | Saugor, C.P. |  | Lieut.-Col. R. W. Mapleton. |
| $45^{\frac{1}{8}}$ | 65 | 178 | 3218 | $3+3$ | - ? |  | British Muscum (Dr. H. Falconer). |
| 45 | 7 , | $22 \frac{1}{2}$ | 33\% | $3+3$ | Mayoghur, Cent. vinces |  | Sir John Morris. |
| 45 | 73 | 8 | $\ldots$ | $3+3$ | ? |  | D. R. Wright. |
| :-45 | $\ldots$ | $\ldots$ | ... | ... | Cenl. Provinces |  | Bombay Natural History Socicty. |
| -45 | 9 | ... | ... | ... | Orissa |  | H.H. the Maharaja of Trarancore. |
| -45 | 8 | rick | cl uph <br> . Jones | Dr. | Cent. I'rovinces (?) |  | Heighway Jones. |
| 44 | 6 | 26 | $32 \frac{1}{2}$ | $3+3$ | ? |  | L.icut.-Col. F. Jollie. |
| 443 | 53 | 33 年 | 351 | $3+3$ | ? |  | L. W. Reynolds. |
| $44 \frac{1}{n}$ | 77 | $44 \%$ | $45 \frac{7}{5}$ | $3+3$ | Rangeer |  | Col. W. J. Morris. |

1 This is the measurement of only a portion of a Sambar anter, and was recorded in the fournal of the liombay Fiatural fistory Society, iii. p. 228. The animal was shot by Mr. K. (;illect in the Central Jrovinces, but got a*ay minus this fiece of his antler.


Frontlet and Horns of Sambar, shot by the Hon. J. Best.
Spread, $49 \frac{1}{\frac{1}{4}}$ inches.


| Length on outside curve. $\qquad$ | Circum ference above brow-tine. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 415 | 7 | 283 | $3+\frac{3}{4}$ | $3+3$ | ? | Ifon. Walter Rothschild. |
| $41 \frac{1}{2}$ | $7{ }^{\frac{1}{2}}$ | $27 \frac{1}{2}$ | $\ldots$ | $3+3$ | Cent. Provinces . | Capt. Lord Charles Bentinck. |
| $41 \frac{1}{2}$ | $6 \pm$ | $30 \frac{1}{2}$ | $36 \frac{1}{2}$ | $4+4$ | Do. | P. Jay. |
| $41 \frac{1}{2}$ | $5 \frac{1}{4}$ | 22 | 243 | $3+3$ | Do. | Capt. W. O. Gibbs. |
| $41 \frac{1}{2}$ | 6 | $12 \frac{1}{2}$ | 233 | $3+3$ | Do. | Lieut.-Col. T. M. Ward. |
| 363 | $6 \frac{1}{8}$ | $35^{\frac{1}{2}}$ | $\begin{aligned} & 32 \\ & \text { Spread } \end{aligned}$ | $\begin{array}{r} 8+6 \\ d, 49 \pm . \end{array}$ | Do. | Hon. J. Best. (See illustration.) |

## Ceylon Specimens.

| Length <br> on <br> ouside <br> curve.Circum. <br> ference <br> above <br> brow-tine. | Tip to <br> Tip. | Widest <br> inside. | Points. | Owner. |  |
| :---: | :---: | :---: | :---: | :--- | :--- |
| $32 \frac{1}{2}$ | $6 \frac{1}{4}$ | 24 | $26 \frac{1}{2}$ | $3+3$ | A. R. Hay. |
| $31 \frac{1}{2}$ | 5 | 20 | 17 | $4+3$ | Lieut. Col. G. E. Hale. |
| -30 | $8 ?$ | $21 \frac{1}{2}$ | $19 \frac{5}{8}$ | $3+3$ | J. Ryan. |
| 29 | $4 \frac{1}{2}$ | 25 | $22 \frac{1}{4}$ | $3+3$ | Earl Cairns. |
| $27 \frac{1}{4}$ | $4 \frac{1}{4}$ | $16 \frac{3}{4}$ | 20 | $3+3$ | A. M. Naylor. |



Frontlet and Antlers of Malay Sambar.
Drawn from a Burmese specimen in the British Museum.
B.-MALAY SAMBAR (C. unicolor equinus).

This local race is nearly as large as the Indian sambar, but the antlers are generally shorter and thicker, with the hind or inner tine of the terminal fork much shorter than the front one, and arising as a spur from the inner hind margin of the beam, of which the front tine forms the direct continuation; the brow-tine is also generally longer. General colour of coat of adult darker, usually a light ring round the eyes, the ears smaller, often with a white margin, and the tail very bushy. Young spotted. The distributional area extends from Assam and Cachar through Burma and the Malay Peninsula to Siam, Hainan, Borneo, and perhaps Sumatra.


OWNER'S MEASUREMENTS.

| 42 | S | 2 S | ... | $\ldots$ | Upper Burma. | H. Shaw Dunn. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $34 \frac{3}{4}$ | $S_{4}^{3}$ | 203 | $25 \frac{3}{4}$ | $3+3$ | Do. | A. L. Bacon. |
| 321 | $7{ }^{-\frac{1}{2}}$ | $24 \frac{7}{8}$ | $27 \frac{1}{4}$ | $3 \div 2$ | Burma . | Major-Gen. O. E. P. Lloyd. |
| 32 | 73 | 203 | $23 \frac{3}{4}$ | $\cdots$ | Upper Burma . | H. L. P. Walsh. |
| 31 等 | 6 | $24 \frac{3}{4}$ | 26 | $3+3$ | Do. | B. Lentaine. |
| $30 \frac{1}{2}$ | $5!$ | 273 | ${ }^{1} 30$ | $3+3$ | Burma | Col. G. H. Evans. |

1 Outside.

## C.-FORMOSAN SAMBAR (C. unicolor swinhoei).

This race is very closely related to the preceding, from which it is distinguished by its shorter head, concave profile, longer limbs, and certain differences in colour ; the lower part of the legs being brownish or whitish yellow, and the bushy tail black all round. It is confined to the island of Formosa.

| 1. $\cdot$ ngt on out side curve. | Circumference. | Tip to 1 ip . | l'oints. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 19.3 | $\cdots$ | 9 | $3+3$ | British Museum. |
| 17 | $4 \frac{1}{6}$ | ... | 5 | Huke of heelford. |
| $-17$ | 4 | $10 \frac{1}{2}$ | $3+3$ | Sir Edmund G. Loder, Bart. |
| $16 \frac{1}{k}$ | 38 | 16 | $3+3$ | Mritish Museum. |

[^4]
## D.-LUZON SAMBAR (C. unicolor philippinus).

Nearly allied to the two last, the height at the shoulder being probably from 33 to 35 inches, the build stout and massive, with the hind-quarters specially elevated, and the form that of a small Malay sambar. On the head is a blackish streak starting from over each eye to form a line down the middle of the face separated by a band of pale fawn from a moustache-like dark mark on the muzzle.
Distribution.-The island of Luzon, in the Philippines; introduced into the Marianne Islands, specimens from which have been described as a separate species under the name of $C$. mariannus.

| Length <br> on <br> outside <br> curve. | Circum. <br> ference. | Tip to <br> Tip. | Points. | Locality. | Owner. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 21 | $4 \frac{3}{4}$ | $5^{\frac{1}{2}}$ | $3+3$ | Luzon . | . | Sir Edmund G. Loder, Bart. |
| $19 \frac{5}{8}$ | $5^{\frac{1}{2}}$ | $7^{\frac{1}{2}}$ | $4+4$ | Do. . | . | British Museum. |
| $18 \frac{3}{8}$ | $5 \frac{1}{8}$ | $14 \frac{3}{9}$ | $4+3$ | Do. | . | Do. |

## E.-BASILAN SAMBAR (C. unicolor nigricans).

Smaller than the last, the height at the shoulder in a mounted specimen in the British Museum being 27 inches. Detached antlers indicate, however, larger animals.

| Length <br> on <br> outside <br> curve. | Circum- <br> ference. | Tip to <br> I'ip. | Points. | Locality. | Owner. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $13 \frac{1}{2}$ | $4 \frac{3}{8}$ | J2 $2 \frac{1}{8}$ | $3+3$ | Basilan Island | . | British Museum (A. H. Everett). |
| $13 \frac{1}{8}$ | $4 \frac{1}{2}$ | $11 \frac{5}{8}$ | $3+3$ | Do. | . | . |

> F.-SZE-CHUAN SAMBAR (C. unicolor dejeani).

A large race from North-western China, with very massive antlers, which show a tendency to develop small supplemental snags.

| Length outside curve. | Circumference. | Tip to Tip. | Widest inside. | Points. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 31 | 6 | 22 | 24 ${ }^{\frac{1}{2}}$ | $3+3$ | N. W. China |  | Hon. Walter Rothschild. |
| $-308$ | 512 | $15 \frac{3}{8}$ | I $8 \frac{1}{2}$ | $3+3$ | Sze-chuan |  | Paris Museum (type). |



Antlers of Javan Rusa.
From a specimen in the collection of Sir Edmund G. Loder, Bart.

## The RUSA DEER (Cervus [Rusa] hippelaphus).

General form, coat, and colour sambar-like; but the ears smaller, the tail thin, the hairs on the back banded with coloured rings, and the under-parts, chin, and inner sides of buttocks whitish. Antlers comparatively slender and only moderately rough, with the brow-tine medium or short, and making a large acute angle with the beam ; the hind or inner tine of the terminal fork much longer than the front or outer one, and forming the continuation of the beam, from the front or front outer surface of which the brow-tine arises as an offshoot; the two antlers enclosing a lyrate space. Young, uniformly coloured. There are two races of this species-one the Javan rusa (C. hippelaphus typicus) of the approximate size of a red deer, and the other the Moluccan rusa (C. hippelaphus moluccensis), from Celebes and
the Moluccas, said to be smaller, and without a distinct mane on the neck or tuft to the tail.

## A.-JAVAN RUSA (C. hippelaphus typicus).



## B.-MOLUCCAN RUSA (C. hippelaphus moluccensis).

|  | Circum. ference. | Tip to Tip. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $36 \frac{1}{8}$ | 45 | I $8 \frac{1}{2}$ | $3+3$ | ? | Sir Edmund G. Loder, Bart. |
| $27 \frac{1}{2}$ | $4 \frac{3}{4}$ | $14 \frac{1}{2}$ | $3+3$ | ? | Duke of Bedford. |
| ¢ ${ }^{3}$ | 4 | $5^{\frac{1}{8}}$ | $\ldots$ | Batchian. | British Museum (A. R. Wallace). |



Frontlet and Horns of Chital. Shot by the Hon. J. Best.

## The CHITAL or AXIS DEER (Cervus [Axis] axis).

This beautiful species is distinguished from all the other members of the rusa-like deer, except the Philippine spotted deer (C. alfredi), by the body being profusely spotted with white at all seasons and all ages; the general colour of the upper-parts being light rufous fawn, with a dark stripe from the nape to the tip of the tail and a black band on the muzzle. Height at shoulder, from 36 to 38 inches; live-weight estimated at about 200 lbs . Antlers supported on short pedicles, long, slender, and moderately rough ; the brow-tine making nearly a right angle with the beam, and the front tine of the terminal fork, which forms the continuation of the beam, much the longer.

The Ceylon chital (C. axis zeylanicus) has relatively small and light antlers, and also differs somewhat in coloration from the large typical race of Central India. There is also a small continental form (C. axis minor).

Distribution.-India and Ceylon.


Length on Circumfer－ outside ence above The first to Tip．Points． curve．point．

| $38 \frac{1}{2}$ | 4 | 25 | $5+5$ | Mandla ． | Hon．Walter Rothschild． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $-38 \frac{1}{4}$ | $4 \frac{3}{4}$ | $19^{\frac{1}{2}}$ | $3+3$ | Asirgarh Jungle， Central Provinces | Lieut．－Col．M．Cust． |
| 38 | $4 \frac{3}{4}$ | 18 | $3+3$ | East Berar ． | Brig．－Gen．F．H．Whitby． |
| 38 | $4 \frac{1}{4}$ | 20 | $4+4$ | Do． | ，Major－Gen．H．D＇U．Keary． |
| 38 | 42 ${ }^{\frac{1}{2}}$ | 22 | $4+4$ | ？ | Col．A．Pollock． |
| 37⿺𠃊⿳亠丷厂彡 | $3 \frac{3}{4}$ | 19 | $3+3$ | Siwalik Lills | Major B．R．M．Glossop． |
| $37 \frac{1}{2}$ | $4^{\frac{1}{4}}$ | 243 | $4+4$ | Bassim，C．P．． | British Museum（Hume Col－ lection）． |
| 371 | 41 | 21 | $4+3$ | ？ | Major A．D．Greenhill－Gardyne． |
| $37 \frac{1}{4}$ | $4 \frac{1}{1}$ | 16\％ | $4+5$ | ？ | Sir Victor Brooke＇s Collection． |
| $37 \frac{1}{4}$ | 4 ${ }^{\frac{1}{4}}$ | 17 | $4+4$ | United Provinces | ．A．Courthorpe． |
| $-37 \frac{1}{4}$ | 4 ${ }^{\frac{1}{2}}$ | $12 \frac{3}{4}$ | $4+4$ | ？ | J．C．Phillips． |
| 371 | 4 | $21 \frac{1}{2}$ | $3+3$ | Central Provinces | ．A．P．Jack． |
| $36 \frac{3}{4}$ | 4 | 203 | $4+4$ | Do． | J．A．Mckee． |
| 361 $\frac{1}{2}$ | $4^{\frac{1}{2}}$ | 20 | $5+5$ | Do． | ．Hon．J．Best．（See illustration， p．70．） |
| $36 \frac{1}{2}$ | $4 \frac{1}{2}$ | 25 | $4+3$ | Berar | C．H．Seely． |
| $35 \frac{3}{4}$ | 4 | $19 \frac{3}{4}$ | $3+3$ | Central Provinces | －Major G．T．M．Bridges． |
| $35^{\frac{1}{2}}$ | $4 \frac{1}{4}$ | $18 \frac{1}{3}$ | $4+4$ | ？ | Sir Edmund G．Loder，Bart． |
| $35 \frac{1}{2}$ | 4 | $12 \frac{1}{4}$ | $5+5$ | ？ | G．W．Hatch． |
| $35^{\frac{1}{2}}$ | 4 | 3212 | $3+3$ | ？ | Capt．R．Tudor Owen． |
| $35^{\frac{1}{2}}$ | 3量 | 19 | $3+3$ | ？ | Col．H．Denys． |
| －35 | $3 \frac{3}{1}$ | $17 \frac{1}{4}$ | $3+3$ | Ceylon | R．Wilson． |
| $-34 \frac{1}{2}$ | $4 \frac{5}{8}$ | $19 \frac{1}{4}$ | $3+3$ | Do． | ．F．J．S．Turner． |
| $-34 \frac{1}{4}$ | $\cdots$ | $\ldots$ | $3+3$ | Do． | ．G．A．Burney． |
| －333 | $4 \frac{5}{16}$ | $14{ }^{7}$ | $3+3$ | Do． | ．J．P．Ireson． |
| －33 ${ }^{\frac{1}{8}}$ | $3 \frac{15}{15}$ | $\cdots$ | $3+3$ | Do． | ．A．J．Wickwar． |
| $-32 \frac{3}{4}$ | $4^{\frac{1}{2}}$ | 24 | $3+3$ | Do． | ．E．M．Biggs． |
| $-32$ | 488 | 143 | $3 \div 3$ | Do． | J．G．Napier． |
| 32 | 31 | 192 | $3+3$ | Do． | ．W．J．Smith． |
| 312 | 4 | 13 | $3+3$ | Do． | M．J．Alderson． |
| $-31 \frac{1}{2}$ | $3 \frac{3}{4}$ | $17 \frac{1}{2}$ | $3+3$ | Do． | Count Scheibler． |
| $31 \frac{1}{2}$ | 3 | $10 \frac{1}{2}$ | $3+3$ | Do． | ，A．R．Hay． |
| $-31 \frac{1}{4}$ | 35 | 17 | $3+3$ | Do． | ．G．B．Vernon． |
| $-31 \frac{1}{4}$ | 3 | 9 | $3+3$ | Do． | ．1H．Storey． |
| $30 \frac{1}{2}$ | $3 \frac{1}{2}$ | $10_{4}^{1}$ | $3+3$ | Do． | －Major F．H．N．Pym． |



Head of Hog-Deer.

The HOG-DEER or PARA (Cervus [Hyelaphus] porcinus).
In the group typified by the hog-deer the antler-pedicles are long, the bulla of the skull is large, and the pit for the face-gland much less deep than in the sambar group, while the nasal bones are not expanded superiorly, and the tail is shorter. In the Philippines the group (Hy'elaphus) is represented by the Philippine hog-deer C. calamienensis, and by the species named C. culionensis. The Indian hog-deer is not dissimilar to the Bavian deer, but the antlers are larger, the build longer and lower, and the summer coat of the adult, as well as that of the young, spotted with yellowish white. General colour in winter rufous or yellowish brown, somewhat speckled above, and much darker beneath ; in summer, upper-parts paler and more or less spotted. Antlers on long pedicles, with the hind tine of the terminal fork the shorter. Height at shoulder, from about 25 to 29 inches; weight, about 90 to 100 lbs . A pair of antlers belonging to a specimen shot by Mr. A. O. Hume in the Ganges Khadir, near Meerut, measured 20 inches along the beam inside, and had a mid-beam girth of 3.5 inches.
Distribution.-India, throughout the Indo-Gangetic plain from Sind and the Punjab to Assam, thence through Sylhet to Burma, Tenasserim, and Siam. The Siamese race ( $C$. p. hecki) differs from the typical hog-deer by its superior size and the absence of spots.

| Length on <br> outside <br> curve. | Circum- <br> ference above <br> brow-tine. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :--- |
| $-23 \frac{1}{4}$ |  |  |  |  |

## The BAVIAN DEER (Cervus [Hyelaphus] kuhli).

A small deer allied to the hog-deer, standing about 27 inches at the shoulder, of light build, and of a uniform brown colour, without a dark stripe down the back.

Distribution.-The Bavian Islands, between Borneo and Java.

| Length on <br> outside curve. | Circum- <br> ference. | Tip to Tip. | Widest <br> inside. | Points. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $9 \frac{3}{4}$ | $2 \frac{7}{8}$ | $10 \frac{7}{8}$ | $10 \frac{7}{8}$ | $3+3$ | British Museum. |



Head of Fallow Deer.

## The FALLOW DEER (Dama vulgaris, or Dama dama).

Antlers normally without a bez, but with a trez-tine, above which the beam is palmated, with numerous snags on the hind edge. Coat spotted with white in summer (except in the black breed), with a blackbordered white area in the neighbourhood of the long tail. Height at shoulder, about 3 feet; weight, about 140 lbs . clean. ${ }^{1}$ The original distribution includes Greece, Spain, Portugal, Anatolia, Rhodes, Sardinia, Asia Minor, Northern Palestine, and North-western Africa, but the species has been introduced into Great Britain and some other countries. In Spain wild fallow abound in Estremadura, especially in the province of Cáceres; in Asia Minor they are found along the south coast as far as Adana, and at one spot in the interior; whether they still exist in North Africa is doubtful.

| Length on out－ side curve． | Circum－ ference． | Tip to Tip． | Spread inside． | Points． | Width <br> of Palm． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 32 | $4 \frac{1}{8}$ | I 8 | 28 | $12+10$ | $5^{1}$ | Woburn | Duke of Bedford． |
| $-31 \frac{1}{2}$ | $\ldots$ | 31 | $28 \frac{1}{2}$ | $\ldots$ | $\ldots$ | ？ | Ernest Ritter von Wisely． |
| ${ }^{1} 3 \mathrm{I}$ | 5 | ．．． | ．．． | 30 | 7 | ？ | Sir Victor Brooke＇s Collec－ tion． |
| $-30 \frac{1}{2}$ | 5 | $10 \frac{1}{2}$ | $20 \frac{1}{4}$ | $13+11$ | 5 | ？ | J．C．Phillips． |
| ${ }^{2} 30$ | $4^{\frac{3}{4}}$ | 23 ${ }^{\frac{1}{2}}$ | $26 \frac{1}{2}$ | 10＋9 | 4 ${ }^{\frac{1}{2}}$ | Drummond Castle | J．G．Millais． |
| 30 | 35 | $\ldots$ | 22 $\frac{1}{8}$ | $12+12$ | $\ldots$ | Uppark，Sussex | J．E．Harting． |
| 30 | 4 | $19 \frac{1}{4}$ | 24 | II +11 | 6 |  | Douglas M＇Douall． |
| －30 | $4 \frac{1}{2}$ | 22 | $\begin{gathered} 37 \\ \text { outside } \end{gathered}$ | $16+10$ | 7 | Drummond Castle | J．G．Millais． |
| 29.3 | 4 ${ }^{\frac{1}{2}}$ | $22 \frac{3}{4}$ | $25^{\frac{1}{2}}$ | $9+8$ | 5 | ？ | Capt．H．T．Timson． |
| $29 \frac{1}{2}$ | 5 | ．．． | $28 \frac{1}{2}$ | $13+14$ | 7 | Petworth，Sussex | J．G．Millais． |
| 2913 | $4 \frac{3}{8}$ | $\ldots$ | 248 | $10+15$ | $\ldots$ | Drummond Castle | Earl of Ancaster． |
| $29 \frac{1}{4}$ | 4\％ | $\ldots$ | $\ldots$ | $14+11$ | 8 | Woburn | Duke of Bedford． |
| $29 \frac{1}{4}$ | $4 \frac{1}{8}$ | $\ldots$ | 193 | $16+15$. | $\ldots$ | New Forest | Hon．G．Lascelles． |
| $-28 \frac{3}{1}$ | $6 \frac{3}{4}$ | $\ldots$ | $29 \frac{1}{2}$ | 20 | 63 | Bohemia | W．Winans． |
| $-28 \frac{1}{2}$ | 4 | I $5 \frac{1}{4}$ | 23 | $9+8$ | $5{ }^{\text {星 }}$ | Essex ． | W．H．Wilson． |
| $28 \frac{1}{2}$ | $4 \frac{1}{8}$ | 18 | 24童 | $8+6$ | 4 | New Forest ． | E．Festus Kelly． |
| ${ }^{3}-28 \frac{1}{2}$ | 4 | $14 \frac{1}{2}$ | 26 | $10+11$ | 6 | Woburn ． | Duke of Bedford． |
| $-28 \frac{1}{2}$ | 5 | $\ldots$ | 30 | 22 | $\cdots$ | Otago，New Zealand <br> （Introduced） | Rev．IV．C．Oliver． |
| ${ }^{4} 28 \frac{1}{2}$ | 4 | $\begin{gathered} \text { Span } \\ \text { outs } \end{gathered}$ | $\begin{aligned} & \text { n } 34 \text { ) } \\ & \text { tside } \end{aligned}$ | 19 | 6 | Colebrooke ．． | Sir Victor Brooke＇s Collec－ tion． |
| 283 | $4{ }^{3}$ | 23 | ， | $18+15$ | $6 \frac{1}{4}$ | ？ | Sir Philip Brocklehurst， Bart． |
| $5^{5}-28$ | $4 \frac{1}{4}$ | 26 | 26 | 23 | $\ldots$ | Surrenden Park | W．Winans． |
| $27 \frac{1}{2}$ | $4 \frac{1}{4}$ | $15 \frac{3}{4}$ | $20 \frac{1}{2}$ | $8+9$ | $4 \frac{3}{4}$ | Windsor | Sir Charles Wakefield． |
| $27 \frac{1}{4}$ | 4 | 23 | ．．． | $10+8$ | $\ldots$ | England | J．Carr Saunders． |
| 267 | $3{ }^{3}$ | 12 | $17 \frac{1}{2}$ | $10+7$ | $\ldots$ | ？ | British Museum． |
| $-26 \frac{1}{2}$ | $4^{\frac{1}{4}}$ | $23 \frac{1}{2}$ | 20－1 | $9+7$ | $5^{\frac{7}{8}}$ | Perthshire | A．Basil Brooke． |
| 26 | $3{ }^{\frac{3}{4}}$ | 81 | 23 ${ }^{\frac{1}{2}}$ | $7+7$ | 5 | ？ | G．L．Harrison． |
| －26 | 5 | $20 \frac{3}{4}$ | $23 \frac{3}{4}$ | $10+10$ | 4 ${ }^{\frac{1}{2}}$ | Tasmania．（Intro－ duced） | T．W．H．Clarke． |
| 253 | $3 \frac{3}{}$ | $13 \frac{1}{2}$ | $23 \frac{1}{2}$ | $13+12$ | 5 | ？ | T．G．A．Moncrieffe． |
| ${ }^{6} 25 \frac{1}{2}$ | $3{ }^{3}$ | 173 | $24 \frac{1}{4}$ | $10+10$ | 6 | Surrenden Park | W．Winans． |
| 25 | $3 \frac{3}{4}$ | ．．． | 19 咅 | $8+8$ | $\ldots$ | Epping Forest | E．N．Buxton． |
| 25 | $3 \frac{1}{2}$ | $15^{\frac{1}{2}}$ | $\ldots$ | $10+10$ | 4 | Northamptonshire | H．H．the Maharaja of Bikanir． |
| －24 | $3{ }^{\frac{1}{2}}$ | 27 | $21 \frac{1}{2}$ | 23 | ．．． | Surrenden Park ． |  |

－Owner＇s measurement：－
1 Recorded by J．G．Millais（Bratish Dev＇r and their Horns）． 2 Weight of antlers， 8 lbs .1 oz．on skull ；no lower jaw（Millais，Britis／2 Deer）．

[^5]

Head of Mesopotamian Fallow Deer. From a specimen in the British Museum.

## The MESOPOTAMIAN FALLOW DEER (Dama mesopotamica).

Larger and brighter coloured than the ordinary fallow deer, with the spots near the middle of the back tending to form longitudinal stripes, and the tail wholly white. Antlers of a totally different type, being somewhat expanded at the origin of the trez-tine (which is large, and situated some distance above the short brow-tine), but at the summit only moderately flattened, and breaking up on the hind border into several snags. Weight, about 24 stone, clean.

## Distribution.-The mountains of Luristan in Mesopotamian Persia and part of Asia Minor.

| $\begin{aligned} & \text { I.ength } \\ & \text { on ollt- } \\ & \text { side } \\ & \text { curve. } \end{aligned}$ | Circum. ference. | Tip to Tip. | Spread inside. | Points: | Widh of l'alm. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $-36 \frac{1}{2}$ | $4{ }^{3}$ | 16.8 | .. | $12+15$ | 5\% | K゙arabogha, Minor | Asia | IF. E. Whittall. |
| -29 | $4 \frac{1}{\mu}$ | $30 \frac{1}{2}$ | $24 \frac{1}{8}$ | $10+11$ | $5 \frac{1}{2}$ | Asia Minor | . | 1)o. |
| 21.3 | $3{ }^{\text {c }}$ | $14 \frac{1}{2}$ | ... | $9 \div 7$ | $\cdots$ | Do. |  | Paris Museum (Abbé David). |
| $20 \frac{1}{4}$ | 5 | 14 | $\cdots$ | $6+5$ | ... | I_uristan Mts. |  | Sir Eidmund G. Loder, Bart. |



Skull and Antlers of extinct Giant Irish Deer (Irish Elk).

## The GIANT IRISH DEER (Dama (?) gigantea).

(Commonly called " Irish Elk.")
An extinct deer, probably standing at least 6 feet at the shoulder, with the antlers enormously expanded, and carrying several large tines on the front border, of which the one above the trez is the longest ; the brow-tine being often flattened and forked. In its typical form this magnificent deer occurs in the Prehistoric deposits of Ireland, England, and probably some of the western districts of the Continent. In the skull the vomer is welded to the adjacent bones. The following specimens are Irish :-

| Spread Tip to Tip. | Length round iuside of antler. | Length of both antlers across skull. | Circum. ference above burr. | Width of Palm. | Points. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{ll} \text { ft. in. } \\ \text { IO } & 2 \end{array}$ | $\begin{aligned} \text { ft. } & \text { in. } \\ 5 & S_{\frac{1}{2}} \end{aligned}$ | ft. in. | $9{ }^{\frac{7}{8}}$ | $19 \frac{1}{4}$ | 19 | British Museum. |
| 98 | ... | $\ldots$ | ... | 20 | $12+11$ | Hon. Walter Rothschild. |
| 96 | $\ldots$ | $\ldots$ | 10 | 17 | $13+10$ | J. G. Millais. |
| 95 | $6 \quad 2$ | 125 | 11 | $21 \frac{1}{4}$ | $11+11$ | Viscount Powerscourt. |
| 95 | 6 o | 1210 | $13^{\frac{1}{2}}$ | $21 \frac{1}{8}$ | $15+13$ | Sir Edmund G. Loder, Bart. |
| 93 | 62 | 135 | 10 | 24 | $12+10$ | Duke of Westminster. |
| 92 | $\ldots$ | 136 | $\ldots$ | 15슬 | $\ldots$ | Mrs. Graham Lloyd. |
| 811 | 510 | ... | $111 \frac{1}{4}$ | 17 | $9+9$ | Viscount Powerscourt. |
|  | 59 | 119 | $9 \frac{1}{4}$ | 17 | 12+11 | Duke of Westminster. |
| S 10 | 510 | 125 | 10 | 18 | $10+9$ | G. C. Whitaker. |

OWNER'S MEASUREMENTS.

| Spread lip to Tip. <br> ft. in. <br> II 9 | Length round inside of antler. ft . in. 710 | Length of both antlers across skull. <br> fi. in. ... | Circum. ference above lunr. $9 \frac{1}{4}$ | Width of Palm. $\text { I } S_{\frac{1}{2}}^{1}$ | Points. | Owner. Public Library, Dublin. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 116 | $\ldots$ | $\ldots$ | $\ldots$ | 20 | $\ldots$ | Marquis of Londonderry. |
| 115 | 63 | $\ldots$ | 93 | 17 | II + I 1 | Dublin Museum. |
| 113 | 7 512 | $\ldots$ | $12 \frac{1}{4}$ | $19 \frac{1}{4}$ | 17 | Mrs. Donaldson-Hudson. |
| $1{ }^{1} 1 \frac{1}{2}$ | 6 911 | $\ldots$ | 94 | $16 \frac{1}{2}$ | 23 | Sir Peter Walker, Bart. |
| 104 | 69 | 1310 | 12 | 20 | $\ldots$ | Earl of Besshorough. |
| 93 | ... | $\ldots$ | $10 \frac{3}{4}$ | 12 | $7+7$ | Duke of St. Albans. |
| 92 | $\ldots$ | 1110 | $10 \frac{1}{4}$ | 223 | $9+9$ | Dublin Museum. |

## The MILU or PÈRE DAVID'S DEER (Elaphurus davidianus).

This deer differs from all the preceding groups by the peculiar form of the antlers, which rise in the plane of the forehead, and fork at a comparatively short distance above the burr, the front prong of the fork again dividing, while the hind prong is long and straight. The bushy tail is longer than in any other deer, and the neck of the male is maned. There is a gland on the outer side of the upper half of the hind cannon-bone, but none on the hock. The colour is uniformly tawny in the adult, but spotted in the young. Height at shoulder, about 3 feet 9 inches. In captivity the antlers are frequently shed twice a year. In the structure of the bones of the feet the milu resembles the red deer group, to which and the barasingha it is considered by Mr. R. I. Pocock to be allied. Mr. Pocock considers that the front prong of the main fork represents the brow-tine of the red deer groups.
Distribution.-Probably northern China or perhaps Kashgaria; recorded in a fossil state from Japan. Unknown in the wild state, and apparently now represented only by the herd at Woburn Abbey, Bedfordshire.


## Hearl of Milu Deer.

| Length on outside curve. | Circum. ference. | Tip to Tip. | Widest inside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| -3I | 6 | $\ldots$ | $\ldots$ | $3+3$ | ? | American National Collection. |
| 31 | $6 \frac{1}{2}$ | $27 \frac{1}{4}$ | $\ldots$ | $3+3$ | ? | Hon. Walter Rothschild. |
| 31 | $4 \frac{3}{1}$ | 23 | $\ldots$ | $7+6$ | ? | British Museum (Duke of Bedford). |
| $-30 \frac{3}{4}$ | 5 | $35 \frac{1}{16}$ | $35 \frac{1}{16}$ | $1 \mathrm{I}+\mathrm{IO}$ | Imperial Park, Pekin | Paris Mluseum (Type specimen). |
| 30 | $5 \frac{3}{4}$ | $24 \frac{3}{}$ | $\ldots$ | $3+2$ | ? | G. L. Harrison. |
| $29 \frac{1}{2}$ | $5 \frac{1}{4}$ | ... | $\ldots$ | $5+5$ | ? | Duke of Bedford. |
| $-29 \frac{1}{4}$ | $6 \frac{3}{8}$ | 29 | ... | $3+2$ | ? | Major W. Anstruther Gray. |
| 281 | $5 \frac{3}{5}$ | $26 \frac{1}{2}$ | $\ldots$ | $3+3$ | ? | Hon. Walter Rothschild. |
| $28 \frac{1}{4}$ | $6 \frac{1}{2}$ | $\ldots$ | $\ldots$ | $8+8$ | Woburn . | Duke of Bedford. |
| 27 | $5^{\frac{7}{8}}$ | $20 \frac{1}{4}$ | $\ldots$ | $6+5$ | Do. | British Museum. |
| $26 \frac{1}{2}$ | $5^{\frac{1}{2}}$ | 16 | $18 \frac{1}{2}$ | $8+7$ | Do. | Royal Scottish Museum. |
| ${ }^{1} 25$ | 5 | $\ldots$ | $\ldots$ | $6+4$ | Do. | Duke of Bedford. |
| . 22 | $4 \frac{5}{8}$ | $\ldots$ | $\ldots$ | $4+3$ | Do. | Do. |
|  |  |  |  | ack tine me | ner's measurements. <br> ured 28 inches from beam of | antler. |

Skull and Antlers of Indian Muntjac.

## The MUNTJAC or BARKING DEER (Cervulus muntjac).

This species is the typical representative of a genus of small IndoMalay deer differing widely from all the foregoing groups. The antlers, which do not usually exceed half the length of the head, have a short brow-tine and an unbranched beam, and are supported on long skin-covered pedicles, continued downwards as convergent ridges on the forehead, whence the name of rib-faced deer. Tufts of bristly hair occupy the position of the antlers in the females. The muzzle has a large naked portion, and although there is generally a pair of glands on the face, there are none either on the hock or the cannonbone. The young may be spotted, but the adults are uniformly coloured. The range of the typical muntjac, which is one of the reddishcoloured species, extends from Ceylon and India through Burma to China, the Malay Peninsula, Sumatra, and Java. Reeves' muntjac (C. reciesi), from China and Formosa, a smaller species, is also reddish, as is Sclater's muntjac (C. sclateri) of Central China, and the Sze-chuan C. lachrymans; C. bridgemani, of Central China, is darker ; in the Tenasserim muntjac ( $C . f e c e$ ) and the larger hairy-fronted muntjac (C. crinifrons) of Eastern China the general hue is dark purplish sepiabrown, with white on the buttocks and under surface of the tail. The average height of the male of the typical species at the shoulder is from 20 to 22 inches, and the weight about 38 lbs ; a female stands about 20 inches and weighs about 32 lbs .

Several local races of the ordinary muntjac doubtless exist. The typical form (C.muntjac typicus) is the Javan animal ; the Burmese race has been distinguished as C. muntjac grandicornis, while the Indian form is known as $C$. m. vaginalis, and the Siamese as $C$. m. curvostylis.

The antlers of the Burmese race are large and massive. The earlier name Muntiacus is often used in place of Cervulus.

|  | Circumference above burr. | Tip to Tip. | Locaity. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $-10 \frac{3}{5}$ | $\ldots$ | ... | Java | H. Van Son. |
| ${ }^{1}-9 \frac{1}{2}$ | 419 | 5 | Singapore . | Sir Edmund G. Loder, Bart. |
| $8{ }_{8}^{7}$ | 3 | $2{ }^{3}$ | Java | M. Maxwell. |
| -85 | $3{ }^{3}$ | 67 | Do. | Dr. Albert von Stephani. |
| ${ }^{1} 7 \frac{5}{8}$ | $4{ }^{\frac{1}{3}}$ | $3{ }^{\frac{1}{3}}$ | Lombok | Hon. Walter Rothschild. |
| $7 \frac{5}{8}$ | 3 | 3 | Siwalik Hills | Major W. E. Stobart. |
| $7 \overline{8}$ | 21 | $1 \frac{3}{4}$ | U. Burma | L. H. Baker. |
| ${ }^{2} 7$ 7 ${ }^{\text {a }}$ | $3{ }^{1}$ | $3{ }^{\frac{7}{5}}$ | Lombok | Hon. Walter Rothschild. |
| 7 | $3{ }^{\frac{7}{8}}$ | $4{ }^{1}$ | Burma | Maj. .Gen. H. D'U. Keary. |
| -63 | $2 \frac{3}{4}$ | $2 \frac{1}{2}$ | Perak | Perak Museum. |
| $6 \frac{3}{4}$ | $2 \frac{1}{4}$ | 3 | Ranikhet. | Surgeon Lieut.-Col. B. W. C. Deeble. |
| 65 | $2{ }^{1}$ | $3{ }^{\frac{1}{8}}$ | Java. | J. C. Van Son. |
| $6 \frac{1}{2}$ | $2{ }^{5}$ | $3{ }^{\frac{1}{2}}$ | Nepal | British Museum (B. H. Hodgson). |
| 61 | $3 \frac{3}{8}$ | 25 | Buxa Duar | Capt. A. O. Creagh. |
| $-6 \frac{1}{2}$ | $2 \frac{1}{2}$ | $3 \frac{1}{8}$ | Namba Forest, Assam | Lieut.-Col. H. S. Wood. |
| $-6 \frac{1}{2}$ | $2 \frac{7}{8}$ | $3{ }^{13}$ | Ranikhet. | Col. E. T. Taylor. |
| -61 | ... | ... | Garo Hills | D. H. Allen. |

## CENTRAL CHINESE MUNTJAC (Cervulus lachrymans sclateri).

About equal in size to the last, with the upper part of the head and fore-neck bright yellow and the body browner than in muntjac. The lower portion of the front of the fore-legs is blackish brown. In the typical C. lachrymans, of Sze-chuan, the head is orange brown, and the limbs are brownish fawn. Weight of male 38 and female 36 lbs .

Distribution.-Central China.

| Length on outside curve of longest antler. | Circumference. | Tip to Tip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $5{ }^{\frac{1}{8}}$ | $2 \frac{1}{2}$ | $3 \frac{3}{5}$ | China |  | Comdr. the Hon. R. O. B. Bridgeman, R.N. |
| 5 | 2 | 3 | Anghwei, China | . | British Museum. |
| $3 \frac{3}{4}$ | 2 | 23 | Tungkuan Shan, China | C. | Comdr. the Hon. R. O. B. Bridgeman, R.N. |
| $2 \frac{1}{2}$ | 15 | 3 | Ningpo . | . | British Museum (R. Swinhoe). |
| $-2 \frac{1}{2}$ | $1 \frac{1}{3}$ | $3{ }^{\frac{1}{4}}$ | Do. | - | Dublin Museum. |



Skull and Antlers of Muntjacs in the collection of Sir Edmund G. Loder, Bart.

The HAIRY-FRONTED MUNTJAC (Cervulus crinifrons).
Length on out-
bide curve of
longest antler.
$1 \frac{1}{2}$
Owner.

I
$4 \frac{1}{2}$
Ningpo
.
British Museum.

## REEVE'S MUNTJAC (Cervulus reevesi).

Length on out-
side curve of longest antler.

| $4 \frac{\pi}{2}$ | $2 \frac{3}{2}$ | Shed | $?$ |
| :---: | :---: | :---: | :---: |
| $3 \frac{1}{2}$ | $2: \frac{1}{2}$ | $3 \frac{1}{2}$ | $?$ |
| $2 \frac{1}{2}$ | $2 \frac{3}{3}$ | $3 \frac{1}{4}$ | Feng Luang Shan |

Locality.
Owner.

Sir Edmund
G. Loder, Bart.
Condr. the IIon. R. O. B. Bridgeman, R.N. Do.

## BRIDGEMAN'S MUNTJAC (Cervulus sinensis = bridgemani).

length on rut-
side curve of
longest intler.

| 5 | 2 | 3 |
| :--- | :--- | :--- |
| ${ }^{1} 3 \frac{5}{5}$ | 3 | 3 |
| ${ }^{1}{ }_{17}^{8}$ | $1 \frac{7}{5}$ | 13 |
| ${ }^{1}{ }_{1}^{3}$ | $\ldots$ | 38 |

locality.
Owher.

Feng Luang Shan
China
Nyanking on the Yangtsi
China

Comdr. the Ilon. R. O. B. Bridgeman, R.N.
Capt. II. L. ArcherItoublon.
Capt. A. 'T. IUunt, R.N.
Comdr. C. L. Lambe, R.N.

1 Determination provisional.


Antlers of Woodland Caribou. From a specimen in the British Museum.

## The REINDEER or CARIBOU (Rangifer tarandus).

Distinguished from all other deer by the presence of antlers in both sexes; those of males being complex, with the brow-tines palmated and often unsymmetrical, and the bez, or second tine, also generally expanded. The muzzle is hairy, the ears and tail are short, and the throat has a fringe of long hair. The coat is very thick, and typically dark cinnamon-brown in colour above, with the limbs, a flankband, and some of the under-parts darker, the neck lighter, and more or less white in the region of the tail, on the under-parts, and fetlocks. In R.t. montanus the whole neck and lower surface are chocolatebrown, but in most American races there is some white in these regions, and R.t. pearyi, of Ellesmereland, is almost wholly white. The false or lateral hoofs are unusually large and spreading ; and there is a patch of long white hair covering a gland on the hock, but none on the hind cannon-bone. Glands between main hoofs. Height at shoulder reaching to 4 feet io inches (Newfoundland). Hinds weigh between 224 and 280 lbs .

Reindeer inhabit the circumpolar regions of both hemispheres, in Europe including Scandinavia, Lapland, and Northern Russia; their southern limit varies from $52^{\circ}$ to $54^{\circ} \mathrm{N}$. latitude, while they extend to between $80^{\circ}$ and $81^{\circ}$ northwards.

Numerous local forms of reindeer are recognised. The more important are: (I) the Scandinavian reindeer ( $R$.tarandus typicus) of Sweden and Norway, which is rather small with moderately expanded antlers; (2) the larger Finnish reindeer ( $R$. t.fenmicus), distinguished by the more vaulted nasal bones; (3) the woodland caribou ( $R$. t. caribou) of the forest districts of Arctic America, characterised by its large size and the short,


Antlers of Woodland Caribou from Nova Scotia. From a specimen in the British Museum.
much-palmated antlers, in which the brow-tines form huge "shovels," one generally much larger than the other ; and (4) the Barren-Ground reindeer ( $R . t$. arcticus), from the open country north of the forests in America, nearly related to the Scandinavian reindeer, and characterised by its small bodily size, and the great length and simple form of the antlers, in which, except on the brow-tine, there is scarcely any palmation. The reindeer of Siberia and Novaia Zemlia, which approximate to the American types, have been named $R$. $t$. sibivicus and $K$. t. pearsoni. Names have been given to numerous American local forms, some of
which tend to connect the Barren-Ground with the woodland type. The Greenland caribou ( $R$. t. gromlandicus) is of the Barren-Ground type, but all the rest are nearer the woodland form. Among these, the Newfoundland R. t. terre-nove has antlers of a very complex type; R. t. montanus and R. t. osborni are mountain-races, probably passing towards R.t. stonci and R. t. granti of Southern Alaska, which have somewhat longer antlers, and thus approach the Barren-Ground type, although they are large animals. Reindeer have brow-tined antlers, but otherwise appear to be related to the American deer.

## A.-AMERICAN SPECIMENS.

| Length on out side curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 62 | $5^{\frac{1}{2}}$ | 40 | $50 \frac{1}{2}$ | $21+17$ | Hudson's Bay | Sir Edmund G. Loder, Bart. |
| 59 | 61 | 29 $\frac{1}{2}$ | $40 \frac{1}{2}$ | $\mathrm{II}+9$ | Yukon | Hon. M. Egerton. |
| 58 | 6 | $27 \frac{1}{4}$ | 41 | 11 +12 | Cassiar | R. Hayne. |
| 58 | $5{ }^{\frac{1}{4}}$ | $40 \frac{1}{4}$ | 45 | $20+14$ | Labrador | H. Hesketh-Prichard. |
| ${ }^{1} 575$ | 53 | $13 \frac{3}{8}$ | ... | $13+7$ | Arctic America | British Museum. |
| 574 | $5{ }^{\frac{3}{4}}$ | 29.4 | 363 | $18+10$ | Yukon | F. C. Selous. |
| 57 | 512 | $16 \frac{1}{2}$ | 2612 | $20+9$ | N. of Davis Strait | Capt. C. R. E. Radclyffe. |
| 553 | $6 \frac{1}{2}$ | 25 | 35 | $23+15$ | Cassiar | Col. L. Parry. |
| ${ }^{2} 553$ | 8 | $\cdots$ | $\stackrel{44}{\text { (outside) }}$ | $26+18$ | Alaska | American National Collection (Reed Collection). |
| 551 | 6 | 28 | 43 | $13+10$ | Stikin River | P. Niedieck. |
| 55 | 6 | 43 | 48 | $12+14$ | Cassiar | F. C. Selous. |
| 55 | 6 | 21 | 35 | $12+10$ | Do. | W. A. Conduitt. |
| 55 | 61 | 19 | 40 | $19+21$ | Do. | F. H. Bailey. |
| $54 \frac{1}{2}$ | $5{ }^{\frac{3}{4}}$ | 373 | $44 \frac{1}{4}$ | $16+13$ | Yukon | Sir A. Armstrong, Bart. |
| 54 | 6 | 28 | 31 ${ }^{\text {爯 }}$ | $18+14$ | Do. | S. R. Vereker. |
| 54 | $5{ }^{\frac{3}{4}}$ | 31 | 389 | $13+16$ | Cassiar | Lord Osborne Beauclerk. |
| 54 | 612 | 29 | 37 | $22+11$ | Alaska | Hon. J. C. Lister. |
| 54 | $4{ }^{\frac{3}{4}}$ | 48 | 52 | $21+14$ | Canada . | D. F. Mackenzie. |
| $53^{\frac{1}{2}}$ | $5 \frac{1}{3}$ | 37 | 453 ${ }^{\text {年 }}$ | $24+14$ | Labrador | K. V. Painter. |
| 53 | 4 ${ }^{\frac{1}{2}}$ | 483 | 54 | $12+11$ | Do. | Hon. Walter Rothschild. |
| $52 \frac{1}{2}$ | 5 | 15 | $26 \frac{1}{3}$ | $17+12$ | N. Canada | J. Talbot Clifton. |



Mr. Hesketh-Prichard's 49-Pointer.

Jength
on out-Circum- Tip to side ference. Tip. curve.

| 52 | $5{ }^{3}$ | 284 | 31 | $15+13$ | E. Yukon | J. Todd. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 52 | 5 | 327 | 37 | $12+11$ | Cassiar | Lord Hindlip. |
| 52 | $5 \frac{1}{2}$ | 6 | 29 | $15+20$ | N. Canada | E. E. P. Cuncliff. |
| $51 \frac{1}{2}$ | 6.1 | 33 | 33 | $12+12$ | Cassiar | F. C. Stern. |
| 513 | $4{ }_{8}^{7}$ | 407 | 483 | $17+14$ | Hudson's Bay | Sir Edmund G. Loder, Bart. |
| 51 | 53 | 27 | 29.1 | $15+15$ | Yukon | A. D. leass. |
| 51 | $6 \frac{1}{2}$ | 251 $\frac{1}{2}$ | 381 | $20+17$ | Cassiar | I'. N. Graham. |
| 51 | 6 | 36 | 40.1 | $16+11$ | Ho. | II. C. Wilson. |
| 51 | $6!$ | 337 | $40 \frac{1}{2}$ | $10+8$ | Do. | J. S. Shepherd. |
| 51 | 6 | 32 | $36 \frac{1}{2}$ | $15+12$ | Do. | M. W. Ward. |
| 51 | 5 | 29.3 | $38 \frac{1}{2}$ | $15+12$ | I) 0 . | Capt. the Mon. G. II. Douglas Pennant. |
| $50 \frac{1}{4}$ | 4.3 | $31 \frac{1}{2}$ | 381 | $10+9$ | Io. | Col. 11. Appleton. |


| Length on out－ side curve． | Circum． ference． | Tip to Tip． | Widest inside． | Points． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 50 | $6 \frac{1}{4}$ | 24 | 35 | $16+13$ | Cassiar ． | Viscount Lascelles． |
| 50 | $5^{\frac{1}{4}}$ | 27 | 38 | $12+11$ | Barren Grounds | A．Barclay Walker． |
| $49 \frac{1}{4}$ | $5 \frac{3}{4}$ | 251 | 363 | $13+12$ | Cassiar | R．Beaumont． |
| $49 \frac{1}{4}$ | $5 \frac{1}{2}$ | 38 | $42 \frac{1}{4}$ | $15+15$ | Do． | C．II．Young． |
| $49 \frac{1}{4}$ | 5 | 30 | 32 | $19+15$ | Labrador | H．Hesketh－Prichard． |
| $49 \frac{1}{4}$ | 63 | 26 | 43 | $18+12$ | Newfoundland | St．George Littledale． |
| 49 | $6 \frac{1}{2}$ | 25 | 34 ${ }^{\frac{3}{1}}$ | $22+18$ | ？ | Sir W．Bass，Bart． |
| 49 | 6 | 26 | 271 ${ }^{\frac{1}{2}}$ | $26+15$ | Yukon ． | H．B．Alexander． |
| 49 | $5 \frac{1}{4}$ | $26 \frac{1}{ \pm}$ | $31 \frac{1}{2}$ | $19+19$ | Do．． | L．Cadbury． |
| $48 \frac{1}{2}$ | $6 \frac{1}{2}$ | 29 | 363 | $20+18$ | Do． | J．Todd． |
| $48 \frac{1}{2}$ | $4 \frac{3}{4}$ | $19 \frac{1}{4}$ | 26⿺𠃊⿳亠丷厂彡 | $24+12$ | Do．． | R．H．Milvain． |
| $47^{\frac{1}{2}}$ | $6 \frac{1}{2}$ | $40 \frac{3}{4}$ | $38 \frac{3}{4}$ | $15+14$ | Itcha Mts．，B．C． | W．Neilson． |
| $47 \frac{1}{ \pm}$ | $5 \frac{3}{4}$ | 243 | 34 | $22+18$ | ？ | C．H．Wilkinson． |
| $46 \frac{1}{2}$ | $5 \frac{3}{4}$ | 32量 | 353 | $18+12$ | Cassiar ． | Major J．F．Church． |
| $46 \frac{1}{2}$ | $6 \frac{1}{2}$ | $16 \frac{1}{2}$ | 28 | 32 | British Columbia | J．Turner－Turner． |
| $46 \frac{1}{2}$ | 5 ${ }^{\frac{1}{2}}$ | $38 \frac{1}{2}$ | 39⿺辶 ${ }^{\frac{1}{2}}$ | $13+10$ | Newfoundland | T．P．Miller． |
| $46 \frac{1}{2}$ | $5^{\frac{1}{2}}$ | $36 \frac{1}{4}$ | 41 | $20+16$ | Do． | Major G．H．A．Ing． |
| $46 \frac{1}{2}$ | $4^{\frac{1}{4}}$ | 26 | 32 | $\mathrm{II}+8$ | Do． | J．T．Lewis． |
| 46 | $4 \frac{1}{2}$ | $24 \frac{1}{2}$ | $31 \frac{1}{2}$ | $15+15$ | Do． | －Capt．H．L．Cottingham． |
| 46 | $5 \frac{1}{4}$ | 263 | 35 | $15+12$ | Do． | H．Charrington． |
| 46 | 512 | 283 | $31 \frac{1}{2}$ | $10+10$ | Do． | R．II．Venables Kyrke． |
| 45 ${ }^{\frac{1}{2}}$ | $5^{\frac{1}{2}}$ | $31 \frac{1}{4}$ | $33^{\frac{1}{2}}$ | $13+12$ | Do． | F．C．Williamson． |
| 45 | $5 \frac{3}{}$ | $18 \frac{1}{2}$ | $37 \frac{1}{2}$ | $17+18$ | Cassiar ． | J．M．Hanbury． |
| $44 \frac{3}{4}$ | $5 \frac{3}{4}$ | ．．． | $29 \frac{1}{3}$ | $29+26$ | Do．． | J．G．Millais． |
| $44^{\frac{1}{2}}$ | $5{ }^{\frac{1}{2}}$ | $18 \frac{3}{4}$ | 3 I | $\mathbf{I I}+8$ | ？ | Major J．E．Platt． |
| 44⿺𠃊 | $5 \frac{3}{4}$ | $20 \frac{1}{4}$ | $26 \frac{1}{4}$ | $10+12$ | Newfoundland | W．R．Greene． |
| 448 | $5 \frac{1}{8}$ | 34 | 37 | $\ldots$ | Do． | C．H．Akroyd． |
| 44 | $5 \frac{1}{4}$ | $31 \frac{1}{2}$ | 37 | $16+13$ | ？ | Sir Robert Harvey，Bart． |
| 44 | $5 \frac{3}{4}$ | 241 | $32 \frac{1}{2}$ | $17+21$ | Newfoundland | J．G．Millais． |
| 44 | $5 \frac{1}{2}$ | $18 \frac{1}{4}$ | 30 | $18+13$ | Do． | Admiral Sir William Kennedy． |
| 44 | 5星 | 19 | $26 \frac{1}{2}$ | $17+14$ | Do． | －Capt．A．G．Allgood，R．N． |
| $43 \frac{1}{2}$ | 5 | 294 | 31 | $18+10$ | Cassiar ．． | Sir Cavendish Boyle． |


| $\begin{aligned} & \text { Length } \\ & \text { ono out- } \\ & \text { side } \\ & \text { curve. } \end{aligned}$ | Circum． ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside． | Puints． | Localits． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $43^{\frac{1}{4}}$ | 53 | $20 \frac{1}{2}$ | 30 | $22+19$ | Newfoundland | A．Alexander． |
| 43 | $5 \frac{1}{4}$ | $17 \frac{1}{2}$ | $22 \frac{1}{2}$ | $15+12$ | Do． | Major C．Hilder． |
| 43 | 5 ${ }^{\frac{1}{2}}$ | $21 \frac{1}{2}$ | $29 \frac{1}{2}$ | $10+8$ | Cassiar | Major R．H．Morgan． |
| $42 \frac{1}{2}$ | 73 | 33 | 381 | $22+18$ | Do． | R．Gordon Smith． |
| $42 \frac{1}{2}$ | $5^{\frac{1}{3}}$ | $26 \frac{3}{4}$ | $30 \frac{3}{4}$ | $23+13$ | Yukon | A．Benitz． |
| $42 \frac{1}{4}$ | $6 \frac{1}{4}$ | $28 \frac{1}{2}$ | $35^{\frac{1}{2}}$ | $24+15$ | Newfoundland | Lieut．H．C．Rawson，R．N． |
| 42 | $6{ }_{6}^{1}$ | 24 | 313 | $17+14$ | Do． | T．A．Armstrong． |
| 42 | $4 \frac{1}{2}$ | 14 | $20 \frac{1}{2}$ | $7+7$ | Quebec ． | Capt．the Hon．G．H．Douglas－ Pennant． |
| 42 | $5 \frac{1}{2}$ | $36 \frac{1}{2}$ | $39 \frac{1}{2}$ | $20+12$ | Newfoundland | Q．C．CoImore． |
| 42 | $5{ }^{\frac{3}{5}}$ | 38 | $41 \frac{1}{2}$ | $10+10$ | Do． | E．C．Russell． |
| 42 | 61 | $20 \frac{1}{2}$ | $30 \frac{1}{2}$ | $13+12$ | Do． | G．C．Whitaker． |
| 41 年 | $5^{3}$ | $15 \frac{3}{4}$ | 25 ${ }^{\text {星 }}$ | $18+15$ | Do． | Prince Nicolas Ghika． |
| ＋1表 | $5^{\frac{1}{2}}$ | 27 | $30 \frac{1}{2}$ | $16+18$ | Do． | Capt．F．Blacker． |
| 41 | $5 \pm$ | 2512 | $28 \frac{1}{2}$ | $14+13$ | Do． | Sir Robert Harvey，Bart． |
| 41 | 6 | 35 | 33 | 20 | British Columbia | Lieut．－Col．C．C．Ellis． |
| 41 | 5 | $28 \frac{1}{2}$ | 32 | $14+17$ | Newfoundland | S．H．Whitbread． |
| $40 \frac{3}{4}$ | 65 | $322 \frac{1}{2}$ | 37 | $20+17$ | Do． | His Majesty the King． |
| 403 | $5^{\frac{1}{2}}$ | 213 | 29 | $13+9$ | Do． | Major S．Upperton． |
| $40 \frac{1}{2}$ | 5 | 32 | $36 \frac{1}{2}$ | $14+9$ | Do． | Sir Philip Brocklehurst，Bart． |
| 40 | $5{ }^{3}$ | 193 | 26 | 12＋11 | Do． | P．B．Vander Byl． |
| 40 | 6 | 312 | $35 \frac{1}{2}$ | $19+14$ | Do． | Admiral Sir William Ǩennedy． |
| 40 | $5^{\frac{1}{2}}$ | 26 | $34 \frac{3}{1}$ | 12＋11 | Do． | Dublin Museum． |

## OWNER＇S MEASUREMENTS．

| 675 | 7 | ．．． | $44 \frac{1}{2}$ | 38 | IIudson＇s liay | J．G．Millais． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 162 | 83 | $\ldots$ | $\underset{\text { (outside) }}{50}$ | $9+15$ | Alaska ． | American National Collection （Reed Collection）． |
| 160 | 74 |  | $\begin{gathered} 43^{\frac{1}{2}} \\ \text { (ounside) } \end{gathered}$ | $20+14$ | Do． | Do． |
| 60 | 6 | $\ldots$ | $50 \frac{1}{2}$ | 43 | Kenai l＇eninsula | W．II．Case． |
| ${ }^{2} 60$ | $\cdots$ | $\ldots$ | $\begin{gathered} 34 \\ \text { coutside) } \end{gathered}$ | $\cdots$ | North Labrador | United States National Museum，Washington． |
| 583 | 81 |  | $\begin{gathered} 39 \frac{1}{2} \\ \text { (outsides) } \end{gathered}$ | $24+16$ | Kenai P＇eninsula | American National Collection． |
| ${ }^{2} 58$ |  |  | ．．． | $\cdots$ | North Lalmador | United States National Muscum，Washington． |

Length
on ont－Circum－Tip to
Widest
side ference．Tip．
curve．

| $57 \frac{1}{2}$ | $5 \frac{3}{4}$ | 363 | 47 | $2 \mathrm{I}+18$ | Alaska | J．C．Phillips． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 57 | $\ldots$ | $\ldots$ | ．．． | $\ldots$ | Cassiar | J．G．Millais． |
| $56 \frac{1}{2}$ | $\ldots$ | ．．． | ．．． | $\ldots$ | Do． | C．Little． |
| 55 | 71 | ．．． | $\ldots$ | $23+22$ | Yukon | Wilson Potter． |
| $54 \frac{1}{2}$ | 53 | 30 | 44 ${ }^{\frac{1}{2}}$ | 31 | Alaska ． | F．T．Colby． |
| 53妾 | 61110 | 44 ${ }^{\frac{1}{2}}$ | 55 | $22+23$ | Yukon ． | C．T．Summerson． |
| 52 | $5^{\frac{1}{2}}$ | ．．． | $\begin{gathered} 39 \frac{1}{2} \\ \text { (outside) } \end{gathered}$ | $1 \mathrm{I}+10$ | Cassiar | American National Collection． |
| 52. | 7 | ．．． | 42 | $17+14$ | Do． | L．H．Green． |
| ${ }^{1} 50 \frac{1}{3}$ | ．．． | $\ldots$ | 45 | ．．． | Do． | American National Collection． |
| $50 \frac{1}{8}$ | 612 | ．．． | 37䍃 | $13+18$ | Do． | Wilson Potter． |
| $49^{\frac{1}{2}}$ | ．．． | $\ldots$ | $\ldots$ | 36 | Do． | Count Chas．Hoyos． |
| ${ }^{2} 49$ | $\ldots$ | $\ldots$ | $\begin{gathered} 39 \\ \text { (outside) } \end{gathered}$ | 22 | W．Coast Greenland | American Museum of Natural History． |
| ${ }^{3} 49$ | $\ldots$ | $\ldots$ | 34 | 36 | ？ | Do． |
| $48 \frac{1}{3}$ | $6 \frac{3}{4}$ | 261 | 34 | 27 | Newfoundland | F．Gillett． |
| 48 | $\ldots$ | $\ldots$ | 43 | 19 | Cassiar | Lieut．R．C．Dalglish，R．N． |
| 48 | $\ldots$ | $\ldots$ | $\ldots$ | ．．． | Do． | Col．Max．C．Fleischmann． |
| 46 | 61 | 39 | 43 | $13+19$ | Newfoundland | G．L．Harrison． |
| ${ }^{1} 44$ | $\ldots$ | $\ldots$ | $\begin{gathered} 39_{2}^{2} \\ \text { (outside) } \end{gathered}$ | 36 | Cassiar | Madison Grant． |
| ${ }^{+}+2 \frac{1}{3}$ | $\ldots$ | $\ldots$ | $\begin{gathered} 29 \frac{1}{2} \\ \text { (ontside) } \end{gathered}$ | 25 | N．W．Coast of Hud－ son＇s Bay | American Museum of Natural History． |
| ${ }^{5} 4 \mathrm{I}$ | $\ldots$ | $\ldots$ | 36 | 36 | Newfoundland ． | Madison Grant． |

## B．－SIBERIAN RACE（R．tarandus sibiricus）．

| Length on out－ side curve． | Circum－ ference． | Tip to Tip． | Widest inside． | Points． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 49 $\frac{1}{2}$ | $4 \frac{1}{2}$ | 28⿺𠃊 | 37 | $16+11$ | Upper Yenisei Valley ． | J．G．Millais． |
| 48 | 5 | 26 | $32 \frac{1}{4}$ | $16+12$ | Do． | J．C．Phillips． |
| 47 $\frac{1}{2}$ | 5 | 203 | 283 | $16+14$ | Do． | British Museum（Natural History）． |
| $46 \frac{3}{1}$ | $4 \frac{5}{8}$ | $20 \frac{1}{4}$ | $30 \frac{1}{2}$ | $12+9$ | Do． | Dublin Museum． |
| 43 | $5^{\frac{1}{2}}$ | 29 | $30 \frac{3}{4}$ | I4＋I I | Do． | Hon．Walter Rothschild． |
| 39 | $5 \frac{3}{4}$ | 261 | 27 | $6+11$ | Bought at Tashkend | Sir Edmund G．Loder，Bart． |
|  |  | R．t．osb | orni． |  | R．t．granlandicus． | 3 R．t．stonei． |

## C．－SCANDINAVIAN RACE．

| $\begin{aligned} & \text { Length } \\ & \text { on out- } \\ & \text { side } \\ & \text { cirve. } \end{aligned}$ | Circum ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest iuside． | Points． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ${ }^{1} 60$ | $5{ }^{\text {\％}}$ | $33^{58}$ | $41 \frac{1}{8}$ | $22+15$ | ？ | Sir V．Brooke＇s Collection． |
| 583 | $4{ }^{3}$ | $24{ }^{\frac{3}{4}}$ | $35^{\frac{8}{4}}$ | $7+7$ | Norway ． | Sir Robert Harvey，Bart． |
| 571 | $5^{\frac{3}{8}}$ | 25 | 39，$\frac{1}{2}$ | $16+19$ | Do． | Do． |
| $55 \ddagger$ | $5 \frac{1}{3}$ | 32 | $37 \frac{1}{2}$ | $17+15$ | Do． | P．B．Vander Byl． |
| $55 \frac{1}{5}$ | $6 \frac{1}{2}$ | 38 | 43 ${ }^{\frac{1}{8}}$ | $18+8$ | Sundal Fjelds，Nor－ way | Capt．Gerard Ferrand． |
| $54 \frac{1}{2}$ | $4{ }^{\frac{7}{8}}$ | 337 | 40 年 | $15+13$ | Norway ．．． | J．H．Thomas． |
| $54 \frac{1}{2}$ | 43 | $32{ }^{\frac{3}{4}}$ | $41^{\frac{1}{2}}$ | $\underline{1 S+13}$ | Do． | H．Hunt． |
| 54 | $4^{\frac{3}{8}}$ | 18 | 32 | $10+5$ | Do． | G．C．M．Dewhurst． |
| 54 | 4 ${ }^{\frac{1}{2}}$ | $2 S^{\frac{1}{2}}$ | 35 | $10+7$ | Do． | R．Persse． |
| 54 | 5 | 22 | $41^{\frac{3}{2}}$ | $16+11$ | Do． | Kenneth M ${ }^{\text {d }}$ Douall． |
| 533 | $4 \frac{1}{2}$ | 26 | $35^{\frac{1}{2}}$ | $12+S$ | Do． | J．M．Hanbury． |
| 53 | 5 | ．．． | ．．． | ．．． | Do． | J．G．Millais． |
| 53 | $4^{\frac{5}{8}}$ | $39 \frac{1}{2}$ | 53 ？ | $15+10$ | Do． | A．Alexander． |
| 53 | 5 | $1{ }^{\text {年 }}$ | 35 | $16+12$ | Do． | H．Hunt． |
| 53 | $4^{\frac{1}{2}}$ | $30 \frac{3}{4}$ | $42 \frac{1}{3}$ | $12+8$ | Do． | R．L．Scott． |
| $52 \frac{1}{2}$ | $4{ }^{\text {星 }}$ | $20 \pm$ | $50 \frac{1}{4}$ | $19+13$ | Do． | C．M．Black． |
| 527 | $4{ }^{3}$ | $22 \frac{1}{4}$ | 41 | $10+9$ | Do． | A．D．Pass． |
| $51 \frac{1}{2}$ | $4{ }^{\text {星 }}$ | 30 | 393 | $16+16$ | Spitzbergen | G．A．Shenley． |
| 51 | $4 \frac{1}{2}$ | 31 | 39\％ | $14+8$ | Norway ． | H．R．H．the Duc d＇Orléans． |
| 51 | $4{ }^{3}$ | $31 \frac{1}{2}$ | $40 \frac{1}{2}$ | $12+6$ | Do． | F．C．Selous． |
| 51 | $4{ }^{\frac{1}{2}}$ | $10 \frac{1}{2}$ | 363 | $12+9$ | Do． | A．Churchill． |
| 50 娄 | $4 \frac{7}{3}$ | 24 | $\begin{gathered} 29 \\ \text { (outside) } \end{gathered}$ | $16+13$ | Io． | H．R．H．the Duke of Saxe－ Colurg and Gotha． |
| 50 | 4 | $27 \frac{1}{2}$ | $40 \frac{1}{2}$ | $11+10$ | Do． | Sir H．Seton－Karr． |
| 50 | 43 | 33 年 | $40 \frac{1}{2}$ | $12+9$ | Do．． | J．C．Maxwell． |

## OWNER＇S MEASUREMENTS．



Extract from a letter of Mr. J. G. Millais, I4th August 1907 :-
" For the purpose of comparison with other local races of reindeer I give the measurements of the twelve best specimens of Newfoundland caribou which I have obtained in the island. In all scientific accounts dealing with the measurements of reindeer antlers no notice is taken of the size of the large brow-shovel, a matter of great importance in determining the respective merits of individual heads. Mere length of antler is not everything in judging the qualifications of deer heads, whilst in this species in particular we must consider beam, span, number of points, symmetry, and size of the large brow-tine, a feature which adds so much to the general character.

| Length <br> on <br> outer <br> curve. | Circum- <br> ference <br> above <br> bez-tine. | Breadth of <br> brow-tine <br> on anterior <br> bargin from <br> base to top <br> front point. | Widest <br> inside. | Points. | Locality. |
| :---: | :---: | :---: | :---: | :---: | :--- |
| 46 | $5 \frac{1}{2}$ | 14 | 3 I | 45 | Tamnapegawi Lake, 1906. |
| 46 | 6 | 14 | 30 | 35 | Upper Gander, 1905. |
| 43 | 7 | $16 \frac{1}{4}$ | 35 | 36 | Shoehill Ridge, 1906. |
| 42 | 6 | $16 \frac{1}{2}$ | 34 | 44 | Upper Gander, 1903. |
| 42 | $5 \frac{1}{2}$ | 15 | $3 I$ | 31 | Resequit Hills, 1906. |
| 40 | 5 | $15 \frac{1}{2}$ | 32 | 38 | Upper Gander, 1905. Picked up. |
| 40 | $5 \frac{1}{4}$ | $15 \frac{1}{2}$ | 39 | 25 | Do. $\quad$ 1905. |
| 38 | $5 \frac{1}{2}$ | 15 | 28 | 35 | Do. 1903. |
| 38 | $5 \frac{1}{2}$ | 18 | $3 I$ | 35 | Millais's Lake, 1902. |
| $37 \frac{1}{2}$ | $6 \frac{3}{4}$ | $17 \frac{1}{2}$ | 33 | 32 | Migwell's Brook, 1905. |
| 36 | 7 | $16 \frac{1}{2}$ | 29 | 49 | Upper Gander, i903. |
| 36 | $6 \frac{1}{2}$ | $13 \frac{1}{2}$ | 38 | 32 | Resequit Hills, 1906. |

" The points of reindeer are difficult to count. No point should be included that does not fulfil the old watchguard or powder-horn test, unless it may be a clean blunt snag at least half an inch from the main horn.
" The Germans count everything as a point upon which a torn piece of paper will rest, but we regard all small excrescences that do not fulfil the old British conditions as of no account. For instance, Captain Cartwright's famous ' 72 point Labrador head,' which I have recently traced, and on which he counted every prominence, has in reality 53 points."

## The ROEBUCK (Capreolus caprea).

(Also known as Capreolus capreolus.)
Roebuck may be recognised by the rudimentary tail, and the mediumsized antlers rising close together and almost vertically from the head, without a true brow-tine, and regularly forking at a point about twothirds the total length, with the posterior prong again subdividing, so that the number of points is usually three. There is no gland or tuft on the hock, but one on the upper part of the outer side of the hind cannon-bone. In the European roe the height at the shoulder is about 26 inches. In winter the coat is dark speckly brown with a large white rump-patch, but in summer foxy red, with little or no white behind. As in the Japanese sika, the white hairs of the winter rump-patch expand under the influence of excitement to form a large disc. The range embraces the greater part of Europe as far as the southern Caucasus, Palestine, and perhaps Persia.

In the typical Scandinavian roebuck there is a yellowish tinge in the winter coat, which is wanting in the greyer Spanish C.c.camus; the Transylvanian C. c. transylvanicus differs from both by the distinct whitish throat and neck patches, while the British C. c. thotti is distinguished from all three by the face being darker than the body.

| Length on outside curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 13 | 4 | 142 | Germany . | Viscount Powerscourt. |
| $12 \frac{1}{2}$ | $\ldots$ | $6 \frac{1}{4}$ | Forfarshire | - J. G. Millais. |
| $12 \frac{1}{4}$ | $4{ }^{3}$ | 9 | Servia | Viscount Powerscourt. |
| 115 | ... | 6 | Monymusk, N.B. | - Sir Arthur Grant, Bart. |
| ${ }^{1} \mathrm{I}$ I ${ }^{\frac{1}{2}}$ | $\ldots$ | $\ldots$ | Orton, Speyside | - Sir J. Macpherson Granit, Bart. |
| ${ }_{11}^{11}{ }_{10}^{10}$ | 6 | 6 | Perth | J. G. Millais. |
| 11 | $7 \frac{1}{4}$ | $\ldots$ | Ross-shire | H. M. Warrand. |
| 1 I | $3{ }^{3}$ | 61 | Dorset | F. Gordon Scott. |
| 11 | $5 \frac{1}{18}$ | $7{ }^{\frac{1}{2}}$ | Ross-shire | H. M. Warrand. |
| ${ }^{1} 11$ | ${ }^{2} 8$ | 8 景 | Germany . | Viscount Powerscourt. |
| ${ }^{1} 1$ | $7{ }^{\frac{1}{3}}$ | $6 \frac{7}{8}$ | Sligo, Ireland | - Sir Josslyn Gore Booth, Eart. |
| 11 | $3 \frac{1}{2}$ | $6 \frac{1}{2}$ | Ballindalloch | G. B. Macpherson Grant. |
| $10 \frac{7}{5}$ | $2 \frac{3}{4}$ | $4 \frac{1}{2}$ | S.-W. Russia | - Count Bobrinskoy. |
| $10 \frac{5}{5}$ | $2 \frac{5}{8}$ | 102 | Austria | - J. R. Luchsinger. |
| $10 \frac{1}{2}$ | $6 \frac{1}{2}$ | 6 | Ballindalloch | - Sir J. Macpherson Grant, Bart. |
| $10 \frac{1}{2}$ | $3 \frac{1}{2}$ | $5^{\frac{3}{4}}$ | Inverness. | C. Macpherson Grant. |

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| 13 | $6 \frac{1}{2}$ | $8 \frac{1}{2}$ |
| :---: | :---: | :---: |
| $12 \frac{1}{8}$ | 3 ${ }^{\frac{3}{1}}$ | $4 \frac{1}{2}$ |
| ${ }^{2} 12 \frac{1}{8}$ | ．．． | ．．． |
| I2． 11 | 6．12 | $5 \cdot 4$ |
| $11 \frac{1}{5}$ | 4 ${ }^{\text {星 }}$ | ．．． |
| 1 I | ．．． | 4量 |
| $10 \frac{1}{2}$ | $3{ }^{\frac{1}{2}}$ | $3 \frac{1}{2}$ |
| $10{ }^{3}$ | $\ldots$ | ．．． |
| ıо | $2 \frac{1}{4}$ | 4 ${ }^{\frac{1}{2}}$ |
| 10 | $2{ }^{3}$ | $5{ }^{3}$ |
| 10 | 4 | 35 |
| $9{ }_{8}^{7}$ | $2 \frac{1}{2}$ | 45 |
| $9{ }^{3}$ | $3{ }^{\frac{1}{4}}$ | 5 |

OWNER＇S MEASUREMENTS．

| Germany | . | . | H．R．H．the Duke of Saxe－Coburg |
| :--- | :--- | :--- | :--- |
| and Gotha． |  |  |  |

Locality．
Austria
H．R．H．the Duc d＇Orléans．
Inverness－shire ${ }^{1}$ ．．J．Hamilton Leigh．
Do．
Perthshire
Austria
R．Persse．
H．R．H．Prince Arthur of Con－ naught．
J．J．de Knoop．
J．Hamilton Leigh．
J．E．Harting．
A．de Zuleta．
J．Hamilton Leigh．
－Sir Josslyn Gore Booth，Bart．
E．S．Hervey．
A．M．Yule．
－HIon．Gerald Lascelles．
－Col．Ralph Vivian．
R．de la Huerta．
G．L．Harrison．
P．H．Thomas．
K．M．Chance．
G．L．Denman．

## MANCHURIAN ROEBUCK (Capreolus bedfordi).

Rather larger than the European species, with the antlers small and slender, the winter coat less brown, and the cheek-teeth taller.

Distribution.-Manchuria and Shen-si ; the Kan-su roe has been separated as $C$. melanotis.

| Length on outside curve. | Circumference. | Tip to 'lip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $13 \frac{3}{8}$ | $4^{\frac{1}{4}}$ | $7 \frac{3}{4}$ | Mongolia | - | G. N. Atkinson. |
| 12 | $3 \frac{1}{ \pm}$ | 7 | W. Kan-su | - | H. F. Wallace. |
| $11 \frac{3}{4}$ | $3{ }^{\frac{1}{2}}$ | $6 \frac{1}{2}$ | Shen-si | . | . K. K. Horn. |
| 108 | $3^{\frac{1}{2}}$ | $5 \frac{1}{8}$ | W. Kan-su | . | G. Fenwick Owen. |
| $10 \frac{1}{2}$ | $3 \frac{3}{5}$ | 5 | Do. | . | - II. F. Wallace. |
| $9^{\frac{1}{4}}$ | 3 | $7 \frac{1}{4}$ | S. of Minusinsk | - | . Sir Edmund G. Loder, Bart. |



Head of Tien Shan Roebuck.

The ASIATIC ROEBUCK (Capreolus pygargus).
Paler and larger than the typical species, the height at shoulder being 30 to 34 inches; the ears shorter and more hairy, the white rumppatch larger, and the antlers longer and more rugose with numerous knotted snags or "pearls."

Distribution.-From the northern Caucasus, the Altai, and mountains of Turkestan to Eastern Siberia. The typical representative is the Altai roebuck. The Tien Shan race ( $C$. p. tionshonicus) has antlers somewhat different in form and more branched. In one type of this race the antlers diverge widely, with 4 or 5 tines each, but in a second the divergence and the number of tines are less.

| Length on outside curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| * $17 \frac{3}{4}$ | 4 | $12 \frac{1}{2}$ | Tien Shan | Hon. Walter Rothschild. |
| 17 | $4 \frac{3}{8}$ | 123 | Do. | Col. C. B. Wood. |
| $16 \frac{1}{3}$ | $3 \frac{1}{2}$ | S5 | Upper Yenisei Valley | - J. Hamilton Leigh. |
| ${ }^{*} 16$ | $4^{\frac{1}{4}}$ | 16 | Tien Shan | . R. F. Glyn. |
| 16 | $4^{\frac{1}{2}}$ | 12 | ? | Viscount Powerscourt. |
| $15 \frac{3}{\text { a }}$ | $3 \frac{5}{8}$ | $16 \frac{1}{2}$ | Siberia | - Count Bobrinskoy. |
| ${ }^{*} 15 \frac{3}{4}$ | $4 \frac{1}{2}$ | $13 \frac{1}{2}$ | Tien Shan | J. V. Phelps. |
| ${ }^{*} 15 \frac{3}{4}$ | $3{ }^{3}$ | 12 | Do. | - Capt. C. M. Threlfall. |
| ${ }^{*} 153$ | 5 | $9 \frac{7}{8}$ | Do. | - J. H. Miller. |
| *15 ${ }^{\frac{1}{2}}$ | $4 \frac{1}{2}$ | $18 \frac{1}{2}$ | Do. | - E. W. Dixon. |
| ${ }^{*} 15 \frac{1}{2}$ | $3{ }^{\frac{1}{2}}$ | 14 | Do. | - Capt. J. N. Price Wood. |
| ${ }^{*} 15 \frac{1}{2}$ | $3^{\frac{1}{2}}$ | 15 | Do. | - P. F. Hadow. |
| ${ }^{*} 15 \frac{1}{2}$ | $4{ }^{\frac{1}{8}}$ | $16 \frac{3}{5}$ | Do. | - Capt. the Hon. G. H. Douglas Pennant. |
| ${ }^{*} 15 \frac{1}{2}$ | 5 | 113 | Do. | . P. B. Vander Byl |
| 151 ${ }^{\frac{1}{2}}$ | 512 | 8 | Siberia | - Sir Edmund G. Loder, Bart. |
| $15 \frac{1}{4}$ | $3{ }^{\frac{1}{2}}$ | ${ }_{1}$ | Do. | - Major W. Anstruther Gray. |
| ${ }^{*} 15 \frac{1}{4}$ | 42 | 11 | Tien Shan | . Lord Osborne Beauclerk. |
| ${ }^{*} 15$ 年 | 4 | 12 | Do. | - T. P. Miller. |
| 15 | $3{ }^{3}$ | 11 | D. | . C. H. Bury. |
| ${ }^{*}{ }^{1} 5$ | 4 | $10 \frac{1}{2}$ | Do. | Prince Colloredo, Mannsfeld. |
| 15 | $3{ }^{3}$ | 15 | Altai | - Royal Scottish Museum. |
| $14 \frac{1}{2}$ | $3{ }^{\frac{3}{1}}$ | $15 \frac{1}{2}$ | Do. | - J. Hamilton Leigh. |
| $14^{\frac{1}{3}}$ | 4 | 15 | Do. | Duke of Bedford. |
| $14 \frac{1}{2}$ | $3{ }^{\frac{1}{2}}$ | $12 \frac{5}{8}$ | Tien Shan | B. Chew. |
| $14 \frac{1}{2}$ | 4 | ${ }_{10}$ | Do. | . Col. A. H. Hussey. |
| $14 \frac{1}{2}$ | $3{ }^{\frac{1}{2}}$ | 151 | Do. | - Major A. D. Greenhill Gardyne. |
| * $14 \frac{1}{2}$ | $3{ }^{1}$ | $13 \frac{1}{2}$ | Do. | - W. R. Read. |

OWNER'S MEASUREMENTS.



Skull and Antlers of Alaskan Elk.
From a specimen in the possession of the Duke of Westminster.

## The ELK or MOOSE (Alces machlis).

Elk are the largest members of the deer tribe, and distinguished by their ungainly form, long limbs, broad, produced, and flabby muzzle (all of which, except a small triangular patch below the nostrils, is covered with hair), the presence of a pendulous hairy organ (the socalled "bell") on the throat of the males, and the form and position of the antlers in that sex. The latter are set on the skull with their bases at right angles to the middle line of the face, and have neither brow nor bez tines. Usually the antlers expand after a short distance into a broad palmation or "shovel," carrying a number of snags on the outer border. In young elk each antler is divided in a fork-like manner into a small front and a larger hind portion. The main hoofs are long and pointed, and the lateral pair large ; there is a gland and tuft of hair both on the hock and hind cannon-bone, the latter being situated high up. The tail is very short. From birth to old age elk are uniformly coloured; the general tint of the hair, which is long, coarse, and somewhat brittle, varying from yellowish grey to deep blackish brown above, with the legs lighter, and being usually darker in the American than in the European race. The height varies from 5 feet

9 inches at the shoulder in Scandinavian examples to as much as 6 feet 9 inches in the Alaskan race ; the weight from 900 to 1600 lbs., that of the antlers being from about 60 lbs . to 100 lbs . The antlers of American elk are more expanded and carry more points than European specimens.

Elk inhabit the forests and marshy districts of Scandinavia, Eastern and Northern Russia, and the Altai ; and in America (where they are invariably known as moose) at the present time are found in Alaska, Montana, Nova Scotia, and New Brunswick. In some localities Scandinavian elk not unfrequently show little or no palmation of the antlers, and thus approximate to the East Siberian form. Elk appear to be nearly related to roebuck.

## A.-AMERICAN and ALASKAN ELK

(A. machlis americanus and A. m. gigas).


| Greatest width． | Length to longest tine． | Circum－ ference above burr． | $\begin{gathered} \text { Tip to } \\ \text { Tip. } \end{gathered}$ | Breadth of palm． | Points． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 583 | 363 | $6 \frac{1}{3}$ | $36 \frac{1}{2}$ | 9 | $9+9$ | Cassiar | Lord Osborne Beauclerk． |
| $58 \frac{1}{2}$ | 45 | $7{ }^{\frac{1}{2}}$ | 42 | $15 \frac{1}{2}$ | $14+14$ | New Brunswick | E．C．Russell． |
| $58 \frac{1}{2}$ | 43 \％ | $6 \frac{3}{4}$ | 35 | $11 \frac{1}{2}$ | $13+11$ | Do． | Lieut．－Col．W．H．Greenly． |
| $57 \frac{1}{2}$ | 38 | 8 | $21 \frac{1}{2}$ | 14 | $18+15$ | Canada | C．H．Akroyd． |
| $57 \frac{1}{4}$ | 36 | $6 \frac{3}{4}$ | $38 \frac{1}{2}$ | 12 | 12＋11 | Cassiar | W．A．Conduitt． |
| $57 \frac{1}{4}$ | 41 | 83 | 35 | II | II＋II | Maine | T．D．M．Cardeza． |
| 57爯 | 35 | $6 \frac{1}{2}$ | 37 | $11 \frac{1}{2}$ | 10 +10 | Yukon | A．D．Pass． |
| $57 \frac{1}{8}$ | $40 \frac{1}{2}$ | 8 | 35 | $13{ }^{\frac{1}{4}}$ | $12+11$ | Maine | J．S．Braithwaite． |
| 57 | 45 | 83 | 38 | $13^{\frac{1}{2}}$ | $10+9$ | Alaska | Hon．J．Cunliffe－Lister． |
| 57 | 41 | 8 | $43^{\frac{1}{2}}$ | 12 | $\mathrm{II}+\mathrm{I} 4$ | Cassiar | Major J．F．Church． |
| $56 \frac{1}{2}$ | $39 \frac{1}{2}$ | 73 | 37 | $13 \frac{1}{2}$ | $14+11$ | ？ | Sir Peter Walker，Bart． |
| 564 | 43 | $7 \frac{1}{2}$ | $37 \frac{1}{2}$ | 11 | $10+12$ | Cassiar | C．H．Young． |
| 561 | $38 \frac{1}{2}$ | $7{ }^{\frac{1}{2}}$ | $30 \frac{3}{4}$ | 15 | 15＋II | Manitoba ． | J．B．M．Thompson． |
| 56 | 41 | 8 | 33 | $12 \frac{1}{1}$ | $16+14$ | Cassiar | R．L．Fenwick． |
| 56 | $42^{\frac{1}{2}}$ | 81 | 39 | 13 | $14+12$ | ？ | Hon．M．Egerton． |
| 551 | 423 | $8 \frac{1}{2}$ | $36 \frac{1}{2}$ | $7 \frac{3}{4}$ | $9+7$ | New Brunswick | Major J．C．B．Statham． |
| 55 | $39 \frac{3}{4}$ | 7 | $36 \frac{1}{2}$ | II | 10 +8 | Cassiar | Col．L．Parry． |
| 55 | $43^{\frac{3}{1}}$ | 8 | 40 | $17 \frac{1}{4}$ | $16+14$ | Alaska | L．Cadbury． |
| $54{ }^{\frac{3}{4}}$ | $36 \frac{1}{2}$ | $6 \frac{3}{4}$ | 41亲 | 9를 | $12+11$ | Cassiar | J．S．Shepherd． |
| $54 \frac{1}{2}$ | 4012 | $7 \frac{1}{2}$ | 35 | 13 | $9+9$ | New Brunswick | A．C．Bell． |
| 54i ${ }^{\frac{1}{2}}$ | 42 | $7 \frac{1}{4}$ | 36 | $11{ }^{\frac{3}{7}}$ | $12+11$ | Alaska | Sir Robert Harvey，Bart． |

## OWNER＇S MEASUREMENTS．

| ${ }^{1} 788 \frac{1}{2}$ | ．．． | ．．． | $\ldots$ | $\ldots$ | ．．． | Yukon |  | Field Museum，Chicago． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ${ }^{2} 77 \frac{1}{2}$ | ．．． | $\ldots$ | ．．． | ．．． | $17+17$ | Alaska | ． | P．Niedieck． |
| 75 | $4 \mathrm{I} \frac{1}{2}$ | $10 \frac{1}{4}$ | $\ldots$ | 215 | $23+19$ | Do． |  | －American National Collec－ tion（Reed Collection）． |
| 75. | $\ldots$ | $\ldots$ | ．．． | $\ldots$ | $\ldots$ | Do． | ． | －Canadian Pacific Collection． |
| $74 \frac{1}{2}$ | ．．． | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | Do． |  | －Chicago Academy of Science． |
| 74 | ．．． | $\ldots$ | $\ldots$ | $\ldots$ | $\cdots$ | Do． | ． | －American Mtiseum of Natural History． |
| 733 | ．．． | $\ldots$ | ．．． | 23 | $24+14$ | Do． | ． | －C．F．Periolot． |
| $71 \frac{1}{2}$ | 49 | $8{ }^{\frac{3}{16}}$ | ．．． | 16 | $20+20$ | Do． | ． | －Sir Edmund G．Loder，Bart． |
| 71 | 48 | $9 \frac{1}{3}$ | $\ldots$ | $17 \frac{3}{1}$ | $18+16$ | Do． | ． | －American National Collec－ tion． |
| 71桨 | 48 | 912 | $\ldots$ | $17 \frac{3}{1}$ | $18+16$ | Do． | ． | Do． |
| 71 | 48 | 8 | 50 | $\mathrm{IO}_{\frac{1}{2}}$ | 21 | Do． |  | －J．C．Phillips． |
| － $69 \frac{1}{4}$ | ．．． | ．．． | ．．． | 26 | $\ldots$ | Do． |  | ．H．C．Thompson． |


| $\begin{aligned} & \text { Greatest } \\ & \text { width. } \end{aligned}$ | Length to longest tine. | $\begin{aligned} & \text { Circum- } \\ & \text { ference } \\ & \text { above } \\ & \text { burr. } \end{aligned}$ | Tip to | Breadth of palm. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 69 | 55 | 11 ? | 37 | 21 | 21 | Alaska | F. B. Tolhurst. |
| 68 呈 | 49 | ${ }_{\text {I }}$ | 36 | $15 \frac{1}{3}$ | $14+14$ | Do. | P. Niedieck. |
| $68 \frac{1}{4}$ | $41 \frac{7}{5}$ | ... | $\ldots$ | 16 | ${ }^{17}$ | New Brunswick | Dr. Munro. |
| 67 | 453 | $8{ }^{1}$ | $45^{\frac{1}{2}}$ | 12 | $\underline{18+11}$ | Alaska | F. T. Colby. |
| 67 | ... | $\ldots$ | $\ldots$ | ... | 23 | Do. | J. H. Whitehouse. |
| 66 | $38 \frac{1}{2}$ | 912 | 44 | 14 | 28 | New Brunswick | S. Decatur. |
| $64 \frac{1}{2}$ | $47 \frac{1}{8}$ | $8{ }_{8}^{7}$ | 459 | $15{ }^{\frac{1}{4}}$ | 31 | ? | Grahamstown Mus |

## B.-EUROPEAN ELK (A. machlis typicus).

The Ural Elk has been distinguished as $A$. m. uralensis.

| Greatest width. | Length to longest tine. | Circum <br> ference above burr. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Breadth of palm. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $48 \frac{3}{1}$ | $30 \frac{1}{2}$ | 8 | 44 | 5 | $4+4$ | Norway | Capt. W. W. Pitt-Taylor. |
| 48 | 31 | 7 | $34 \frac{3}{4}$ | 83 | $10+9$ | Do. | G. J. Van Heek. |
| 48 | 32 | 8 8 | $37 \frac{1}{2}$ | 11 丕 | $10+9$ | Nr. St. Petersburg | Prince E. Demidoff. |
| 47 $\frac{1}{2}$ | 307 | 63 | 323 | 9 I | $10+10$ | Norway | D. W. Stobart. |
| ${ }^{1} 46$ | 303 | $6 \frac{1}{2}$ | 43 | $10 \frac{1}{2}$ | 15 | Do. | Abel Chapman. |
| $44^{\frac{1}{4}}$ | $30 \frac{1}{8}$ | $7 \frac{1}{8}$ | $29 \frac{1}{2}$ | 10 | $9+8$ | Do. | Sir Victor Brooke's Collection. |
| ${ }^{2} 44$ | 31 ${ }^{\frac{3}{4}}$ | $7 \frac{1}{4}$ | 35 | $10 \frac{1}{4}$ | $\mathrm{II}+8$ | Stuttberg. | O. Greaves. |
| $43^{\frac{1}{2}}$ | 29 | $7{ }^{\frac{1}{2}}$ | $\ldots$ | $10 \frac{1}{2}$ | 24 | Norway | Sir Peter Walker, Bart. |
| $43{ }^{3}$ | 32 | 6 |  | $9^{\frac{1}{2}}$ | $7+8$ | Russia | British Museum (Sir Edward Caley). |
| $43^{\frac{1}{4}}$ | $25 \frac{1}{2}$ | $5 \frac{1}{4}$ | 35 | 3 | $6+6$ | Norway | F. H. Nye. |

OWNER'S MEASUREMENTS.

| 52 | 32 | 7 | ... | 9 | $9+9$ | Norway | - H, J. Elwes. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $5 \mathrm{I}^{\frac{3}{4}}$ | 33 | $8 \frac{1}{2}$ | 361 | $15 \frac{1}{4}$ | 10 +10 | Do. | Capt. Gerard Ferrand. |
| 49 | ... | ... | 35 | 6 | $8+8$ | Sweden | J. A. M'Mullen. |
| 46 | $32 \frac{1}{2}$ | $7 \frac{1}{2}$ | 33 | $11 \frac{1}{2}$ | $10+10$ | Do. | Capt. Gerard Ferrand. |
| 45 | 31 | 7 | 28 | $\ldots$ | 17 | Do. | S. Ratcliff. |
| $43 \frac{1}{4}$ | $28 \frac{1}{2}$ | 6 | $33 \frac{1}{4}$ | II | $12+10$ | Lithuania | Prince Radziwill. |



Antlers of East Siberian Elk, from the Hon. Walter Rothschild's specimen.

## C.-EAST SIBERIAN ELK (A. machlis bedfordiæ).

This race shows a marked tendency to absence of palmation in the antlers, which usually have four or five large tines on each side. Certain antlers from East Siberia are, however, distinctly palmated, but appear to differ somewhat in form from ordinary European specimens.

| Greatest <br> width. | Length to <br> longest <br> tine. | Circum- <br> ference <br> above <br> burr. | Tip to <br> Tip. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :--- |
| $42 \frac{1}{2}$ | $30 \frac{1}{2}$ | $7 \frac{1}{2}$ | 28 | $6+5$ | Siberia . | Hon. Walter Rothschild. |
| $39 \frac{1}{2}$ | $26 \frac{1}{2}$ | 8 | 37 | $4+3$ | Do. . | . British Museum. |
| $37 \frac{1}{2}$ | $31 \frac{2}{4}$ | 8 | 32 | $5+4$ | Do. . | . Hon. Walter Rothschild. |



Head of White-tailed Deer. Shot by Mr. G. Graham-Clarke.

## The WHITE-TAILED DEER (Mazama [Odocoileus] virginiana).

Exclusive of the wapiti, all the deer of America are distinguished from those of the Old World, except elk and roebuck, by the structure of the bones of the feet, as they also are by the form of the antlers, which are either regularly forked or spike-like. In the white-tailed deer the antlers are large and complex, with a long sub-basal snag, and the front prong of the main fork developed at the expense of the hind one, and carrying a number of snags on its upper surface. Tail long. A gland-tuft on the hock, and a small cylindrical white one with a black centre near the lower end of the hind cannonbone. Colour of upper-parts chestnut in summer and bluish grey in winter, with the under surface of the tail and the buttocks pure white. Typically from Eastern North America, where the height at the shoulder reaches to 3 feet i inch, but represented by numerous races in other parts of the continent, which gradually decrease in size and complexity of antlers towards the south, where they extend to Peru, Bolivia, and Guiana. Weight of a specimen of the typical race shot by Mr. Selous, 12 st. 7 lbs .

Mazama is the oldest name for the American deer, and may be
employed if all are included in one genus. If they are split up, Mazama is the title for the brockets, while the white-tail and its allies may be called Odocoileus, a name originally based on a fossil tooth of the typical species.

## A.-NORTHERN RACES (M. virginiana typica, etc.).

This typical race inhabits Virginia, its range including eastern N. America from Ontario and Maine to Florida, and westward to the Missouri. In Canada and New England it is replaced by the larger and greyer $M$. v. borealis; and there are several other races in the States.

| $\begin{aligned} & \text { Length } \\ & \text { ont } \\ & \text { outside } \\ & \text { curve. } \end{aligned}$ | Circum. ference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 278 | $5{ }^{3}$ | Single antler | $\ldots$ | 16 | N. America . | - British Museum. |
| $27 \frac{1}{1}$ | $5^{\frac{1}{2}}$ | $9{ }^{\frac{1}{2}}$ | 19 | $8+6$ | New Brunswick | G. Graham-Clarke. (See illustration.) |
| $27 \frac{1}{8}$ | $4{ }^{3}$ | $14 \frac{1}{4}$ | 19 | $6+6$ | N. America | British Museum. |
| 263 ${ }^{\text {崖 }}$ | $4{ }^{\frac{3}{1}}$ | $9 \frac{1}{8}$ | 20 | 20 | Do. | - Major James Grant. |
| 261 | $5^{\frac{1}{2}}$ | $4{ }^{\frac{3}{4}}$ | $17 \frac{1}{4}$ | $13+13$ | Ontario | W. S. Browne. |
| 26 | 4 ${ }^{\frac{1}{2}}$ | $5 \frac{1}{1}$ | 18 | $8+7$ | Maine | T. D. M. Cardeza. |
| 26 | $4{ }^{\frac{1}{5}}$ | 9 | $16 \frac{1}{2}$ | $6+6$ | ? | C. A. Kitson. |
| $25^{3}$ | $4{ }^{\frac{1}{2}}$ | 9 | 19 | 11 | Maine | - H. S. Wellcome. |
| 25 | 5 | $12 \frac{1}{8}$ | ... | $6+10$ | ? | British Museum. |
| 25 | 5 | $6 \frac{7}{8}$ | 19 | $6+5$ | E. Kootenay, B.C. | Col. A. Charlesworth. |
| $24^{\frac{1}{2}}$ | $4{ }^{\frac{1}{2}}$ | $12 \frac{3}{8}$ | $18 \frac{1}{2}$ | $6+6$ | ? | J. Carr Saunders. |
| 23 3 | $4{ }^{\frac{3}{1}}$ | $7 \frac{1}{2}$ | $18 \frac{1}{2}$ | $4+4$ | New Brunswick | . W. H. Lindsay. |
| 23 年 | $4{ }^{\frac{1}{4}}$ | 65 | 17 | $6+5$ | Do. | Capt. E. C. Hamilton. |
| 23 | 5 | 5 | 16 | $6+6$ | British Columbia | - J. Turner-Turner. |
| 23 | $4 \frac{1}{2}$ | 14 | $20 \frac{1}{2}$ | $7+5$ | Canada. | . J. A. Douglas. | OWNER'S MEASUREMENTS.




Head of Mexican White－tailed Deer in the Collection of ${ }^{\bullet}$ Major W．Anstruther Gray．

## B．－MEXICAN WHITE－TAIL（M．virginiana lichtensteini）．

This is one of the smaller races of the species，the height at the shoulder ranging from about 33 to 36 inches，and the antlers being usually smaller and simpler than in the northern race．
Distribution．－Mexico．In Northern Mexico this race is represented
by the Texan $M . v$ ．texana，and in the extreme south by $M . v$ ． tolteca，which does not turn red．The Central American specimens entered below belong to other races．

| $\begin{aligned} & \text { Length } \\ & \text { on out- } \\ & \text { side } \\ & \text { side } \end{aligned}$ | Circum ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside． | Points． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 135 | $3 \frac{3}{8}$ | $6 \frac{7}{8}$ | $11{ }^{\text {星 }}$ | $3+3$ | Sonora | British Museum． |
| 13 年 | $3{ }^{5}$ | 7 | $1{ }^{1} \frac{1}{8}$ | 4＋4 | Venezuela | Hon．Walter Rothschild． |
| $11{ }^{\text {量 }}$ | 3 | $4^{\frac{1}{2}}$ | 9 9 | $3+3$ | Costa Rica | Sir Edmund G．Loder，Bart． |
| 84 | $2 \frac{1}{8}$ | $4{ }^{\frac{3}{4}}$ | 65 | $3+4$ | Mexico | Sir Victor Brooke＇s Collection． |
| OWNER＇S MEASUREMENTS． |  |  |  |  |  |  |
| $18 \frac{1}{2}$ | $\ldots$ | $9{ }^{\frac{1}{2}}$ | $\ldots$ | $5+4$ | Sonora | J．C．Phillips． |
| $16 \frac{1}{2}$ | $4{ }^{\frac{1}{4}}$ | ．． | $14 \frac{1}{2}$ | 4＋4 | Rio－Frio Mts．，Mexico | Pio Noriega． |
| 14 | $3{ }^{\frac{1}{2}}$ | 9 | ．．． | ．．． | Sonora | Major W．Anstruther Gray． |



Head of Mule-Deer.

## The MULE-DEER (Mazama [Odocoileus] hemionus).

Antlers with a much shorter sub-basal snag than in the whitetailed deer, beyond which the beam is directed outwards for a short distance, and then curves upwards to form a regular fork, both prongs of which are usually equal, and generally subdivide so as to form five points on each side. Ears large and heavy; tail short and small, naked below basally, with a black tip. Gland-tufts on hock and cannon-bone coloured like the leg; the latter of these elongated and situated on the upper half of the cannon-bone. General colour of upper-parts yellowish tawny in summer, brownish or rufous speckled grey in winter, with a brown horse-shoe mark on the forehead. Height at the shoulder, 3 feet 3 or 4 inches in the typical form. Weight (exceptional), 17 stone 2 lbs. (F. C. Selous).

Distribution.-The greater part of North America westward of the Missouri, extending from British Columbia to California. There are several local races, among which the South Californian MT. hemionus peninsula is one of the smallest.


Head of Mule-Deer from Colorado, in the possession of Mr. H. A. James.

| Length on outside curve. | Circumference. | Tip to Tip. | Widest inside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 34 | 5 | 18 | 213 | $19+18$ | Wyoming | J. G. Millais. |
| 305 | $5 \frac{3}{4}$ | $18 \frac{3}{1}$ | 24 $\frac{1}{2}$ | $5+5$ | ? | W. Moat. |
| 30 | 53 | $\cdots$ | 4 I | 17 | White River, Colorado | H. A. James. |
| 285 | 4 $\frac{1}{2}$ | 13 本 | $17 \frac{3}{4}$ | $5+5$ | Wyoming | Ford G. Barclay. |
| $28 \frac{1}{2}$ | 5 | 183 | 21 | $6+4$ | British Columbia | J. McI. M'Iver Campbell. |
| $28 \frac{1}{2}$ | $\ldots$ | $\ldots$ | $24 \frac{1}{2}$ | $\ldots$ | White River | Major Maitland Kirwan. |
| 28 | 5 | 20 | $23 \frac{1}{1}$ | $7+6$ | Wyoming | J. Hall. |
| 28 | $4 \frac{1}{4}$ | $22 \frac{1}{2}$ | $24 \frac{3}{4}$ | $6+6$ | Do. | H. A. C. Darley. |
| $27 \frac{3}{4}$ | 6 | I $5 \frac{1}{4}$ | $19 \frac{1}{4}$ | $9+6$ | British Columbia | G. Wrey. |
| $27 \frac{1}{2}$ | $5 \frac{3}{4}$ | 143 | $24 \frac{1}{2}$ | $6+5$ | Do. | Hon. Walter Rothschild. |
| $27 \frac{1}{1}$ | 5 | $14 \frac{1}{2}$ | $24 \frac{3}{\frac{3}{4}}$ | $6+5$ | Do. | C. W. Janson. |
| $27 \frac{1}{4}$ | $4 \frac{1}{4}$ | $15 \frac{1}{4}$ | $26 \frac{1}{4}$ | $5+5$ | North America | T. L. Fisher. |


| Length on outside curve. | Circum. ference. | Tip to Tip. | Widest inside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 27 | $5 \frac{1}{4}$ | 1912 | 215 | $6+5$ | North America | Sir Edmund G. Loder, Bart. |
| 27 | $5^{\frac{1}{4}}$ | $19 \frac{1}{2}$ | 223 | $5+5$ | British Columbia | . D. H. Crake. |
| 263 | $4{ }^{\frac{3}{4}}$ | 195 | 201 | $5+5$ | Wyoming | - Ernest Farquhar. |
| $26 \frac{1}{2}$ | 5 | I $5 \frac{1}{2}$ | I81 | $6+5$ | British Columbia | - T. P. Kempson. |
| 261 | $5{ }^{3}$ | $\ldots$ | 171 $\frac{1}{2}$ | 12 | Wyoming | . Lord Rendlesham. |
| $26 \frac{1}{4}$ | $6 \frac{1}{4}$ | $13{ }^{\frac{1}{4}}$ | 18 | $5+4$ | British Columbia | . A. H. Goodall. |
| 26 | 5 | $15 \frac{1}{4}$ | 192 | $4+4$ | Do. | J. V. Colby. |
| 251 | 4 ${ }^{\frac{1}{2}}$ | $12 \frac{3}{4}$ | $16 \frac{3}{4}$ | $5+5$ | Sierra Nevada | P. Grace. |
| 2512 | $5^{\frac{1}{2}}$ | $\ldots$ | $21 \frac{1}{2}$ | 8 | British Columbia | . Sir Peter Walker, Bart. |
| $25^{\frac{1}{2}}$ | $4 \frac{1}{4}$ | 27 | 29 | $5+5$ | Wyoming | . Lieut. -Col. G. J. Fitzgerald. |
| 253 | 4 ${ }^{\frac{1}{8}}$ | 19 | 20 | $5+5$ | Do. | - A. H. Pollen. |
| $25 \frac{1}{4}$ | 5 | $7 \frac{1}{2}$ | 191 | $8+6$ | ? | W. A. Warren. |

OWNER'S MEASUREMENTS.

| $32 \frac{1}{8}$ | 6 | $26 \frac{3}{4}$ | $44 \frac{1}{8}$ | 25 | B. Columbia | . | H. Whiting. |
| :--- | :--- | :--- | :--- | :---: | :--- | :--- | :--- |
| 32 | 6 | 26 | $\ldots$ | $2 \mathrm{I}+19$ | Wyoming | . | . C. R. F. Lutwidge. |
| $30 \frac{1}{4}$ | $6 \frac{1}{2}$ | $18 \frac{1}{4}$ | 30 | $12+\mathrm{II}$ | Alberta . | . | . N. J. Dinnen. |
| $29 \frac{1}{2}$ | $5 \frac{3}{4}$ | 25 | $25 \frac{1}{4}$ | $8+5$ | Montana . | . | J. C. Phillips. |
| 29 | $6 \frac{1}{2}$ | $29 \frac{1}{2}$ | $\ldots$ | $8+6$ | Do. | . | . E. S. Cameron. |

## The BLACK-TAILED DEER (Mazama [Odocoileus] columbiana).

Nearly allied to the mule-deer, but of inferior size, with relatively smaller ears and finer hair ; but specially characterised by the shorter gland and tuft on the hind cannon-bone, and the larger and longer tail, of which the upper surface is black and the lower mostly white.
Distribution.-Western North America, from Alaska, British Columbia, and Vancouver to California. The Alaskan race (M.c. sitkensis) has the upper surface of the base of the tail coloured like the back; in the Californian M. c. scaphiotus the general colour is paler and the ears are larger.

| Length <br> on out- <br> side <br> curve. | ference. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | | Tip to |
| :---: |
| Tip. | | Widest |
| :---: |
| inside. | Points. $\quad$ Locality. $\quad$ Owner.

## OWNER'S MEASUREMENTS.

| 22 | $4 \frac{1}{1}$ | $\ldots$ | ${ }^{2} 22$ | $\ldots$ | Vancouver | Clive Phillipps-Wolley. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 21 | 5 | 159 | 15 | $5+5$ | N.E. California | H. C. Nelson. |
| $20 \frac{1}{4}$ | 5 | 17 | 17 | $5+7$ | Do. | A. E. Leatham. |
| 1913 | 53 | ... | 21 | $5+5$ | ? | Sir W. Gordon Cumming, Bart. |
| 16 | $3{ }^{3}$ | $8 \frac{1}{2}$ | $14 \frac{1}{7}$ | $5+3$ | British Columbia | W. T. Hornaday. |



Frontlet and Antlers of Marsh-Deer.

## The MARSH-DEER (Mazama [Blast,oceros] dichotoma).

Antlers without a sub-basal snag, forking regularly, with both prongs again dividing, and the upper one usually more complex than the lower. Ears large, with white hair internally. Hair long and coarse, reversed on the withers for a short distance. General colour of upper-parts bright rufous chestnut in summer, browner in winter; legs black from the knees and hocks downward. No gland on hind cannonbone. Size, approximately that of a red deer. Although ten is the usual number of points, sports are common.
Distribution-From Brazil to the inner wooded districts of Argentina.

| $\begin{aligned} & \text { Length } \\ & \text { on out- } \\ & \text { side } \\ & \text { curve. } \end{aligned}$ | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside. | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 25 | $5^{\frac{1}{2}}$ | 183 | 218 | $5+4$ | Paraguay | Hon. Walter Rothschild. |
| $24 \frac{1}{2}$ | 5 | 16 | 18 | $5+5$ | Do. | Admiral Sir William Kennedy. |
| $24 \frac{1}{2}$ | $6 \frac{1}{2}$ | 21 | $20 \frac{1}{2}$ | $6+5$ | N. Argentina | J. Todd. |
| $23 \frac{3}{8}$ | $5^{\frac{1}{8}}$ | $15 \frac{3}{1}$ | 161 | $5+4$ | Paraguay | British Museum. |
| 23 号 | 6 | ... | $19 \frac{1}{2}$ | 12 | Do. | G. R. Stuart. |

Length
on out－Circum－Tip to Widest
side ference．Tip．inside．Points．
curve．

| $22 \frac{3}{4}$ | 55 | $17 \frac{1}{2}$ | 183 | $7+6$ | Paraguay | － | Hon．Walter Rothschild． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 225 | $6 \frac{1}{4}$ | 20 | $20 \frac{1}{2}$ | $5+5$ | Brazil |  | Sir Victor Brooke＇s Collection． |
| 223 | $5^{\frac{1}{2}}$ | 25 | $\ldots$ | 28 | Argentina | ． | A．Vans－Agnew． |
| 221 | 4 ${ }^{\frac{1}{2}}$ | I $8 \frac{1}{2}$ | $18 \frac{1}{2}$ | $4+3$ | Do． | ． | G．L．Harrison． |
| $21 \frac{1}{2}$ | $5^{\frac{1}{2}}$ | 22 | 16⿺𠃊⿳亠丷厂犬 | $6+6$ | Paraguay | ． | S．Pulley． |
| 2112 | 6 | 13 ？ | $\ldots$ | $4+4$ | Do． |  | H．R．H．the Duc de Montpensier． |
| 21 $\frac{1}{2}$ | 5 | 123 ${ }^{\text {a }}$ | 16 | $5+5$ | Do． |  | Admiral Sir Willian Kennedy． |

OWNER＇S MEASUREMENTS．

| $25 \frac{1}{8}$ | 5 | $22 \frac{1}{4}$ | $\ldots$ | $6+7$ | Paraguay | ． | ．Dr．Albert von Stephani． |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $22 \frac{1}{2}$ | $7 \frac{1}{2}$ | $\ldots$ | $15 \frac{1}{4}$ | $6+6$ | Argentina | ． | ．Kenyon Slaney． |
| $22 \frac{1}{4}$ | $6 \frac{7}{5}$ | 26 | 25 | $5+5$ | Do． | ． | ．Sir Edward G．Loder，Bart． |



Skull and Antlers of Chilian Guemal，shot in Patagonia by Mr．H．Hesketh Prichard．

## The PAMPAS DEER (Mazama [Blastoceros] bezoartica).

A small deer nearly allied to the last, but with the front prong of the antlers simple, and the hind one divided. A whorl in the hair on the middle of the back and another at the base of the neck, so that the hair of the withers is directed forwards for a considerable distance. Colour of upper-parts light reddish brown, under-parts and lower surface of tail white ; upper surface of latter black. Height at shoulder, 30 inches.

Distribution.-Brazil to Northern Patagonia, in open districts.

| Length on outside curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Points. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $15{ }^{3}$ | $3^{\frac{1}{2}}$ | 5 | $6+7$ | Argentina | Col. Heber Percy. |
| $14 \frac{5}{8}$ | $2{ }^{\text {2 }}$ | 13 星 | 3+3 | Do. | British Museum. |
| $14 \frac{1}{2}$ | 3 | 103 ${ }^{\frac{3}{4}}$ | $3+3$ | Do. | E. M. Crosfield. |
| 14 | 3 | 11 | $3+3$ | ? | Sir Edmund G. Loder, Bart. |
| 14 | $4^{\frac{1}{4}}$ | $11 \frac{1}{4}$ | $3+3$ | Paraguay | Admiral Sir William Kennedy. |
| $13 \frac{1}{2}$ | $4{ }^{\frac{3}{4}}$ | 8 | $3+3$ | Do. | R. A. Cooper. |
| 13 | $2 \frac{1}{2}$ | $12 \frac{3}{5}$ | $3+3$ | ? | W. Livingstone-Learmonth. |

The PERUVIAN GUEMAL (Mazama [Hippocamelus] antisiensis).
Together with the closely allied Chilian guemal, this species constitutes a group of deer characterised by the antlers forming a single fork. There is no gland-tuft on the hind cannon-bone, the short tail is rather bushy, and the hair coarse and brittle.

Distribution.-The high Andes, from Ecuador to Northern Chili.

| Length outside curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $11 \frac{3}{1}$ | $4{ }^{\text {采 }}$ | 6 | Bolivia, 13,000 ft. | A. Y. Hardy. |
| 10 | $3{ }^{5}$ | 8 | Ecuador | Hon. Walter Rothschild. |
| $9 \frac{1}{2}$ | $7 \frac{5}{8}$ | $4 \frac{5}{5}$ | Tinta, South Peru | British Museum (H. Whitely). |
| $8 \frac{1}{2}$ | $3{ }^{3}$ | 5 | N. Argentina | W. Buchanan Smith. |

## The CHILIAN GUEMAL (Mazama [Hippocamelus] bisulca).

Distinguished from the last by its superior size (shoulder-height $39 \frac{1}{2}$ inches) and more uniform colouring, as well as by several details connected with the latter.

Distribution.-From the Chilian Andes to the plains of Patagonia.

| $\begin{gathered} \text { Length } \\ \text { ontside } \\ \text { outurve } \\ \text { curv. } \end{gathered}$ | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ |  | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| H1妾 | $3{ }^{\frac{7}{8}}$ | $9 \frac{1}{2}$ | Patagonia | . . | H. Hesketh Prichard. |
| 1012 | 35 | 712 |  | ? | British Museum. |
| $-7 \frac{1}{4}$ | 3 | 4 | Chili | . . | J. C. Phillips. |
| -45 | 17 | $4^{\frac{1}{2}}$ | Do. | . | American National Collection. |

- Owner's measurements.


## The WOOD-BROCKET (Mazama nemorivaga).

The brockets are some of the smallest deer included in the genus Mazama, of which they are the typical representatives. They are recognisable by their simple spike-like antlers, the tufted crown of the head, and, in many, although not all, cases the radiation of the hair of the face from two whorls, which causes that on the nose to be directed downwards. The most widely distributed species is the red brocket (M. americana, ${ }^{1}$ or M. nufa), other species being the nearly allied $M$. setta of Colombia and M. sheila of Venezuela, M. tema of Guatemala, and the small M. simplicomis. The present species is distinguished by its small size (height at shoulder about 19 inches), its pale pepper-and-salt brownish or grey colour, the streak on the forehead, and the absence of a gland and tuft on the hock.

Distribution.-Guiana, Colombia, Bolivia, Brazil, and Trinidad.


[^6]

Head of Musk-Deer.

## The MUSK-DEER, or KASTURA (Moschus moschiferus).

She-lu, Chinese. Kastura, Kashmiri.

From all living deer except the Chinese water-deer this species is distinguished by the absence of antlers, the function of which is discharged in the male by long upper tusks. The tail is rudimentary and the fur coarse and brittle, while the lateral hoofs are very large. The males have a glandular pouch which secretes the musk from which the species takes its name. Height at shoulder about 20 inches, at rump 22 inches. Distribution.-The forest-districts of the Himalaya as far west as Gilgit, at elevations of 8000 feet or more in summer, to Tibet, Siberia, Western China, Amurland, and Corea.


## OWNER'S MEASUREMENTS.

4
$3 \frac{3}{5}$
$3 \frac{1}{4}$

3

Ta Chin lu . . . . . . M. Mitchell.
Chitral . . . . . . . Capt. J. T. H. Lane.
Do.
Dr. Albert von Stephani.
Upper Kumaon
Capt. K. Channer.


Skull of Transvaal Giraffe. Presented to the British Museum by the late Mr. Rowland Ward.

The GIRAFFE (Giraffa camelopardalis).

Ihulhla, Swazi.
Indllutlamiti, Zulu.
Tuthla, Basuto.
Luomba ningo, Chilala.
Intutzo, Chila.

Noabi, Masawara.
Giri, or Halgiri, Somali.
Kameel, Boer.
Nyama marakiti, Asenga.
Vakumin deji, Hausa.

Zaraff, Sudani.
The long limbs and neck, the peculiarly formed head, and the blotched or netted hide, render giraffes distinguishable at a glance from all other living ruminants; with none of which, except the okapi, they have any very close affinity, although their nearest relatives are the deer. So great is their distinctness that, with the okapi, they constitute a family by themselves-the Giraffide. One of the most marked peculiarities of the giraffes is to be found in the horns, of which the largest pair rise from the head between the ears, and are covered during life with skin. They are never shed; and in the adult are immovably united to the bones of the skull, although separate in young animals. In addition to these, there is a more or less distinct third horn, or boss, situated on the forehead between the eyes, as well as a rudimentary pair at the back of the head, or occiput. Giraffes have a long, extensile tongue, hairy lips, and broad, low-crowned cheek-
teeth. There are no tusks in the upper jaw ; and in the outermost pair of lower front teeth the crown, as in the okapi, is double, or bilobed. Lateral hoofs are wanting.

Among the local races of the species, the Nubian giraffe, G. $c$. typicus, is a pale-coloured animal with a large front horn and white legs; and from this the Kordofan G. c. antiquorum differs by the smaller and more numerous spots on the upper part of the legs. The Baringo giraffe, G. c. rothschildi, is characterised by the black spots of the old bulls and the jagged markings of the cows ; and the Taposa G.c. cottoni is allied. The Nigerian G. c. peralta, the palest of all, is close to the Nubian. The Congo G. c. congoensis combines the presence of a third horn with fully spotted legs ; this being also the case with the Kilimanjaro G.c.tippelskirchi, in which the markings have an irregular star-like form and the legs are more or less spotted. The races with fully spotted legs and a more or less rudimentary front horn include the Angolan G.c. angolensis, the North Transvaal G.c. wardi, and the South African G. c. capensis.

## The SOMALI GIRAFFE (Giraffa reticulata)

The Somali giraffe (for which the name netted giraffe would be appropriate, were it not that it has a double signification) may be described as a dull, liver-coloured animal with a coarse network of narrow white lines dividing the ground-colour into a number of large, irregularly quadrangular and sharply defined patches. The head and upper part of the neck are, however, spotted, while the ears and the legs from the knees and hocks downwards are white.

Apparently this type of colouring is specially adapted for rendering the animal inconspicuous when in covert.

| A.—NIGERIAN RACE (G. c. peralta). |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Estimated <br> maximum <br> height. <br> f.t. ins. | At shoulder. | ft. ins. | Locality. | Owner. |  |
| $\delta-\mathrm{r} 6$ | 4 | II | 0 | N. Nigeria |  |

B.-EASTERN RACES (G. c. rothschildi, etc.)

| Estimated |
| :---: |
| maximum |
| height. |

$\left.\begin{array}{cc}\text { ft. } & \text { ins. } \\
\text { I9 } & 3 \\
19 & 0 \\
8-18 & 7\end{array}\right]$.

At shoulder.
Locality.
Owner.
ft ins.
... British East Africa . . . Col. J. Caswell.
12 D Do. . . . T. P. A. Holford.

7
...
South-east Africa . . . F. Vaughan Kirby.

Estimated maximum height.
ft . ins. ठ-I8 6

8-17 6
8-17 3
उ-17 3
8-16 o
$\stackrel{8-15}{ }{ }_{\text {to }}{ }^{6}$
16 o 9-13 10

Estimated maximum height. ft. ins. उ-I8 4

ठ-I 8 O
お-17 o
¢-16 10

At shoulder.
Locality.
ft. ins.
... British East Africa
Do.
Do.
Do.
East Central Africa
South-east Africa

British East Africa

Owner.
J. Hall.
A. Vonwiller.

British Museum (Major P. H. G. Powell-Cotton). Lady Hindlip.

The late A. H. Neumann.
F. Vaughan Kirby.

British Museum (Major P. II. G. Powell-Cotton).

## C.-SOUTHERN RACES (G. c. capensis, etc.).

At shoulder
ft. ins.

120
...
...

Locality.

Angola
South Africa
W. Matabililand

North Kalatiari

Owner.

Hon. Walter Rothschild.
The late Sir W. Cornwallis Harris.
F. C. Selous.
H. A. Bryden.

- Owner's measurements.


Head of Prongbuck.

## The PRONGBUCK or PRONG-HORN (Antilocapra americana).

Although commonly termed an antelope, this ruminant differs from all the members of the Bovida by the forking of the horns. These are annually shed from their bony sheaths and replaced by a new pair, which commence to grow up beneath the old ones before they are cast off. In consequence of this, the species is generally regarded as representing a family (Antilocaprida) by itself. Horns absent or rudimentary in the female. Ears long and pointed, tail short, and neck maned. General colour chestnut, with a white rump-patch, and white bars on the throat. Height at shoulder, 36 inches; weight, 70 to 80 lbs . clean.

> Distribution.-Western North America, from British Columbia to Mexico.


| $\begin{gathered} \text { Length } \\ \text { Lon } \\ \text { outside } \end{gathered}$ carve. | Circnm- | Tip to Tip. | Widest <br> inside. | Lscality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 151 ${ }^{\frac{1}{8}}$ | 61 | 75 | $\ldots$ | ? | Col. Ralph Vivian. |
| 15 | $5^{\frac{1}{2}}$ | 1 | $\ldots$ | Wyoming . | Sutton Timmis. |
| 15 | 6 | ... | $\ldots$ | Do. | H.R.H. the Duc d'Orléans. |
| 15 | 55 | $5{ }^{\text {章 }}$ | $10^{\frac{1}{4}}$ | Do. | St. George Littledale. |
| 15 | 53 | $7{ }_{ \pm}^{3}$ | $\ldots$ | Do. | Isaac Bell. |
| 142 ${ }^{\frac{1}{2}}$ | $5{ }^{\text {䍃 }}$ | 12 | $\ldots$ | ? | C. F. Bengough. |
| $14 \frac{1}{2}$ | $\ldots$ | $\ldots$ | $12 \frac{1}{2}$ | Wyoming . | T. W. H. Clarke. |
| $14 \frac{1}{2}$ | $5^{\frac{3}{1}}$ | $11{ }^{\frac{3}{4}}$ | ... | Do. | British Museum. |
| $14 \frac{1}{2}$ | 6 | ... | $9{ }^{\frac{1}{2}}$ | Laramie Plains, Wyoming | Ford G. Barclay. |
| $14 \frac{1}{2}$ | $6 \frac{5}{5}$ | 53 | ... | Wyoming. | The late Lieut.-Col. Hon. W. Coke. |
| $14 \frac{1}{2}$ | 6 | 6 | $\ldots$ | Alberta | F. I. Mitchell. |
| $14 \frac{1}{7}$ | 6 | 28 | $\ldots$ | ? | Sir Victor Brooke's Collection. |
| $14 \frac{1}{4}$ | 7 | $4 \frac{1}{4}$ | $\ldots$ | ? | J. McI. M'Iver Camphell. |
| 14 | 51 | $5 \frac{3}{4}$ | $\ldots$ | Wyoming. | Major A. J. Carstairs. |
| $14 \frac{1}{4}$ | $5 \frac{3}{1}$ | 53 | $\ldots$ | Do. | Earl of Dartmouth. |

OWNER'S MEASUREMENTS.



Horns of Bubal Hartebeest. From Sir Abe Bailey's specimen.

## The BUBAL HARTEBEEST (Bubalis boselaphus).

This species commences the family of hollow-horned ruminants or Bovida, in which the horns are in the form of unbranched hollow sheaths supported on bony cores and carried permanently. The hartebeests are large antelopes with naked muzzles, abnormally long faces, doubly-curved horns, small apertures to the face-glands, large valvular nostrils (of which the lower rims are covered with stiff hairs), long, tufted tails, and large lateral hoofs. Both sexes are horned. The females have two teats.

Typical hartebeests have a whorl of hair on the forehead, and the hair on the middle line of the face directed downwards below this till a short distance above the nose, where there is another whorl; faceglands large. The present species is the smallest of the group, standing only 43 or 44 inches at the shoulder. It has a short pedicle supporting the horns, which are in the form of the letter $U$, and the colour is uniform tawny, with the tail-tuft black.

Distribution.-North-west Africa (interior of Morocco, Algeria, and Tunisia).

| Length on front curve. | Circum- <br> ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $15 \frac{1}{2}$ | 8. | 7 7 | North Africa | Eritish Museum. |
| 148 | 10 | 9 | Senegral | Hon. Walter Rothschild. |
| 13 星 | 93 | $9 \frac{1}{4}$ | Tunısia | Sir Abe Bailey. |
| $13 \frac{1}{2}$ | $8 \frac{1}{2}$ | $7{ }^{\text {星 }}$ | North Africa | . British Museum. |



Head of Western Hartebeest.

## WESTERN HARTEBEEST (Bubalis major).

Kanki, Hausa.
Apparently related to the preceding species, but larger, with more massive horns, which are more bent near the middle, and have long, smooth tips. Body uniform rufous fawn, varying from deep red almost to fawn-grey, face deep brown, the fore-legs streaked with dark brown or blackish from the knees downwards, and the tail-tuft black. Height at shoulder, from about 50 to 54 inches.

> Distribution.-Gambia, Nigeria, and interior of the Cameruns, Togoland, etc.

Length on
front curve. front curve.

| 263 | 131 ${ }^{\frac{1}{2}}$ | $6 \frac{1}{1}$ | Nigeria | - - | Capt. E. E. Williams. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $-26 \frac{1}{8}$ | $13 \frac{3}{8}$ | I I | Do. | - | Sergeant Lefanu. |
| 26 | 12 $\frac{1}{2}$ | $14 \frac{3}{4}$ | Do. | . | Lady Constance Stewart-Richardson. |
| 251 ${ }^{\frac{1}{2}}$ | $11 \frac{3}{4}$ | $12 \frac{1}{2}$ | Do. | - | Capt. P. A. Clive, |
| 25 ${ }^{\frac{1}{2}}$ | 122 | II $\frac{3}{5}$ | Gold Coast | - . | Dr. J. H. Collier. |
| 251 | 123 | 10 | Nigeria | . | Capt. C. C. West. |
| 251 ${ }^{\frac{1}{2}}$ | 1 $2 \frac{1}{2}$ | II ${ }^{\frac{1}{3}}$ | Do. | . | R. J. Wolseley. |
| $25^{\frac{3}{8}}$ | 123 ${ }^{3}$ | I I ${ }^{\frac{1}{4}}$ | Yauri, Ha | States | Major J. W. Carroll. |




Head of Tora Hartebeest.

TORA HARTEBEEST (Bubalis tora).
Worobo, Abyssinian. Tora, Sudani.
Horn-pedicle of medium length, the horns themselves in the form of an inverted bracket ( $\sim_{\sim}^{\sim}$ ).

## A.-TYPICAL RACE (Bubalis tora typica).

Height at shoulder, from 50 to 54 inches. Colour uniformly pale tawny fulvous, with the exception of the tail-tuft and chin, which are black. Although of the same uniform colour, this species is easily distinguished from $B$. boselaphus by its superior size and differently shaped horns. Weight, from 300 to 400 lbs .

Distribution.-Abyssinia and south and middle portion of Blue Nile. The Blue Nile B. t. rahatensis has the horn-tips markedly inclined inwards.



## B.-KEILI RACE (Bubalis tora digglei).

Horns intermediate between those of $A$ and $C$; general colour dark fulvous, with a tinge of rufous.

## Distribution.-Keili northward along the Ofat River on Sudan Abyssinian frontier.

| Length on front curve. | Circum. ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| -21 ${ }^{\frac{1}{2}}$ | ... | $\ldots$ | Abyssinian Border of the Sennar Province. | W. H. Diggle. |
| $20 \frac{1}{4}$ | $9{ }^{\frac{3}{4}}$ | 123 | Do. | The Hon. Walter Rothschild. |
| 20 | 10 | I I | Blue Nile | Hon. T. G. B. Morgan-Grenville. |
| 198 | 10 | 14 | Abyssinian Border of the Sennar Province. | W. H. Diggle. |



Head of Somali Hartebeest. Shot by Col. H. G. C. Swayne.
C.-SOMALI RACE (Bubalis tora swaynei).
Sig; Somali. Korkei, Galla.

Horns directed forwards and then inwards. Height at shoulder, about 47 inches; weight, about 300 lbs. General colour deep rufous chocolate-brown, with white tips to the hairs; face black, except the muzzle and a line between the eyes which, like the shoulders and upper part of fore-legs, as well as a patch on the upper part of the hind-legs, are black.
Distribution.-Interior of Somaliland and Shoa; in Somaliland on the dry plateau known as the Haud. The East Somali B. s. noacki is redder, with the face-mark inconspicuous and less defined.

Length on
front curve. Circumference.

| $20 \frac{1}{4}$ | $8 \frac{7}{8}$ | $26 \frac{3}{4}$ | Somaliland | . | Col. H. G. C. Swayne. |
| ---: | :---: | :---: | :---: | :---: | :--- |
| $19 \frac{5}{8}$ | 9 | 27 | Do. | . | C. Bulpett. |
| $19 \frac{1}{2}$ | $9 \frac{1}{2}$ | $22 \frac{1}{2}$ | Do. | . | G. H. Cheetham. |
| $19 \frac{1}{4}$ | $10 \frac{1}{4}$ | 29 | Do. . | . | Sir Abe Bailey. |
| $-19 \frac{1}{4}$ | $\ldots$ | $24 \frac{1}{4}$ | N. Somaliland | . | J. Menges. |


| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| -191 | ... | $16 \frac{1}{2}$ | Somaliland. | D. D. Haskard. |
| 197 | 10 | 215 | Do. | H. A. Bryden. |
| 19 | 10 | $23 \frac{1}{4}$ | N. Somaliland | A. E. Butter. |
| -19 | $9^{\frac{1}{4}}$ | 181 | Do. | Capt. M. M'Neill. |
| 183 ${ }^{3}$ | $9 \frac{3}{4}$ | 2 I | Do. | Capt. R. M. Backhouse. |
| $18 \frac{3}{1}$ | 9 | $21 \frac{1}{4}$ | Somaliland . | Major R. P. Cobbold. |
| I $8 \frac{3}{1}$ | 10 | 19 | Do. | Capt. F. L. LivingstoneLearmonth. |
| I $\$_{1} \frac{3}{4}$ | $9^{\frac{1}{2}}$ | 19 | Do. | J. R. Luchsinger. |
| $18 \frac{3}{4}$ | $9{ }^{\frac{1}{4}}$ | 16 | Do. | Ford G. Barclay. |
| $1 \mathrm{~S}_{1} \frac{1}{3}$ | $9 \frac{1}{1}$ | $19 \frac{1}{4}$ | Do. | Capt. T. W. Greenfield. |
| $18 \frac{3}{8}$ | $8 \frac{3}{4}$ | I8 | Do. | Col. H. G. C. Swayne. |
| $18 \frac{1}{4}$ | 10 ${ }^{\frac{1}{4}}$ | 22, $\frac{1}{2}$ | Do. | T. Morse. |
| $18 \frac{1}{8}$ | 9 | $17 \frac{1}{4}$ | Do. | Norman B. Smith. |
| 18 | 83 | $10 \frac{3}{4}$ | Do. | Count J. Potocki. |
| 18 | $9 \frac{1}{2}$ | 20 | Do. | W. F. Whitehouse. |
| 18 | 9 | 22 | Do. | Major B. R. M. Glossop. |
| $17 \frac{3}{1}$ | I I | 17 | Gallaland | Viscount Edmond de Poncins. |
| $17 \frac{3}{4}$ | 10 | $21 \frac{1}{2}$ | Somaliland. | E. Lee Townshend. |
| $17 \frac{3}{4}$ | 10 | 20 | Do. | Digby Davies. |
| $-17 \frac{1}{2}$ | 94 | 19 | Do. | Sir Edmund G. Loder, Bart. |
| $17 \frac{1}{2}$ | 9 | $18 \frac{3}{1}$ | Abyssinia | I. Buxton. |
| ¢ $15 \frac{1}{2}$ | 7 | $11 \frac{1}{8}$ | Gallaland . | - Viscount Edmond de Poncins. |

[^7]

Head of Kongoni.

## The KONGONI or COKE'S HARTEBEEST (Bubalis cokei).

Horn-pedicle moderate ; horns bracket-shaped, very short and thick. Height at shoulder, 48 or 49 inches. Weight, about 300 lbs . General colour uniform bright fawn, with the lower lip somewhat browner, and the lower part of the rump paler ; tail long, with the black tuft ascending some way up the hind surface. Two local races, B. c. rothschildi, from the district north of Lake Rudolf, and B. c. kongoni, from the Guaso-nyero, have been named, while the Nakuru hartebeest may represent a third race, B. c. nakura.

Distribution.-Eastern Africa, from Usagara northwards to Kilimanjaro, Masailand, and north of Lake Rudolf.

| Length on front curve. | Circumference. | Tip to Tip. |  | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 21 | 9 | $13{ }^{\frac{1}{2}}$ | East Africa | - . | . | Capt. M. L. Pears. |
| $-20 \frac{3}{4}$ | ... | ... | Do. | . . | . | . Sir Abe Bailey. |
| 20 | $9 \frac{1}{2}$ | 144 | Do. | . . | . | Col. J. Caswell. |
| 20 | 9 | $13{ }^{\frac{1}{4}}$ | Do. | . . | - | . Capt. R. Meinertzhagen. |
| $19 \frac{3}{4}$ | 101 | 16 | Do. | . . | . | . Major the Hon. W. G. Cadogan. |
| $19 \frac{1}{2}$ | $9 \frac{3}{4}$ | I $1 \frac{1}{4}$ | Do. | . . | . | - Capt. C. Brook. |
| $19 \frac{1}{2}$ | $10 \frac{1}{4}$ | $13 \frac{1}{}{ }^{\frac{1}{2}}$ | Do. | . . |  | - Capt. R. A. McClymont. |
| 193 | 10 星 | 123 | Do. | - | - | . C. W. Turner. |



The two following specimens represent B. c. nakura:-

$19 \frac{1}{2}$

1912

Circum-
ference.
Tip to
Tip.
$10 \frac{1}{2} \quad 13 \frac{1}{4}$

IO 13 Lake Nakuru . . Capt. E. Sartorius.
Locality.
Owner. IO 1 II $\frac{1}{2}$ Do. . . H. W. Seton-Karr.

The following East African heads belong to the type regardedtogether with the Nakuru hartebeest-by Dr. O. Neumann as hybrids between cokei and lelwel jacksoni:-



Skull and Horns of Neumann's Hartebeest.

## NEUMANN'S HARTEBEEST (Bubalis neumanni).

In this species, which may be merely a race of $B$. cokei, the horns are to a considerable degree intermediate between those of the toracokei and those of the lelwel-cama group.

Colour of hair fulvous fawn, much richer on the back, where there are also some darker spots, which may be stains or natural ; below very much paler. Chin blackish; tip of tail black. Male brighter and darker in colour than the female. There are also on the back some patches with longer, thicker, almost whitish-buff hair, perhaps remains of the winter fur. Height at shoulder, from 48 to 50 inches.

Distribution.-East Africa, in the neighbourhood of Lake Rudolf.

| Length on curve. curve | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $16 \frac{1}{2}$ | $10{ }_{4}^{3}$ | 83 | N. E. of Lake Rudolf | Neumann. |
| ¢ $133 \frac{1}{2}$ | $7{ }^{1}$ | $9{ }^{\text {昜 }}$ | E. shore of Lake Rudolf | Do. |



Skull and Horns of Jackson＇s Lelwel Hartebeest．

## The LELWEL HARTEBEEST（Bubalis lelwel）．

Mangazi，Waganda．Teital，Sudani．
Related to the preceding，but the general colour uniformly rufous tawny，and the horns less abruptly bent．In the typical race the horns incline slightly outwards at the tips，and the lower part of the legs have some dark markings．In the Baringo or Jackson＇s race，B．l． jacksoni，the legs are coloured like the back，uniformly foxy red．B．l． niediecki of the White Nile differs by the parallel or inward direction of the horn－tips．B．l．insignis of the Albert Nyanza district has a black dorsal stripe and two small dark patches on the face，and dark markings on the lower part of the legs．Weight，about 450 lbs ． Height at shoulder，about 52 inches．
Distribution．－Typically from the Bahr－el－Ghazal，Upper Nubia，and Kordofan ；represented in the interior of British East Africa， north of Lake Baringo，and Uganda，by B．l．jacksoni，to which many of the undermentioned specimens belong．

| $\begin{aligned} & \text { Length } \\ & \text { on } \\ & \text { front } \\ & \text { curve. } \end{aligned}$ | Circum－ ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 26 | $11{ }^{\frac{7}{8}}$ | $14^{\frac{7}{5}}$ | E．Africa | E．H．Litchfield． |
| $-25 \frac{7}{8}$ | $1 \mathrm{I}_{\text {量 }}$ | $9^{\frac{1}{8}}$ | Nr．Gondokoro | ．Capt．E．T．W．McCausland． |
| 253 | $1{ }^{1} \frac{1}{2}$ | 14 | E．Africa | Capt．H．C．Hart． |
| $25^{\frac{1}{4}}$ | $12 \frac{1}{2}$ | $7{ }^{1}$ | Do． | ．A．Saunderson． |
| 251 | 1119 | II章 | Do． | F．C．Selous． |
| 25 年 | 11 | $14 \frac{1}{2}$ | Do． | W．N．McMillan． |
| 25 | $12 \frac{1}{4}$ | $12 \frac{5}{8}$ | Do． | ．Duke of Medinaceli． |


| $\begin{gathered} \text { Length } \\ \text { Lent } \\ \text { front } \\ \text { curve } \end{gathered}$ | Circum－ ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locali |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 25 | $10 \frac{3}{4}$ | 10 星 | White Nile |  | Duke of Alba． |
| 25 | $11 \frac{1}{2}$ | 8 | Sudan | ． | Sir Kenneth Crossley． |
| 25 | 124 | $1 \mathrm{I} \frac{1}{2}$ | Uganda | ． | Douglas M‘Douall． |
| 25 | 12 | $10 \frac{3}{4}$ | Do． |  | －Major A．W．Jennings Bramly． |
| $24 \frac{3}{4}$ | 12 | $14 \frac{1}{4}$ | Do． | ． | －Capt．V．C．de Crespigny． |
| $24 \frac{3}{}$ | $11{ }^{\frac{1}{2}}$ | 134 | Kordofan | ． | ．C．E．Lyall． |
| $24{ }^{\text {星 }}$ | $11{ }_{1}^{1}$ | 117 | Sudan | ． | J．V．Colby． |
| $24{ }^{\frac{3}{4}}$ | $111 \frac{1}{2}$ | $9 \frac{1}{1}$ | East Africa | ． | －Sutton Timmis． |
| $24 \frac{5}{8}$ | 113 | 8 | Uganda | ． | －Capt．R．H．Leeke． |
| $24 \frac{1}{2}$ | $12{ }^{3}$ | $7{ }^{\frac{1}{2}}$ | East Africa | ． | －A．de Rothschild． |
| $24 \frac{1}{2}$ | $10 \frac{3}{4}$ | $10 \frac{1}{4}$ | Do． | ． | －Col．R．Bright． |
| 24를 | $1{ }^{1}$ | 18 年 | Do． | ． | －C．Bower Ismay． |
| 242 | 12 | 83 | Do． | ． | －O．Mosley． |
| $24 \frac{1}{2}$ | 12 | 10 | Sudan | ． | －R．H．Willan．， |
| 24. | 11 | 105 | East Africa | ． | A．Vonwiller． |
| 24 | 12 | $8 \frac{1}{2}$ | Do． | ． | Duke of Alba． |
| 24 | $11 \frac{1}{2}$ | $10 \frac{1}{2}$ | Do． | ． | －G．Henry． |
| 24 | $11 \frac{1}{2}$ | 9 | Do． | ． | －Capt．H．C．S．Ashton． |
| $23 \frac{7}{5}$ | $10 \frac{7}{8}$ | 12 | Do． | ． | －Major P．H．G．Powell－Cotton． |
| 23 䍃 | $10 \frac{3}{8}$ | 6 | White Nile | ． | ．Capt．A．H．Vivian． |
| 23 䍃 | $111 \frac{1}{2}$ | 115 | Do． | ． | ．Earl of Sefton． |
| 23 3 | 11 | $12 \frac{1}{2}$ | East Africa | ． | B．Dominick． |
| 23 年 | 12 | $11 \frac{3}{4}$ | Do． | ． | －F．Santos Saurez． |
| 233 | $11 \frac{1}{2}$ | $7{ }^{1}$ | Do． | ． | －Col．Max．C．Fleischmann． |
| 23 皇 | $12 \frac{1}{2}$ | $8{ }^{3}$ | Do． | ． | －J．Leslie． |
| 23 章 | $12 \frac{1}{4}$ | $9{ }^{\frac{1}{4}}$ | Do． | ． | －Sir J．Hume Campbell，Bart． |
| $23 \frac{5}{8}$ | 11 | 131 | Kordofan | ． | Capt．H．S．Hearn． |
| $23 \frac{1}{2}$ | $12 \frac{1}{12}$ | $10 \frac{3}{4}$ | East Africa | ． | －Major H．B．Dalgety． |
| $23 \frac{1}{2}$ | $11 \frac{1}{2}$ | $11 \frac{1}{2}$ | Uganda | ． | －Capt．P．Garrard． |
| $23 \frac{1}{2}$ | 12 | $5{ }^{5}$ | East Africa | ． | －R．J．Cuninghame． |
| $23 \frac{1}{2}$ | $1{ }_{1}{ }^{\frac{1}{4}}$ | $7{ }^{\text {星 }}$ | Do． | ． | －N．C．Cockburn． |
| 231 | $12 \frac{1}{1}$ | $11 \frac{1}{2}$ | Do． | ． | －Col．Stephenson R．Clarke． |
| $23 \frac{1}{4}$ | $12 \frac{1}{4}$ | $10 \frac{1}{4}$ | Do． | ． | －H．Sampson． |
| 231 | 12 | $8 \frac{1}{2}$ | Do． | ． | －Mrs．Percy C．Madeira． |
| $23 \frac{1}{4}$ | $12 \frac{1}{2}$ | $7 \frac{1}{2}$ | Uganda | ． | －Miss C．Buxton． |
| 23 年 | 11 | 7 | Do． | ． | －Dr．J．O．Shircore． |
| $23 \frac{1}{4}$ | $11^{1}$ | $10 \frac{1}{4}$ | East Africa | ． | －Capt．P．Chapman． |
| $23 \frac{1}{8}$ | 12 | $7 \frac{1}{2}$ | Do． | ． | －A．Fowler． |
| ¢ 22 | 812 | 67 | White Nile | ． | －Col．St．G．Henry． |
| $\bigcirc 21$ | 103 | 114 | Uganda | ． | －Dr．A．Paget． |
| $20 \frac{1}{2}$ | $10 \frac{1}{4}$ | $13{ }^{\text {a }}$ | Blue Nile | ． | －Capt．E．S．Stephenson． |
| 20 | 10 | 113 | Do． | ． | －Capt．J．A．Pollock． |
| 20 | $9 \frac{1}{2}$ | $1 \mathrm{O}_{2}$ | Do． | ． | ．Capt．N．A．Orr－Ewing． |



Head of Cape Hartebeest. Shot by Mr. R. Bosworth-Smith.

## The CAMA or CAPE HARTEBEEST (Bubalis cama).

Kama, Bechuana. Ingama, Makalaka.
Horn-pedicle greatly elongated ; horns very sharply bent, and forming a letter $V$ when viewed from the front. Height at shoulder, from 48 to 54 inches. General colour reddish brown, darker than in any of the preceding ; face (except between the eyes), back of neck, chin, shoulders, thighs, and tail black or blackish; lower portion of buttocks with a conspicuous whitish or yellowish blaze. The typical southern form is extinct, and the name $B$. cama selbornei has been proposed for the race found north of the Orange River, as typified by the Kimberley herd.
Distribution.-Africa southwards of the Limpopo, but extending farther northwards along the confines of the Kalahari desert. This species (the rooi hartebeest) is now nearly exterminated in the Cape, but a few still linger in the old Bushman country in the north-west of Cape Colony. Although practically exterminated in the Orange River Colony and in most of the Transvaal (except to the northwest), numbers are to be found in the plains and open forest of British Bechuanaland, the Bechuanaland Protectorate, Basutoland, and in farms near Kimberley and Mafeking. In the North Kalahari and the desert-regions about the Botletli River big troops are to be met with. In Basutoland these hartebeests live in mountainous country, at a high elevation, where there is a heavy snowfall in winter.

| Length on front curve． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 26 | $12 \frac{1}{1}$ | $13 \frac{3}{4}$ | Orange River Colony | Sir Owen Philipps． |
| $25^{\frac{1}{2}}$ | 122 ${ }^{2}$ | 12 年 | ？ | Sir Edmund G．Loder，Bart． |
| 25 | 11 | 10 | Do． | C．Rube． |
| $24 \frac{3}{4}$ | $10 \frac{1}{2}$ | 95 | ？ | R．T．Coryndon． |
| $2.4 \frac{1}{2}$ | 12 | II | Near Boshof，O．R．C． | Hon．Walter Rothschild． |
| $24 \frac{1}{2}$ | 12 | $9{ }^{\frac{1}{2}}$ | South Africa | C．D．Rudd． |
| $24^{\frac{1}{2}}$ | $12 \frac{1}{2}$ | 10 | Ngamiland | F．T．Garbutt． |
| $23^{\frac{3}{4}}$ | 10 | 83 | Do． | British Museum（Sir Andrew Smith）． |
| $23 \frac{3}{1}$ | 11 | $5 \frac{3}{1}$ | ？ | J．C．Phillips． |
| $23 \frac{1}{2}$ | $11 \frac{1}{2}$ | 10 ${ }^{\frac{1}{2}}$ | Kamaland | F．C．Selous． |
| $23 \frac{1}{2}$ | $11 \frac{1}{2}$ | 115 | Bechuanaland． | G．L．Harrison． |
| $23 \frac{1}{2}$ | 12 | $8 \frac{1}{2}$ | ？ | N．H．Barton． |

OWNER＇S MEASUREMENTS．

| 26 | 113 | 13 | Natal | C．S．Mann． |
| :---: | :---: | :---: | :---: | :---: |
| $25 \frac{3}{4}$ | 12 | 4 | Orange River Colony | Sir Abe Bailey． |
| 25 | 11年 | $10 \frac{1}{2}$ | Do． | Capt．W．Jardine． |
| $24^{\frac{7}{8}}$ | II | 7 | Nata River | American National Collection． |
| 245 | 113 | $11 \frac{1}{8}$ | ？ | B．Senior． |
| $24^{\frac{1}{2}}$ | 115 | 12 | Damaraland | Berlin Museum． |
| $24 \frac{3}{8}$ | 1018 | $9 \frac{3}{10}$ | Do． | Th．Rehbock． |
| $24 \frac{3}{8}$ | 11 | 175 | ？ | P．C．Keytel． |
| $24 \frac{1}{4}$ | II | $7{ }^{\frac{7}{8}}$ | Orange River Colony | Sir Abe Bailey． |
| 24 | 1012 | $8 \frac{1}{8}$ | Griqualand | A．F．Williams． |
| 22 | $11{ }^{\frac{1}{4}}$ | $14 \frac{7}{5}$ | Basutoland | R．Bosworth－Smith． |
| 9 21 亳 | 81 | $13 \frac{3}{2}$ | Orange River Colony | Sir Abe Bailey． |



Head of Lichtenstein's Hartebeest.

The KONZI, or LICHTENSTEIN'S HARTEBEEST (Bubalis lichtensteini).
Inkulando, Mashona.
Kokotombwi, Barotsi.
Konsi, Chila, Chilala, and
Chibisa.
Konshi, Chinyanja.
Horn-pedicle very short and broad, and the horns themselves much flattened and curved inwards towards one another below the terminal backward inclination. Height at shoulder, 50 to 52 inches; weight, about 300 lbs . General colour tawny fulvous, becoming more rufous along the back, with the chin, tail-tuft, and front of cannon-bones black. Distribution.-East Africa north of the Sabi River, including Nyasaland, Mozambique, German East Africa to Usagara, and N.E. and N.W. Rhodesia.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 22, | $11 \frac{3}{4}$ | 15 | Barotsiland | - | T. G. Davey, |
| $22 \frac{1}{8}$ | 123 | 20 | B. C. Africa | - | Sir Alfred Sharpe. |
| $21 \frac{1}{2}$ | $12 \frac{1}{4}$ | 9 | E. of Tanganyika | . . | O. L. Berringer. |
| $21 \frac{1}{2}$ | $12 \frac{1}{2}$ | 9 | Batoka Plateau, Rhodesia | Northern | F. Smitheman. |
| $21 \frac{1}{2}$ | $13 \frac{3}{ \pm}$ | 4 | N.E. Rhodesia . | . . | F. H. Melland. |
| $2 \mathrm{I} \frac{1}{4}$ | 14 | 117 | Chambesi Valley | . . | L. Harger. |
| 213 | 121 | 812 | N. W. Rhodesia | . . | Capt. P. R. Bald. |




Head of Hunter's Hartebeest (Female).

The HIROLA, or HUNTER'S HARTEBEEST (Damaliscus hunteri).
Arôli, Somali. Blanketta, Galla.
With this species we come to a group of antelopes closely allied to the true hartebeests, but with the frontal region not elevated into a horn-pedicle, and the horns themselves forming in most cases a lyrate or simple curve, and the face of medium length. The hair of the face is directed uniformly upwards; there is a transverse fold of skin, underlain by fat, immediately behind the horns. In the present species the slender horns are indeed doubly curved, although without the sudden angulation of the true hartebeests. They slant upwards and outwards, and then bend downwards, after which the long points are directed upwards. Colour uniform rufous, with a chevron on the face, the inner surface of the ears, and the tail-tuft white. Height at shoulders, about 48 inches ; build light and graceful.

> Distribution.-Southern Somaliland (Jubaland) to north bank of Tana River.

| Length. |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| On front curve. | Straight. | Circum. ference. | Tip to Tip. | Locality. | Owner. |
| 263 | $22 \frac{1}{2}$ | 85 | 10 $\frac{1}{2}$ | Joreh | . I. N. Dracopoli. |
| $26 \frac{3}{8}$ | $\ldots$ | $8 \frac{1}{4}$ | $14 \frac{1}{2}$ | Jubaland | British Museum. |
| $26 \frac{1}{4}$ | 22 | 81 | I $2 \frac{1}{2}$ | Tana Valley . | . Sir Robert Harvey, Bart. |
| 26 | 2218 | $8 \frac{1}{2}$ | I $5^{\frac{1}{2}}$ | Do. | G. Blaine. |
| -25 | $22 \frac{1}{8}$ | 8 | 12 | Jubaland | Col. E. G. Harrison. |
| $24 \frac{7}{8}$ | $\ldots$ | 81 | $15 \frac{1}{2}$ | Tana Valley . | . H. C. V. Hunter. |
| 245 | $21 \frac{1}{4}$ | S3 | $9{ }_{4}$ | Do. | . Sir Robert Harvey, Bart. |
| - 92 I $\mathrm{I}^{\frac{1}{4}}$ | 1912 | $5^{\frac{7}{3}}$ | 1 I | Jubaland | . Col. E. G. Harrison. |
| ¢ $20 \frac{3}{3}$ | I 8 | 6 | $15 \frac{1}{4}$ | Tana Valley . | G. Blaine. |
| $20 \frac{1}{8}$ | $\cdots$ | $5{ }^{5}$ | $8 \frac{7}{8}$ | Do. | . Hon. Walter Rothschild. |
| 19 ${ }^{\frac{1}{2}}$ | $17 \frac{3}{8}$ | $5{ }^{\frac{3}{7}}$ | 10 | Joreh | . I. N. Dracopoli. |
|  |  |  |  | Owner's measurements |  |



Hunter's Hartebeest. Shot by Mr. I. N. Dracopoli.


Head of Korrigum. Shot by G. Blaine.

## KORRIGUM, TIANG, or TOPI (Damaliscus corrigum).

Korrigum, Bornow. Devvi, Hausa.
Horns with a single slightly lyrate curve. Size large. General colour reddish with a blackish blaze on the face and usually similar patches on the upper part of the fore-limbs, hips, and thighs, which extend in the form of a garter on the inside of the limbs above the knees and hocks. Tail-tuft black. Face-blaze usually black, but buffish or white in the guasingishu (D. c. phallius).

## A.-TYPICAL KORRIGUM or SENEGAL HARTEBEEST

(D. corrigum typicus).

In this race the black markings are strongly pronounced, and a streak is given off from the face-blaze to run upwards and outwards below the eye. The lower parts of the legs appear to be coloured like the body.

Distribution.-Senegambia and the interior of West Africa.

| Length on front curve． | Circum． ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| －2S $\frac{1}{2}$ | $10 \frac{3}{4}$ | $4 \frac{3}{4}$ | N．Nigeria | －Capt．C．F．Watson． |
| $-26 \frac{3}{1}$ | 918 | $15 \frac{1}{8}$ | Senegambia | Imperial Museum，Vienna． |
| $26 \frac{1}{2}$ | $9{ }^{\text {3 }}$ | $5 \pm$ | Lake Chad | Major D．F．MacCarthy Morrogh． |
| $-25 \frac{5}{5}$ | 10 | S | Do． | Sir Edmund G．Loder，Bart． |
| $-25 \frac{1}{4}$ | $9 \frac{1}{2}$ | 14 | Gambia | Capt．IV．B．Stanley． |
| $24 \frac{7}{8}$ | 10 | 63 | Lake Chad | A．L．Ross． |
| $24^{3}$ | $9 \frac{1}{2}$ | $4 \frac{1}{4}$ | N．Nigeria | Capt．L．C．Brodie． |
| $24 \frac{3}{4}$ | 9 | 9 | Nigeria | Capt．A．B．Baillie－Hamilton． |
| $24 \frac{5}{5}$ | $10 \frac{1}{4}$ | 7 | Benue | Capt．E．J．Wolseley． |
| $24 \frac{5}{5}$ | $9{ }^{3}$ | $9{ }^{1}$ | Gambia ． | G．Blaine． |
| $-24 \frac{5}{8}$ | IO $\frac{1}{8}$ | 9 | ？ | J．C．Phillips． |
| 245 | 95 | $4{ }^{\frac{3}{4}}$ | Lake Chad | Major I．B．Cockburn． |
| $24 \frac{1}{2}$ | $9^{\frac{1}{2}}$ | 103 | Do． | Capt．P．Chapman． |
| $824 \frac{1}{4}$ | 7 | $3{ }^{3}$ | Do． | Major D．F．MacCarthy Morrogh． |
| $24 \frac{3}{4}$ | $10 \frac{1}{2}$ | $13^{\frac{1}{2}}$ | N．Nigeria | ．Dr．G．J．Pirie． |
| $24 \frac{1}{1}$ | Io | Io | Do． | －P．E．Bradney． |
| 24 | $9^{\frac{1}{2}}$ | 6 | Lake Chad | －Capt．L．C．Jackson． |
| 24 | 10 | 5 | N．Nigeria | －Major T．Astley Cubitt． |
| 24 | 9 | 9 | Lake Chad | －Sir F．Lugard． |
| $23 \frac{3}{4}$ | $9{ }^{\frac{1}{2}}$ | $9{ }^{1}$ | Do． | －Major E．J．Lugard． |
| 233 | $9{ }^{\frac{1}{4}}$ | $7 \frac{3}{5}$ | Nigeria ． | W．F．Gowers． |
| $23 \frac{3}{4}$ | 10 | 8 | Lake Chad | －Capt．S．B．B．Dyer． |
| $23 \frac{3}{}$ | $9{ }^{3}$ | 12 | Do． | －C．S．Burnett． |
| 23 䍃 | $9{ }^{\frac{1}{2}}$ | $13 \frac{1}{2}$ | N．Nigeria | Capt．C．C．West． |
| $23{ }^{3}$ | $10 \frac{1}{4}$ | 13 | Do． | ．Capt．G．Bonham－Carter． |
| $921{ }^{\text {妥 }}$ | 63 | 5年 | Do． | －H．Maynard． |
| －Owner＇s measurement |  |  |  |  |



Skull and Horns of Tiang.

## B.-TIANG (D. corrigum tiang).

Tiang, Dinka.
The East African representative of the korrigum, from which it differs by the larger area of black on the inside of the limbs, and the tan colour of their lower portion. The tiang of the Mau Plateau, B.E.A. (D. c. selousi) is distinguished by the bright chestnut colour of the muzzle and of the area round the eye above the dark eye-stripe. D. c. jonesi of the Upper Sudan is said to inhabit sandy tracts in place of swamps, and is reported to be a plumper and browner animal, with no dark eye-stripe, and no dark markings on the limbs.

Distribution.-Sennar, Kordofan, and the Bahr-el-Ghazal.

Circum-
ference.
$9 \frac{3}{4}$
10 $\frac{1}{2}$
$24 \frac{1}{2} \quad 9 \frac{1}{2}$

Tip to Tip.
Locality.
II $\frac{1}{2}$
95
9 White Nile

Owner.

| $25 \frac{7}{8}$ | $9 \frac{3}{2}$ | $11 \frac{1}{2}$ | Kordofan | . Major C. J. Hawker. |  |
| :--- | ---: | ---: | :---: | :---: | :--- |
| $24 \frac{3}{ \pm}$ | $10 \frac{1}{2}$ | $9 \frac{5}{8}$ | Do. | . Major A. J. B. Percival. |  |
| $24 \frac{1}{2}$ | $9 \frac{1}{2}$ | 9 | White Nile | . | H. Cookson. |


| Length on front curve. | Circum. ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $24 \frac{1}{2}$ | 10 | $7{ }^{\frac{1}{8}}$ | W. Kordofan . | A. L. Butler. |
| $24 \frac{1}{4}$ | ıо | 151 | Kordofan | Sir Robert Harvey, Bart. |
| 233 年 | 8 | $7 \frac{1}{2}$ | White Nile | T. D. M. Cardeza. |
| $23 \frac{1}{2}$ | 10 | $10 \frac{1}{3}$ | Kordofan | G. L. Harrison. |
| $23 \frac{1}{2}$ | 83 | $7{ }^{\frac{1}{4}}$ | Sudan | Col. J. J. Asser. |
| $23 \frac{1}{1}$ | 83 | 81 | Dinder Valley | - C. D. Eyre. |
| $23 \frac{1}{4}$ | 83 | $2 \frac{7}{8}$ | Sudan | C. R. Gurney. |
| 23 | $9 \frac{1}{2}$ | $8 \frac{1}{2}$ | White Nile | E. C. Crispin. |
| $22 \frac{7}{8}$ | 83 | 51 | Do. | . Lord St. Oswald. |
| 223 | $8 \frac{3}{}$ | 9 | Do. | British Museum (R. McD. Hawker) |
| 225 | 9 | 7 | Sudan | Capt. R. J. Collins. |
| $22 \frac{1}{2}$ | 9 | $6 \frac{1}{2}$ | Do. | G. C. Whitaker. |
| $22 \frac{1}{2}$ | 83 | $6 \frac{1}{2}$ | Do. | Capt. G. S. Cameron. |
| $22 \frac{1}{2}$ | $8_{1}^{1}$ | 9.4 | Dinder Valley | - C. Bower Ismay. |
| ¢ $22 \frac{1}{2}$ | $8 \frac{1}{4}$ | $7 \frac{1}{2}$ | Kordofan | Walter Jones. |
| $22 \frac{1}{2}$ | 9 | $6 \frac{1}{2}$ | Sudan | Col. A. Colville. |
| 223 | 93 | 14 | White Nile | Lieut. - Gen. Sir B. T. Mahon. |
| $22 \frac{1}{1}$ | 9 | $5 \frac{1}{2}$ | Sudan | . Capt. G. S. Nickerson. |
| $22 \frac{1}{4}$ | $8 \frac{1}{2}$ | 61 | White Nile | Major H. N. Dunn. |
| 223 | 83 | 6 | Do. | . Capt. A. H. Vivian. |
| $22 \frac{18}{1}$ | 8 䍃 | 4 ${ }^{\frac{1}{2}}$ | Do. | E. M. Tabor. |
| 22.1 | $9{ }^{\frac{3}{1}}$ | 4 | Lado | . Q. Grogan. |
| $22 \frac{1}{4}$ | $9^{\frac{1}{2}}$ | $7 \frac{1}{4}$ | Sudan | Capt. E. H. Francis. |
| $22 \frac{1}{4}$ | 9 | 5 | Sobat District | . Capt. J. A. Pollock. |



Head of Topi. From a specimen shot by the late Mr. A. H. Neumann.
C.-TOPI (D. corrigum jimela).

## Korki, Galla. <br> Mangazi, Waganda.

Differs from D.c.typicus by the darker colour and absence of dark eye-stripe (see illustration). General colour dark reddish brown, with a silky bluish grey gloss; shoulders and thighs with blue-black patches ; no dark stripe from the frontal blaze to the eye; under-parts bright cinnamon. Dark markings absent in young. Horns lyreshaped, with the tips inclined backwards and inwards. A topi from the Upper Congo appears to connect typicus with jumela, having a vestige of the black eye-stripe. Height at shoulder, 48 to 50 inches. Weight, about 300 lbs.

Distribution.-Typically from the Juba district to British East Africa, thence to the Sabuki River, also near Lake Rudolf. The Uganda form apparently represents a distinct race of darker colour and larger stature.


- Owner's measurements.


Head of Bontebok.

## The BONTEBOK (Damaliscus pygargus).

Distinguished from the preceding species of the genus by the lower portions of the limbs being mainly white, as well as (if one race of the korrigum be excluded) by a white blaze on the face, which is continuous from the horns to the nose. Height at shoulder, about 40 inches. Weight, about 200 lbs . Colour of fore part of back rufous fawn darkening into blackish on the back of ears, upper part of face, near the rump, flanks, shoulders, front of limbs, and tail-tuft ; side of basal part of rump, upper half of tail, under-parts, and much of hind surface of limbs white.

The horns very nearly resemble those of the blesbok in shape, but their colour is much darker.

Distribution.-Cape Colony, south of the Orange River; now nearly exterminated. Although formerly occurring in tens of thousands on the Karus of Cape Colony and near Cape Agulhas, bontebok are reduced to a single herd preserved on some flats on the estate of Mr. Vander Byl, near Swellendam, in the south of Cape Colony.

| Length on front curve. | Circum. ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $16 \frac{3}{5}$ | $6{ }^{3}$ | $9{ }^{\frac{1}{8}}$ | ? | British Museum. |
| 163 | $6{ }^{5}$ | $8{ }_{4}$ | Bredasdorp | A. C. Campbell. |
| ${ }^{1} 15 \frac{7}{8}$ | $6 \frac{7}{8}$ | 8 | Do. | British Museum (F. C. Selous). |
| $15^{\frac{1}{2}}$ | 612 | $8 \frac{1}{1}$ | Do. | Hon. Walter Rothschild. |
| ${ }^{1} 5^{\frac{1}{2}}$ | $6 \frac{1}{2}$ | 7 | Do. | W. A. Simpson Hinchliffe. |
| ${ }^{1} 5^{\frac{1}{2}}$ | $6 \frac{1}{2}$ | $9{ }^{3}$ | Do. | A. C. Humbert. |
| $15 \frac{3}{8}$ | $6 \frac{1}{8}$ | $8 \frac{1}{8}$ | Cape Colony | Sir Victor Brooke's Collection. |


| Length on front curve. | Circum ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 15 | $6 \frac{3}{4}$ | $8 \frac{1}{2}$ | Cape Colony : | - F. C. Selous. |
| 15 | 6 | 7 | Do. | - Sir Owen Philipps. |
| 15 | $6 \frac{1}{4}$ | $6 \frac{3}{4}$ | Bredasdorp | - W. S. Curtis. |
| 15 | 6 | 10 | Do. | A. W. Guthrie. |
| $914{ }^{\text {¢ }}$ | $5^{\frac{3}{3}}$ | $7{ }^{5}$ | Do. | . Sir Abe Bailey. |
| 9141 | $5^{\frac{1}{4}}$ | 7 | Do. | - W. A. Simpson Hinchliffe. |
| ${ }^{1} 9153 \frac{1}{2}$ | 53 | $7{ }^{\frac{1}{2}}$ |  | . British Museum (F. C. Selous). |
|  |  |  | ${ }^{1}$ Height at 5 | shoulder, $36 \frac{3}{3}$. |
|  |  |  | OWNER'S MEA | ASUREMENTS. |
| 153 | 61 | $7{ }^{\frac{1}{16}}$ | Bredasdorp | Capt. W. Jardine. |
| $15 \frac{1}{2}$ | $6 \frac{1}{2}$ | 5 | Do. | A. Ohlsson. |
| $15 \frac{1}{2}$ | $6 \frac{3}{3}$ | $9 \frac{3}{4}$ | Do. | - Mr. Justice Hopley. |
| $15 \frac{1}{4}$ | 61 | 9 | Do. | - P. C. Keytel. |
| 15 | 61 | 75 | Do. | . Sir Abe Bailey. |
| 15 | 6 | $9{ }^{\frac{1}{8}}$ | Do. | - Dr. Albert von Stephani. |
| $14 \frac{1}{2}$ | $\cdots$ | .. | Do. | South African Museum. |
| $\bigcirc 13$ | 5 | $6 \frac{1}{8}$ | Do. | - Abel Chapman. |



Horns of Female and Male Blesbok.

## The BLESBOK (Damaliscus albifrons).

Nunni, Bechuana.
Closely allied to the bontebok, but with the white blaze on the forehead divided by a brown line between the eyes, the absence of a white rump-patch, the wholly brown tail, and the yellowish rings of the horns; the horns themselves showing a greenish tinge.

Formerly to be numbered by hundreds of thousands, the beautiful blesbok had in the last sixty years grown very scarce, being fonly met with in small numbers on a few Boer farms in the Transvaal and the Orange River Colony; but since the Boer War they have increased enormously in numbers, and it is estimated that there are now over 50,000 on farms in the Orange River Colony. Seventy years ago blesboks often literally darkened the face of the land with
their innumerable legions. The north of the Cape Colony, Griqualand West, the Orange River Colony, and the plains of the Western and Southern Transvaal were the true home of this beautiful antelope. Gordon Cumming wrote as follows of the blesbok-country in 1848: "The plains exhibited one purple mass of graceful blesboks, which extended without a break as far as my eyes could strain; the depth of their vast legions covered a breadth of about six hundred yards."

Distribution.-Northern plains of Cape Colony, Orange River Colony, Transvaal, Griqualand West, and Bechuanaland.

| Length on front curve. | Circum- <br> ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 188 | $6 \frac{1}{2}$ | 10 | South Africa . | - H. G. Supple. |
| 181 | $5 \frac{3}{ \pm}$ | $12 \frac{1}{7}$ | Do. | . Sir Edmund G. Loder, Bart. |
| $17 \frac{3}{4}$ | $6 \frac{1}{2}$ | I $5 \frac{1}{2}$ | Orange River Colony | - Major B. Horsbrugh. |
| $17 \frac{1}{4}$ | $6 \frac{3}{4}$ | 7 | Transraal | - Sir Abe Bailey. |
| 174 | $7 \frac{1}{4}$ | $6 \frac{1}{2}$ | Orange River Colony | - B. J. Fitzherbert. |
| $17 \frac{1}{4}$ | $6 \frac{3}{4}$ | $8 \frac{1}{2}$ | Do. | . Sir H. J. Goold-Adams. |
| 17 | $6 \frac{3}{4}$ | 7 | ? | F. V. Worthington. |
| 17 | 7 | 10 | ? | J. L. Drège. |
| $16 \frac{3}{4}$ | $6 \frac{3}{4}$ | 7 | ? | T. Stephenson. |
| $16 \frac{3}{4}$ | $6 \frac{1}{2}$ | $9{ }^{7}$ | Orange River Colony | - Col. W. H. Sitwell. |
| 16 $\frac{1}{2}$ | 7 | 8 | Do. | - Capt. H. D. Livingstone. |
| 161 $\frac{1}{2}$ | $6 \frac{1}{2}$ | $9 \frac{1}{2}$ | Do. | - Capt. Sandilands. |
| $16 \frac{1}{2}$ | $6 \frac{8}{4}$ | 6 | Do. | - Major C. F, Pinney. |
| $16 \frac{1}{2}$ | $6 \frac{1}{4}$ | $8 \frac{1}{4}$ | Do. | Hon. R. A. Ward. |
| $16 \frac{1}{2}$ | $6 \frac{1}{2}$ | $4 \frac{1}{4}$ | Do. | - Major I. Brooke. |
| 163 | 7 | 63 | Do. | - A. E. Croker. |
| 164 | 63 | $7 \frac{1}{4}$ | Do. | - Lieut.-Col. F. Fitzherbert. |
| 164 | 63 | 71 | Do. | - Major G. F. Henry. |
| $16 \frac{1}{4}$ | 6 | $6 \frac{1}{2}$ | ? | Capt. R. Meinertzhagen. |
| 161 | 7 | $9 \ddagger$ | ? | British Museum. |
| $16 \frac{1}{7}$ | 6 爯 | 94 | Transvaal | Capt. C. G. Leslie. |
| 16 | $6 \frac{8}{5}$ | 7 | ? | Capt. E. W. S. Balfour. |
| 16 | 63 | 83 | Orange River Colony | . Col. Lord Douglas Compton |

\(\underset{\substack{Length on <br>
front <br>

curve.}}{ } \quad\)| Circum- |
| :---: |
| ference. |$\quad$| Tip to |
| :---: |
| Tip. |

Locality.
Owner.

| 16 | $6 \frac{3}{3}$ | 7 | Orange River Colony | . W. A. Simpson IIinchliffe. |  |
| :---: | :---: | :---: | :---: | :---: | :--- |
| ${ }^{15} 5$ | $6 \frac{7}{4}$ | $7 \frac{1}{4}$ | Do. | . | Sir Owen Philipps. |
| ${ }^{1} 15 \frac{1}{4}$ | $6 \frac{1}{2}$ | IO | Driefontein, Orange River <br> Colony | British Museum (F. C. Selous). |  |
| ${ }^{1} 15$ | $5 \frac{1}{4}$ | $\ldots$ | Orange River Colony | . Capt. H. D. Livingstone. |  |



Head of Blesbok.

## OWNER'S MEASUREMENTS.

| 181 ${ }^{1}$ | ... | $\ldots$ | ? | W. Colson. |
| :---: | :---: | :---: | :---: | :---: |
| 18 | 61 $\frac{1}{2}$ | 105 | Orange River Colony | - F. R. N. Findlay. |
| 173 | ... | $\ldots$ | Do. | . C. S. Mann. |
| $17 \frac{1}{2}$ | 612 | 83 | Transvaal | . J. B. Wheelwright. |
| $17 \frac{1}{4}$ | $6 \frac{1}{4}$ | $10 \frac{1}{8}$ | Orange River Colony | - Capt. W. Jardine. |
| 17 | ... | $8 \frac{1}{2}$ | ? | Major W. Anstruther Gray. |
| 17 | $6 \frac{3}{4}$ | $9 \frac{1}{2}$ | ? | J. C. Phillips. |
| $16 \frac{7}{8}$ | 7 | $7{ }^{\frac{1}{2}}$ | Orange River Colony | . Count E. Hoyos. |
| ¢ $16 \frac{1}{2}$ | $6 \frac{1}{4}$ | 8 星 | Do. | - Sir Abe Bailey. |
| 16 | 61 | 10, ${ }^{\frac{1}{2}}$ | ? | A. F. William. |
| $15^{\frac{5}{3}}$ | $6 \frac{1}{2}$ | $7 \frac{1}{4}$ | Transvaal | . H. A. Bryden. |
| ¢ $144^{\frac{7}{8}}$ | $4 \frac{3}{4}$ | $8 \frac{1}{4}$ | Orange River Colony | . P. C. Keytel. |
|  |  |  | Weight, r8o lbs. Height at | oulder, $39 \frac{1}{2}$ inches. |



Head of Sassaby. From a specimen shot in Mashonaland by Mr. F. C. Selous.

The SASSABY or BASTARD HARTEBEEST (Damaliscus lunatus).
Incolomo, Matabili. Luchut, Masara.
Ingalowana, Basuto. IVtengo, Chilala and Chibisa
Inkweko, Masubia. Minanci, Swazi.
Inyundo, Makalaka. Msansi, Zulu.
Kaboli, Barotsi and Ngami. Unchurre, Makuba.
Horns short, starting obliquely outwards, with a single upward and backward lunate curve. Height at shoulder, from 3 feet io inches to 4 feet. General colour dark chestnut-red, with the face, shoulders, hips, upper portions of limbs, and tail-tuft black, and the region of the groin and margin of the ears white.

The sassaby has the reputation-in the opinion of all hunters who have tested its speed-of being the fleetest and most enduring antelope in South Africa; and were it not that, in common with the Cape hartebeest, it happens to be lacking in presence of mind, it would very seldom fall to the sportsman's rifle. A troop of sassaby may be often turned from its course, or brought to a halt, by firing over the heads of the fleeing animals. Or if the leader of the troop be wounded and turned out, the rest of the herd become confused and now and again offer easy shots.

Distribution.-South-East Africa, from north of the Orange River to the Zambesi, westward to Lake Ngami, and northwards to British Central Africa.

| Length on front curve. | Circumference. | T'ip to Tip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $17 \frac{1}{2}$ | $7 \frac{1}{4}$ | 11 | N. E. Rhodesia | - | . Sir Abe Bailey. |
| $17 \frac{1}{1}$ | $8 \frac{1}{2}$ | $9{ }^{3}$ | Do. | - | . Earl of Kingston. |
| $17 \frac{1}{4}$ | $8 \frac{1}{3}$ | $10^{3}$ | Do. | - | - K. D. Waterhouse. |
| $17 \frac{1}{4}$ | $7 \frac{1}{12}$ | I $1 \frac{1}{2}$ | Do. | . | - Col. C. F. Blane. |
| 17 | S ${ }_{2}^{1}$ | $12{ }_{4}^{1}$ | Do. | . | Col. A. Colville. |
| 17 | $7{ }^{\text {星 }}$ | $10 \frac{1}{2}$ | Do. | . | . I. M. Stewart. |
| $16 \frac{3}{4}$ | $7 \frac{1}{4}$ | 12 | Do. | . | - IV. A. Conduitt. |
| $16 \frac{3}{4}$ | $7{ }^{\frac{1}{4}}$ | $11 \frac{1}{4}$ | Ngamiland . | - | . Hon. G. Legge. |
| $16 \frac{3}{4}$ | $8 \frac{1}{4}$ | $10^{\frac{1}{7}}$ | N.E. Rhodesia | - | - J. Turner. |
| 165 | 75 | $13 \frac{2}{\frac{2}{1}}$ | Do. | . | - F. H. Melland. |
| $16 \frac{1}{2}$ | $7 \frac{1}{2}$ | 14 | Do. | . | - R. Hayne. |
| 161 | $6 \frac{3}{4}$ | $13 \frac{1}{4}$ | Ngamiland . | . | . A. G. Stigand. |
| $16 \frac{1}{2}$ | $7 \frac{1}{2}$ | $12 \frac{1}{4}$ | N. E. Rhodesia | . | - H. Cookson. |
| $16 \frac{1}{2}$ | 78 | $10{ }_{4}^{\text {a }}$ | Do. | . | Capt. S. H. Christy. |
| $16 \frac{1}{2}$ | $7 \frac{3}{1}$ | $10 \frac{1}{4}$ | S. Rhodesia . | . | C. VV. Adams. |
| $16 \frac{1}{4}$ | 71 | I I $\frac{1}{2}$ | N.E. Rhodesia | . | Hon. W. Guinness. |
| 16 | 73 | $1{ }_{1}^{1} \frac{1}{4}$ | ? |  | A. Hugh Bainbridge. |
| 16 | 75 | $12{ }^{\text {a }}$ | Chinama, B. C.A. | . | Hon. Walter Rothschild. |
| 916 | 64 | $14 \frac{1}{4}$ | N.E. Rhodesia | . | Col. A. Colville. |
| 153 | 72 | $15^{\frac{1}{2}}$ | Mashonaland . | . | Sir John Willoughby, Bart. |
| $15 \frac{3}{4}$ | $7 \frac{1}{2}$ | 11 | N.E. Rho!esia | . | F. H. Melland. |
| 15\% | 73 | $11 \frac{3}{1}$ | S. Africa | - | Sir Edmund G. Loder, Bart. |
| $15 \frac{1}{2}$ | 8 | II $\frac{3}{1}$ | N. E. Rhodesia | . | A. de L. Long. |
| $15 \frac{1}{3}$ | $8 \frac{1}{4}$ | $10 \frac{1}{4}$ | ? |  | W. A. Simpson Hinchliffe. |
| $15 \frac{1}{2}$ | S | 13 | N.E. Rhodesia |  | P'. K. Glazebrook. |
| 154 | $\cdots$ | $\ldots$ | Mashonaland . | - | F. C. Selous. |
| $15 \frac{1}{4}$ | 7 | $14 \frac{3}{5}$ | ? |  | F. T. Garbutt. |
| $15 \frac{1}{4}$ | $8_{\underline{1}}^{1}$ | $13 \frac{3}{19}$ | ? |  | Wr. F. Wailes-Fairbairn. |
| $15 \frac{1}{4}$ | S | 12. | S.E. Africa | - | . British Museum (Sir Andrew Smith). |
| $15 \frac{1}{4}$ | 71 | $1{ }^{\frac{1}{2}}$ | Rhodesia | - | . N. II. Barton. |

## OWNER'S MEASUREMEN'TS

$17 \frac{1}{ \pm}$ I4䨝 N.E. Rhodesia . . J. C. Phillips.


Frontlet and Horns of Brindled Gnu. From specimen in the British Museum, presented by the late Mr. Rowland Ward.

## The BRINDLED GNU or BLUE WILDEBEEST (Connochætes taurinus).

Ee-vumba, Makalaka.
Ikokoni, Basuto.
Inkoni-koni, Amandebili.
Inkongoni, Swazi and Zulu.
Kokong, Barotsi and Batoka.

Minynumbwi, Batonga.
Munyumbwa, Chila.
Numbo, Masubia.
Nyamba, Chilala and Chisenga.
Unzozo, Makuba.

From their near relatives the hartebeests the gnus, or wildebeests, are distinguishable at a glance by their grotesque shape and smooth horns, as they also are by their habits. The long, broad, and massive head has a blunt and bristly muzzle, and tufts of coarse hair on the forehead and chin; the chin-tuft also extending on to the throat. The horns, which are placed on the crown of the head, are approximated at their bases, especially in old bulls, and are nearly smooth, more or less flattened at the bases, but almost cylindrical at the tips; the curvature being at first outwards, or outwards and downwards, and then bending upwards at the tips. An abundant mane of long hair clothes the back of the neck; and the tail is covered with longer and softer hairs, reaching considerably below the hocks. It is from the equine form of the tail that these animals were long popularly known by the name of "horned horse." The hoofs are characterised by their narrow form.

The blue wildebeest, as this species is called in S. Africa, is a large animal, standing from 4 feet 3 to 4 feet $4 \frac{1}{2}$ inches at the shoulder. Its most characteristic features are the outward direction of the horns, which are but little expanded at the base and not unlike those of a buffalo; the almost uniformly black tail, the partially pendent mane, the presence of a fringe on the throat, the downward direction of the long hair on the face, and the absence of long hair on the lower part of the chest and between the fore-legs. The general colour varies from
grizzled roan to blackish slaty brown, with more or less distinct vertical dark stripes, most conspicuous in the lighter-coloured specimens, on the sides of the neck and fore-quarters. Typically, the fringe of hair on the throat, like the mane and tuft on the forehead, is black.

Distribution.-Formerly ranging from the north of the Orange River for a long distance up East Africa, the brindled gnu is now practically exterminated in the Orange River Colony and the adjacent districts south of the Limpopo. It survives in parts of Griqualand


Head of Brindled Gnu.
West and the Kalahari, as well as in British Bechuanaland, and is numerous in northern Zululand, as well as in Khama's country, the Orange River Colony, and Rhodesia, and thence northwards through Central and East Africa, and it also occurs in Mozambique. In spite of its clumsy and ungainly appearance, the brindled gnu is a rapid mover; and even when severely wounded will not unfrequently succeed in making good its escape from the mounted hunter.

It is generally distributed in South-East Central Africa, and north of the Zambesi is represented by the Nyasa race (C. taurinus johnstoni), distinguished by the white chevron on the face. Another race is noticed below.

## A．－TYPICAL（C．taurinus typicus）and NYASA RACES．

| Widest outside． | Widest inside． | Length on front curve． | Breadth | $\begin{gathered} \text { Tip to } \\ . \text { Tip. } \end{gathered}$ | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $32 \frac{1}{2}$ | 29 | 20 | 4 | $26 \frac{1}{2}$ | P．E．Africa | British Museum（late Mr． Rowland Ward）．See illus－ tration，p． 150. |
|  | 29 | 31 | ${ }^{1} 134$ | $15 \ddagger$ | Sali Flats | Dr．R．P．Mitchell． |
| 32 | 28 | 24 | $4{ }^{\frac{8}{1}}$ | 21 | P．E．Africa | I．C．Phillips． |
| $\ldots$ | $28 \frac{1}{2}$ | 215 | 5 ${ }^{\frac{1}{4}}$ | $17 \%$ | Matabililand | G．H．M．Banks． |
| 31 爫 | 28 | $22 \frac{1}{4}$ | $4{ }^{3}$ | 183 | Nyasaland | Capt．G．M．I．Ilawthorne． |
| ．．． | $28 \frac{1}{2}$ | 20 妾 | 5 | 16 | Pungwe | C．C．Gouldsmith． |
| $30 \frac{7}{8}$ | $26 \frac{3}{4}$ | 21 | $4 \frac{1}{1}$ | $21 \frac{1}{2}$ | S．E．Africa | American National Collection． |
| 30 需 | 263 | $23 \frac{1}{1}$ | $5 \frac{1}{8}$ | $16{ }_{4}^{3}$ | ？ | Sir Abe Bailey． |
| $30 \frac{1}{2}$ | $26 \frac{1}{2}$ | $23 \frac{1}{1}$ | $6 \frac{1}{2}$ | 18 ¢ | S．E．Africa | F．C．Selous． |
| $30 \frac{1}{2}$ | $26 \frac{3}{9}$ | $24 \frac{1}{1}$ | 4를 | 18 | P．E．Africa | Capt．R．A．McClymont． |
| $30 \frac{1}{2}$ | 26 | $22 \frac{1}{4}$ | $4{ }^{\frac{1}{2}}$ | $18 \frac{1}{2}$ | Do． | Col．A．Colville． |
| 3 여 | 26 | 22 | $4 \frac{1}{1}$ | 17 量 | Do． | IV．A．Simpson Hinchliffe． |
| $\ldots$ | $26 \frac{1}{2}$ | $21 \frac{1}{4}$ | $4{ }^{5}$ | $20 \frac{1}{2}$ | Matabililand | Major R．Hayes－Sadler． |
| $30 \frac{1}{4}$ | $26 \frac{1}{4}$ | 193 | 5 | $21 \frac{1}{2}$ | ？ | B．Nicolson． |
| 30 | 253 | $21 \frac{1}{2}$ | $4{ }^{\frac{3}{4}}$ | 19.1 | Pungwe | Dr．S．Martin． |
| 30 | $26 \frac{1}{4}$ | $21 \frac{1}{2}$ | $4^{\frac{1}{2}}$ | $18 \frac{1}{4}$ | Do． | Ifon．Walter Rothschild． |
| 30 | 26 | 21 | 42 | 19.1 | Do． | Count R．Coudenhove－ Kalergi． |
| ．．． | $25 \frac{1}{2}$ | 22 | $4 \frac{1}{4}$ | 17 | S．Africa ． | G．Richards． |
| 29 等 | $25^{\frac{1}{2}}$ | 22 | $4{ }^{\frac{3}{4}}$ | $16 \frac{1}{2}$ | G．E．Africa | J．R．Rolls Richardson． |
| 293 | $24 \frac{1}{7}$ | 245 | $4 \frac{1}{4}$ | 18 䍃 | S．E．Africa | H．W．Elliott． |
| 293 | 26 | 22 | 4 | $18_{5}^{3}$ | ？ | British Museum（Sir $\Lambda$ ． |
| 29 ${ }^{\frac{1}{2}}$ | 25 | $19 \frac{1}{4}$ | 5 | 204 | ？ | G．Bateman． |
| 29를 | $25 \frac{1}{4}$ | $20 \frac{1}{2}$ | 5 | 20 | Zululand． | Maj．－Gen．Sir David Bruce． |
| $29 \frac{1}{2}$ | $25^{\frac{1}{2}}$ | $21 \frac{1}{4}$ | $4 \frac{1}{1}$ | $18{ }^{\text {采 }}$ |  | Sir Owen Philipps． |
| 29 | 26 | 19 | 4 | $21 \frac{1}{4}$ | N．E．Rhodesia | H．Cookson． |
| 29 | 251 |  | 3 量 | 19 | Pungwe | H．R．H．Prince Pedro d＇Orléans et de Braganza． |
| 29 | 24 爯 | 20.1 | $4 \frac{1}{4}$ | 163 | ？ | A．Hugh Lainbridge． |

## OWNER＇S MEASUREMENTS．




Head of White Bearded Gnu.

## B.-NYASA RACE.

| Widest outside. | Widest inside. | Length on front curve. | Breadth of palm. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 30 | $25^{\frac{3}{4}}$ | $24 \frac{1}{2}$ | $4^{\frac{1}{2}}$ | 189 | Nyasaland | Capt. R. Meinertzhagen. |
| $291{ }^{16}$ | 25 | 209 | 5 | 16 | Do. | A. R. Andrew. |
| 29 | 24 $\frac{1}{\text { 星 }}$ | 21 | $4{ }^{3}$ | 14 | Do. | T. Mills. |
| 26 | 22 | 13 | 5 | 19 | N. W. Rhodesia | G. Crompton. |
| 26 | 219 | $13 \frac{1}{1}$ | $4 \frac{1}{4}$ | $17 \frac{8}{4}$ | Nyasaland | Sir Alfred Sharpe. |
| ¢ $255 \frac{7}{8}$ | $21 \frac{1}{8}$ | $18 \frac{7}{5}$ | 4 | 123 | Mashonaland | J. Ff. Darling. |
| 25\% | $21 \frac{1}{2}$ | I 8 星 | $4^{\frac{1}{2}}$ | $13{ }^{\frac{1}{2}}$ | Nyasaland | K. II. Storey. |
| 251 | 215 | $17 \frac{1}{1}$ | 4 | I5 | Barotsiland | R. T. Coryndon. |



Skull and Horns of White-bearded Gnu.

## C.-KILIMANJARO or WHITE-BEARDED RACE (C. taurinus albojubatus).

> Nyumbu, Swahili. Lavagadli, Somali.
> Engat, Masai.

A race distinguished by its slightly paler colouring, and the yellowish white throat-fringe, a few whitish hairs being also mingled with the mane. The form of the widest part of the front of the horns is somewhat different from the corresponding region in the typical race. Weight, about 550 lbs .

Distribution.-East Africa-Athi plains, Ukambani, north of Kilimanjaro.

| Widest outside. | Widest inside. | Length on front curve. | Breadth of palm. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $29 \frac{1}{2}$ | $26 \frac{1}{4}$ | $24 \frac{1}{7}$ | $4^{\frac{1}{2}}$ | $18 \frac{3}{1}$ | East Africa | - W. L. Spencer Churchill. |
| $29 \frac{1}{2}$ | $25^{\frac{1}{2}}$ | 24 | 53 | 165 | Do. | - Sir Edmund G. Loder, Bart. |
| 29.1. | 253 | $21 \frac{1}{2}$ | $4 \frac{3}{1}$ | I $7 \frac{1}{2}$ | Do. | G. L. Harrison. |
| 29 | 25 | $25^{\frac{3}{1}}$ | $4{ }^{\frac{3}{4}}$ | $16 \frac{3}{4}$ | Do. | - Mrs. J. E. R. Oldfield. |
| 29 | $24 \frac{3}{4}$ | 21 | 43 | 18 | Do. | . H. C. Phipps. |
| 28? | 25 | $21 \frac{1}{2}$ | $4 \frac{1}{2}$ | $18 \frac{3}{4}$ | Do. | - C. Bulpett. |
| 283 | $25 \frac{1}{4}$ | 21 | $4{ }_{4}$ | 18 | Do. | W. Sewall. |
| $28 \frac{1}{2}$ | 25 | $21^{\prime}$ | $4 \frac{1}{2}$ | $17 \frac{1}{2}$ | Do. | . The late G. G. Longden. |
| 281 | 24 $\frac{1}{2}$ | 21 | 5 | 183 | Do. | - Abel Chapman. |


| Widest outside． | Widest inside． | Length on front curve． | Breadth <br> of palm． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 281 | 24 ${ }^{\frac{1}{2}}$ | 22 | 5 | 16 | East Africa | －J．H．Penruddock． |
| 28.1 | 25 | 22 | $4^{\frac{1}{2}}$ | 19 | Do． | －W．Neilson． |
| $28 \frac{1}{4}$ | $24^{\frac{1}{2}}$ | $22 \frac{1}{2}$ | $4^{\frac{1}{2}}$ | 15 | Do． | －R．H．R．Brocklebank． |
| 28 年 | $24^{\frac{1}{2}}$ | 21 | $4{ }^{\frac{3}{1}}$ | 163 | Do． | －Capt．R．Meinertzhagen． |
| 28 年 | 24 | $21 \frac{1}{2}$ | $4^{\frac{3}{4}}$ | 161 | Do． | ．R．W．McKergow． |
| 28 | $24 \frac{1}{2}$ | $24 \frac{3}{1}$ | $4{ }^{\frac{3}{4}}$ | 18 | Do． | Dr．A．E．Herz． |
| 28 | $23 \frac{1}{3}$ | 20 | 4 ${ }^{\frac{1}{2}}$ | $18 \frac{3}{18}$ | Do． | －Capt．V．C．de Crespigny． |
| 28 | 25 | 24 | $4^{\frac{1}{4}}$ | $18 \frac{1}{1}$ | Do． | Capt．G．F．Phillips． |
| 28 | $2+\frac{1}{2}$ | 22 量 | 5 | 19 | Do． | ．G．W．C．Drexel． |
| $27 \frac{3}{9}$ | $24 \frac{1}{4}$ | 21 | 5 | $18{ }^{3}$ | Do． | C．B．C．Storey． |
| $27 \frac{3}{4}$ | 24. | 223 | $4 \frac{1}{4}$ | $19 \frac{1}{4}$ | Do． | －J．Anstruther． |
| 273 | 233 | $21{ }^{\text {量 }}$ | $5^{\frac{1}{2}}$ | $17 \frac{1}{4}$ | Do． | －Comdr．H．L．P．Herd，R．N． |
| $27 \frac{3}{4}$ | 24 | $23 \frac{1}{2}$ | $4{ }^{\frac{3}{4}}$ | $15{ }^{\text {m }}$ | Do． | ．Col．D．M．Lumsden． |
| $27 \frac{3}{4}$ | $25^{\frac{1}{2}}$ | $22 \frac{1}{4}$ | $5{ }^{\text {星 }}$ | $14 \frac{1}{2}$ | Do． | －Capt．T．H．Rivers Bulkeley． |
| $27 \frac{3}{1}$ | $23 \frac{1}{2}$ | $25 \frac{1}{1}$ | $4{ }^{3}$ | $16 \frac{1}{2}$ | Do． | W．N．McMillan． |
| $27 \frac{3}{4}$ | 24 | $25^{\frac{1}{ \pm}}$ | $4^{\frac{1}{2}}$ | $14 \frac{1}{4}$ | Do． | F．C．Selous． |
| $27 \frac{3}{1}$ | 25 | $23 \frac{1}{2}$ | $4{ }^{\frac{3}{8}}$ | 21 | Do． | －G．C．Slacke． |
| $27 \frac{3}{4}$ | 23 䍃 | 23 | 53 | 23 | Do． | －W．H．Levy． |
| $27 \frac{1}{2}$ | 23 年 | $21 \frac{1}{2}$ | $4{ }^{\frac{3}{1}}$ | 15 年 | Do． | C．Craig． |
| $27 \frac{1}{2}$ | 23 年 | $15^{\frac{1}{2}}$ | $4{ }^{\frac{3}{4}}$ | 203 | Do． | T．D．M．Cardeza． |
| $27 \frac{1}{2}$ | $23 \frac{3}{3}$ | 21 | 42 | 163 | Do． | Master of Belhaven． |
| $27 \frac{1}{2}$ | ．．． | 22 | 6 | ${ }^{1} 5^{\frac{1}{2}}$ | Do． | Lord Delamere． |
| $27 \frac{1}{2}$ | 24 | 18 䍃 | $4{ }^{3}$ | $18 \frac{1}{1}$ | Do． | Dr．Clifford Brookes． |
| $27 \frac{1}{2}$ | 24 | $24^{\frac{1}{2}}$ | $4{ }^{\frac{7}{4}}$ | $16 \frac{1}{2}$ | Do． | S．E．Milsom． |
| 274 | 23 3 | 181 | $4{ }^{5}$ | 19 | Do． | Lord Alex．Thynne． |
| $27 \frac{1}{13}$ | 23 | 21 | $4^{\frac{1}{1}}$ | 141 ${ }^{\frac{1}{2}}$ | Do． | A．de Rothschild． |
| $27 \frac{1}{4}$ | $22 \frac{3}{4}$ | 23 | $5^{\frac{1}{2}}$ | 15 | Do． | Major J．A．Hannyngton． |
| $27 \frac{1}{1}$ | 23 年 | 21 | $4^{\frac{1}{2}}$ | $16 \frac{3}{}$ | Do． | －Percy C．Madeira． |
| $27 \frac{1}{1}$ | $23 \frac{1}{2}$ | $20 \frac{1}{1}$ | $4{ }^{\text {爯 }}$ | $21 \frac{1}{2}$ | Do． | C．Frick． |
| 273 | 24 | 23 | $4^{\frac{1}{2}}$ | $18 \frac{1}{4}$ | Do． | Lt．－Col．T．A．Colfox． |
| ¢ 22 年 | $19 \frac{1}{2}$ | $16 \frac{1}{2}$ | $3{ }^{\frac{1}{4}}$ | $12 \frac{3}{5}$ | Do． | ．R．E．Wemyss． |



Head of Gnu.

## The GNU or BLACK WILDEBEEST (Connochætes gnu).

This southern species is the true gnu, which was formerly known to the Hottentots by that name, although, by the colonists, it is termed the black wildebeest. Its inferior size (height at shoulder, about 3 ft . Io ins.), the downward curvature of the horns at starting and their great expansion at the base, the white tail, the abundant fringe of long hair on the lower part of the chest and between the fore-legs, the upright mane, and the crest of hair on the face, distinguish it from the brindled gnu. The general colour is uniform deep umber-brown, passing into black. Females are much smaller than males; and have the horns more slender and less expanded at the base.
Distribution.-The northern range of this species was approximately limited by the Vaal, or northern branch of the Orange River. At the time of the Boer War this gnu was represented by herds of a few hundred in the Orange River Colony and on Mr. C. D. Rudd's estate near Cape Town. On the plains of the latter country, as well as on the Karus of Cape Colony, it was formerly found in vast herds, generally in company with quaggas. Fierce and treacherous in disposition, it was especially characterised by its habit of indulging in grotesque capers and frolics on the approach of strangers.

| Length on front curve. | Breadth of palm. | Tip to Tip. |
| :---: | :---: | :---: |
| $26 \frac{1}{2}$ | $7 \frac{3}{4}$ | $14 \frac{1}{2}$ |
| $25^{1}$ | 78 | $21 \frac{1}{4}$ |
| 25 | $6 \frac{3}{4}$ | $15^{\frac{1}{4}}$ |
| $24 \frac{1}{2}$ | 8 | 16 |
| 24, $\frac{1}{2}$ | $7{ }^{\frac{1}{4}}$ | 18 |
| $24 \frac{1}{2}$ | S | $17^{3}$ |
| $24 \frac{1}{4}$ | $7 \frac{1}{2}$ | $19 \frac{1}{2}$ |
| 24 | 812 | 15 |
| 24 | $9 \frac{1}{2}$ | $15^{\frac{1}{2}}$ |
| 24 | 81 | $13 \frac{1}{4}$ |
| 24 | S | 14 |
| 232 | 8 | $16 \frac{1}{2}$ |
| $23 \frac{1}{2}$ | $7{ }^{1 / 4}$ | $15 \frac{1}{2}$ |
| 23 | $7 \frac{1}{2}$ | $11 \frac{1}{2}$ |
| 23 | $7 \frac{1}{2}$ | 15 |
| 23 | 8 | $12 \frac{1}{2}$ |
| 23 | $7 \frac{1}{4}$ | $13 \frac{1}{2}$ |
| 23 | $7 \frac{3}{1}$ | $14{ }^{\frac{3}{4}}$ |
| 223 $\frac{3}{4}$ | $7{ }^{\frac{1}{4}}$ | 15 |
| $22 \frac{3}{4}$ | $8_{2} \frac{1}{2}$ | $16 \frac{1}{4}$ |
| 228 | 75 | 12 $\frac{1}{2}$ |
| ¢ 193 | ${ }^{3} 13 \frac{1}{2}$ | $10 \frac{3}{4}$ |

## OWNER'S MEASUREMENTS.

| $30^{7}$ | ${ }^{1} 22 \frac{1}{2}$ | 14 | Kalahari. | Dr. F. H. H. Guillemard. |
| :---: | :---: | :---: | :---: | :---: |
| 30 | 10 $\frac{1}{2}$ | 171 $\frac{1}{8}$ | ? | Mr. Justice Hopley. |
| $29 \frac{1}{2}$ | $6 \frac{3}{4}$ | 7 | Orange River Colony | Sir Abe Bailey. |
| $27 \frac{7}{8}$ | 7 | I I | Do. | Count E. Iloyos. |
| $27 \frac{1}{2}$ | 10 | $11 \frac{1}{2}$ | Do. | C. S. Mann. |
| $26 \frac{3}{4}$ | 7 | 14 | ? | Major W. Anstruther Gray. |
| $26 \frac{1}{4}$ | 812 | 15 | Cape Colony | Grahamstown Museum. |



Skull and Horns of Abyssinian Duiker shot by Mr. J. G. Millais.

## The DUIKERBOK (Cephalophus grimmi).

Puti, Bechuana.
Impunzi, Matabili.
Grwapi, Chinyanja.
Nagi, M'Kua.

Impungi, Swazi and Zulu.
Imputi, Basuto.
Gudda, Hausa.
Mpewo, Waganda.

Nakasha, Chila.
The Cape duiker, or 'diver,' is a southern representative of an extensive group of, mostly small, antelopes confined to Africa. In all of these the muzzle is naked; face - glands of a more or less elongated form are present, as are lateral hoofs; the tail is of medium length, the knees have no tufts of long hair, and the females are provided with four teats. The horns, which are short and straight, are generally present in both sexes, but are smoother and more slender in the does than in the bucks; while in both sexes they are more or less hidden by a tuft of long hairs growing from the crown of the head. The upper cheek-teeth have low crowns, with square grinding surfaces, and the face-glands are arranged to form a bare line of pores on each side of the muzzle. The present species-the true duikerbok-is characterised by the horns (absent in the females) inclining upwards at an obtuse angle to the plane of the profile of the nose. Other features of the sub-group are the long and pointed ears, the general yellowish fawn colour, devoid of dark markings, except a brown nosestreak. The Cape duiker, which measures from 23 to 26 inches at the shoulder, ranges on the west as far north as Angola, and on the east, in the shape of local races, to the Shiré Highlands, north of which it is
replaced by shorter-eared races akin to the Abyssinian C.g. abyssimicus. Weight, about 30 lbs . Throughout its habitat the duikerbok is to be met with wherever sufficient covert exists ; and its furtive, squatting, dodging habits are most aptly indicated by its name. Occurring either singly or in pairs, it strictly avoids both open plains and steep, rocky mountains.

## A.-CAPE AND ALLIED RACES.

Length on
front.

| $6 \frac{3}{8}$ | $2 \frac{1}{4}$ | 298 | Transvaal | Dr. W. Gibson. |
| :---: | :---: | :---: | :---: | :---: |
| $6 \frac{1}{4}$ | 23 | $3{ }^{3}$ | Do. | - Sir Owen Philipps. |
| $5^{\frac{7}{3}}$ | $1 \frac{7}{8}$ | $2 \frac{1}{2}$ | South Africa | . Wr. A. Simpson Hinchliffe. |
| $5^{\frac{3}{1}}$ | 2 | $3 \frac{1}{8}$ | Do. | . R. McClellan. |
| 5亭 | $2 \frac{1}{15}$ | $2{ }^{3}$ | N.W. Rhodesia . | . Guy Nickalls. |
| $5 \frac{1}{2}$ | $2 \frac{1}{8}$ | $2 \frac{7}{8}$ | Selinya, Khama's country | F. C. Selous. |
| $5^{\frac{1}{2}}$ | $2 \frac{1}{4}$ | 23 | Cape Colony | . Mr. Justice Hopley. |
| $5^{\frac{1}{2}}$ | 2 | $2 \frac{1}{4}$ | Delagoa Bay | . F. W. Parish. |
| $5 \frac{1}{4}$ | $2 \frac{1}{4}$ | I $\frac{1}{3}$ | Zululand . | - Major L. O. Williams. |
| $5^{\frac{1}{4}}$ | 218 | 15 | N.V. Rhodesia . | . Earl of Kingston. |
| $5^{\frac{1}{4}}$ | $2 \frac{1}{4}$ | $3 \frac{5}{16}$ | Do. | . Col. Lord Douglas Compton. |
| $5{ }^{\frac{1}{7}}$ | 21 ${ }^{8}$ | 2 | Do. | - J. C. Phillips. |
| $5^{\frac{1}{8}}$ | 2 | 3 | S. Rhodesia | . Capt. N. Livingstone Learmonth. |
| $5^{\frac{1}{8}}$ | 2\% | 3 | S.W. Transvaal. | - W. F. Tuthill. |
| 5 ${ }^{\frac{1}{8}}$ | 2 | $2 \frac{3}{8}$ | Transvaal . | . H. T. and A. H. Glynn. |
| $5^{\frac{1}{3}}$ | $2 \frac{3}{16}$ | 23 | Cape Flats . | - Capt. W. Jardine. |
| 5 | 2 | $1{ }^{\frac{3}{4}}$ | South Africa | - J. J. B. Saffery. |
| 5 | $2 \frac{1}{4}$ | $2 \frac{1}{4}$ | Do. | - G. Richards. |
| 5 | $2 \frac{3}{5}$ | $2 \frac{1}{4}$ | Do. | - G. B. Plumptre. |
| 5 | $2 \frac{1}{4}$ | $2 \frac{1}{2}$ | Do. | - F. C. Selous. |
| 5 | $2 \frac{1}{4}$ | $2 \frac{1}{4}$ | Angola . | - C. H. Pemberton. |
| 5 | 21 | $2 \frac{1}{3}$ | ? | C. C. Bowring. |
| 5 | $2 \frac{1}{4}$ | 25 | Ngamiland. | - Mervyn G. Williams. |
| 5 | $2 \frac{1}{3}$ | $3{ }^{\frac{1}{4}}$ | Northern Rhodesia | . F. Smitheman. |
| 5 | $2 \frac{1}{4}$ | I $\frac{1}{2}$ | Do. | - R. Beaumont. |
| 5 | $2 \frac{1}{4}$ | $2 \frac{1}{1}$ | Nyasaland . | - Dr. J. O. Shircore. |

## OWNER'S MEASUREMENTS.

| $\begin{aligned} & \text { Length on } \\ & \text { ffront. } \end{aligned}$ | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $6 \frac{1}{2}$ | ... | $\ldots$ | Angola | - E. P'. Cooper. |
| 63 | 21 | 23 | S. Africa | C. S. Mann. |
| 6 | 28 | $3^{\frac{1}{4}}$ | Do. | Col. J. J. IIarrison. |
| 6 | 23 | $2{ }^{3}$ | Do. | H. Henderson. |
| $5{ }^{\frac{7}{6}}$ | 23 | $2{ }^{1}$ | Do. | Major H. Chamney. |
| $5{ }^{5}$ | $2 \frac{1}{2}$ | $2 \frac{1}{2}$ | Do. | Sir Abe Bailey. |
| $5{ }^{3}$ | $\ldots$ | $2 \frac{1}{2}$ | Do. | J. Whitaker. |
| $94 \frac{3}{4}$ | 23. | 23 | ? | P. C. Keytel. |

## B.-ABYSSINIAN (C. grimmi abyssinicus) AND ALLIED RACES. <br> Midaku, Abyssinian.

Smaller than the Cape duiker, and agreeing in size and in the relative shortness of the ears with the crowned duiker (C. g. coronatus), this race differs from the latter by the general colour of the fur being greyish brown instead of bright yellow. Allied but larger races occur in the Kenia and Zomba districts of Eastern Africa, respectively known as C. g. hindei and C.g. shirensis.

Distribution.-The highlands of Abyssinia: the East African specimens mentioned below belong to the allied races.

| length on front. | Circumference. | Tip to Tip. |  | ality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $5^{\frac{1}{2}}$ | $2 \frac{1}{8}$ | 2 | E. Africa | - |  | A. de L. Long. |
| $4{ }^{\text {\% }}$ | $2 \frac{1}{4}$ | $\cdots$ | Do. | - | - - | Abel Chapman. |
| 45 | $2 \frac{1}{4}$ | $2 \frac{1}{4}$ | Do. | - | - - | E. B. Horne. |
| 45 | 23 | 1 $\frac{1}{4}$ | Do. | - |  | Viscount Ennismore. |
| $4{ }^{\frac{1}{2}}$ | 21 | $2 \frac{3}{5}$ | Do. | - | - - | W. H. Lindsay. |
| $4^{\frac{1}{2}}$ | 2 | $1 \frac{1}{2}$ | Do. | - | - . | Gerard Buxton. |
| $4 \frac{1}{2}$ | 21 | 23 | Do. | - | - . | R. F. C. Tompson. |
| 43 | 23 | 21 | Do. | - | . . | J. F. Franks. |
| 43 | 23 | 2.1 | Do. | . | - - | J. G. Millais. |
| 43 | 2 | 2 | sudan | - | - . | Major P. M. Dove.] |
| $4{ }^{\frac{1}{4}}$ | 2.1 | 3 | Abyssinia | - | - . | D. P. MacGillivray. |
| 43 | 23 | 13 | $\mathrm{I}_{0}$ | - | - | W. F. Whitehouse. |
| $4{ }^{\frac{1}{4}}$ | 25 | 7 | Bahr-el-Gl | azal | . . | F. C. Selous. |

Length on front.

| $4 \frac{1}{8}$ | 2 |
| :--- | :--- |
| $4 \frac{1}{8}$ | $2 \frac{1}{8}$ |
| $4 \frac{1}{8}$ | 2 |
| $4 \frac{1}{8}$ | $2 \frac{3}{16}$ |
| $4 \frac{1}{8}$ | $2 \frac{1}{4}$ |
| $4 \frac{1}{8}$ | 2 |
| $4 \frac{1}{8}$ | $2 \frac{3}{8}$ |
| $4 \frac{1}{8}$ | $2 \frac{5}{8}$ |
| $4 \frac{1}{8}$ | 2 |

Tip to Tip.
2
$1 \frac{7}{8}$
$1 \frac{3}{4}$
I
23
2 李
I $\frac{1}{2}$
I $\frac{1}{4}$
2

Locality.
Gallaland
Abyssinia
Do.
E. Africa

Do.
Do.
Do.
Do.
Sudan.

Owner.
Lord Hindlip.
Major P. H. G. Powell-Cotton.
F. Gillett.
. E. H. Litchfield.
K. V. Painter.

- Sir Richard Dane.
- Capt. C. J. Murray.

Sir I. Hume Campbell, Bart. Col. A. Colville.

## C.-WESTERN RAGES (C. grimmi coronatus and C. g. campbelliæ).

A small short-eared race standing about 15 or 16 inches in height, of a bright yellowish fawn colour, showing a faint tinge of black; $C . g$. campbellia is an allied West African race, with much more dark speckling in the coat, to which most or all of the following specimens probably belong.

Distribution.-West Africa.

| Length on front. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $4 \frac{1}{1 \frac{5}{6}}$ | $2 \frac{1}{4}$ | $2 \frac{5}{8}$ | N. Nigeria | S. M. Grier. |
| $4{ }^{\frac{5}{8}}$ | 24 | ... | Do. | Capt. G. C. Kelly. |
| 4 ${ }^{\frac{1}{2}}$ | $2 \frac{1}{2}$ | $\frac{7}{8}$ | Do. | Major E. M. Baker. |
| $4 \frac{1}{2}$ | 21 | 27 | Nigeria . | Major J. A. Burdon. |
| $4{ }^{\frac{1}{2}}$ | $2{ }^{3}$ | $1{ }^{\frac{3}{1}}$ | Do. | Major J. B. Cockburn. |
| $4{ }^{\frac{3}{8}}$ | $2 \frac{1}{4}$ | $2 \frac{1}{2}$ | Do. | Capt. W. M. Fowler. |
| $4^{\frac{3}{8}}$ | $2 \frac{1}{4}$ | $1 \frac{1}{2}$ | Do. | G. W. Webster. |
| $4{ }^{3}$ | 21 | $1 \frac{7}{8}$ | Gold Coast | Capt. B. E. Murray. |
| $4 \frac{3}{16}$ | $2 \frac{1}{2}$ | $1 \frac{3}{5}$ | Okutu, S. Borgu | Major B. R. M. Glossop. |
| $4 \frac{1}{16}$ | $2 \frac{1}{6}$ | $2 \frac{1}{21}$ | Nigeria . | C. Bryant. |
| 4 | 23 | $3 \frac{1}{2}$ | Do. | Capt. F. Call. |
| 4 | 2 | 13 | Lokoja, Niger | Capt. T. N. Puckle. |
| $2 \frac{15}{6}$ | $1{ }^{\frac{7}{8}}$ | $1 \frac{7}{5}$ | Portuguese Guinea | Major P. H. G. Powell-Cotton. |

## THE BLACK DUIKER (Cephalophus niger).

Distribution.-Liberia to the Gold Coast.

Length on front. Circumference. Tip to Tip. Locality.

Owner.

| $3 \frac{1}{4}$ | $2 \frac{1}{8}$ | 2 | $?$ | J. C. Phillips. |
| :--- | :--- | :--- | :---: | :--- | :--- |
| $2 \frac{1}{2}$ | $2 \frac{1}{2}$ | $1 \frac{3}{4}$ | Gold Coast | . Capt. G. Wolfe-Murray. |

            \(2 \frac{1}{2}\)
                    I \(\frac{3}{4}\)
    ?

Capt. G. Wolfe-Murray.


Head of Blue Buck．

## The BLUE DUIKER or BLUE BUCK（Cephalophus monticola）．

Ipiti, Zulu.

In the great majority of duikers，that is to say all except those included in the group mentioned above，the horns，which are generally present in both sexes，slope backwards either in or just below the line of the profile of the nose．The present species is included in a sub－ group characterised by the smoky－brown or blackish colouring，and is especially distinguished by the rufous legs and uniformly coloured rump， the height at the shoulder being I 3 inches．Weight，about 8 lbs ．clean． Distribution．－Southern Africa，from the wooded districts of Cape Colony northwards to Benguela on the west，and Nyasaland on the east．

A．－TYPICAL RACE．

| Length on front． | Circum－ ference． | Tip to Tip． | Locality． |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 2年 | 13 | I $1 \frac{1}{2}$ | Tushila Plain， | B．C．A．． | Hon．Walter Rothschild． |
| $2 \frac{1}{8}$ | I $\frac{3}{4}$ | $\frac{7}{5}$ | ？ |  | Sir Owen Philipps． |
| $2 \frac{1}{16}$ | $1 \frac{1}{2}$ | I $\frac{3}{1}$ | Nyasaland ． | －． | D．D．Lyell． |
| 2 | $1 \frac{1}{2}$ | $1 \frac{1}{2}$ | Pondoland | － | Sir Edmund G．Loder，Bart． |
| 2 | $\ldots$ | $1{ }^{3}$ | Natal ． | ． | F．C．Selous． |
| 2 | I 5 | $1 \frac{3}{4}$ | Penguela | － | G．IV．Penrice． |
| 2 | I量 | $1 \frac{1}{4}$ | N．Rhodesia | － | L．de Fries． |
| 2 | $1{ }^{\text {星 }}$ | $1 \frac{1}{2}$ | ？ |  | Col．E．St．C．Pemberton． |
| ¢ 17 | I $\frac{3}{1}$ | 13 | Nyasaland | － | D．D．Lyell． |
| 1考 | $1{ }^{\frac{5}{5}}$ | 13 | Benguela | ．． | Hon，Walter Rothschild． |

B．－SUDANI RACE（C．monticola æquatorialis）．

Length on

Circum－
ference．
13

Tip to Tip．
I $\frac{1}{2}$ Sudan．．．．Capt．C．Leigh．
1 Uganda ．．．Capt．lI．S．Toppin．

## MAXWELL'S DUIKER (Cephalophus maxwelli).

This species belongs to the sub-group characterised by the smokybrown or blackish colour. In size it is small (height at shoulder, about I 4 inches). The face is coloured like the back; the limbs, like the body, are greyish brown ; and the rump is not parti-coloured. It was first brought to England by Col. C. Maxwell, and described by Col. Hamilton Smith in 1827.

Distribution.-West Africa, from Gambia to the Gold Coast.

| Length on <br> front. | Circum- <br> ference. | Tip to Tip. |
| :---: | :---: | :---: |
| $2 \frac{1}{2}$ | $2 \frac{3}{4}$ | $\mathrm{I} \frac{3}{4}$ |
| $2 \frac{1}{4}$ | $2 \frac{1}{4}$ | $2 \frac{1}{8}$ |
| $-2 \frac{2}{5}$ | $\ldots$ | $2 \frac{3}{5}$ |
| $2 \frac{1}{4}$ | $2 \frac{1}{8}$ | $1 \frac{7}{8}$ |
| $2 \frac{1}{8}$ | $2 \frac{1}{4}$ | 2 |
| $1 \frac{5}{8}$ | $2 \frac{1}{8}$ | 2 |
| Q15 | $1 \frac{3}{4}$ | $1 \frac{7}{16}$ |


| Locality. | Owner. |
| :---: | :---: |
| Portuguese Guinea | Viscount de Thiene. |
| Do. | M. V. Hay. |
| Sierra Leone | L. J. Jones. |
| Ashanti | D. H. M. Boyle. |
| S. Nigeria | Major E. M. Baker. |
| Fanti | Hon. Walter Rothschild. |
| S. Nigeria | Major E. M. Baker. |

The RED or NATAL DUIKER (Cephalophus natalensis). Rooi-Bosch-bolije, Boer. Msumbi, Swazis and Malonga. ITkumbi, Zulu. Izikupu, Basuto. Chisimbi, Lower Zambesi.

This duiker is classed in another sub-group of small or mediumsized species characterised by the fulvous, rufous, or chestnut groundcolour ; and is specially distinguished by its small size (height at shoulder, IS to I9 inches) and completely uniform colouring, having no dark markings on either the face or body. The horns are short and thick.
Distribution.-Natal, Transvaal, and Mashonaland (including all the forest and bush country of the East Coast), and perhaps the Lualwa River district of the Mozambique Province.

Length on
fiont.

| $-3 \frac{7}{5}$ | $2 \frac{3}{4}$ | 2 |  |
| ---: | :--- | :--- | :--- |
| $-3 \frac{5}{5}$ | $2 \frac{3}{4}$ | $1 \frac{3}{4}$ |  |
| $-3 \frac{5}{5}$ | $3 \frac{1}{4}$ | $3 \frac{1}{4}$ | Natal |
| $3 \frac{3}{5}$ | $2 \frac{1}{2}$ | $2 \frac{1}{8}$ | Sabi Flats. |
| $3 \frac{1}{4}$ | $2 \frac{5}{3}$ | 2 |  |




## The BAY DUIKER (Cephalophus dorsalis).

From the last species the bay duiker, together with some allied West African forms, differs by the presence of a black stripe running along the back and continued to the tail. As a species, its special characters are the dark colour of the buttocks, and the evenly haired tail, which shows no sign of a tuft, and is white below.

Distribution.-West Africa, from Sierra Leone to the Gold Coast, being replaced in the Cameruns by C. castoneus.

| Length on front. | Girth. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 311 | $2 \frac{1}{8}$ | 2 | West Africa | Hon. Walter Rothschild. |
| 31 ${ }^{\frac{1}{2}}$ | 32 | $3 \frac{3}{5}$ | Cameruns (C.castaneus) | C. S. Mann. |
| $2 \frac{7}{5}$ | $2 \frac{1}{4}$ | $1 \frac{1}{1}$ | Sierra Leone | Major-Gen. P. S. Wilkinson. |
| $2 \frac{1}{2}$ | I $\frac{3}{4}$ | $1 \frac{1}{18}$ | S. Nigeria | Major E. M. Baker. |
| $2 \frac{1}{2}$ | $2 \frac{1}{2}$ | 15 | Portuguese Guinea . | C. S. Burnett. |

## BANDED DUIKER or ZEBRA-ANTELOPE (Cephalophus doriæ).

The tiger-like transverse black bands on the orange ground of the back suffice to distinguish at a glance this pretty little duiker from all its kindred.

Distribution.-The interior of the West Coast of Africa from Liberia to Sierra Leone, where it is commonly known as the mountain deer.

| Length on front. | Circumference. | Tip to Tip. | Locality: | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $1 \frac{7}{8}$ | ... | I | Liberia . | British Museum (Dr. J. Buittikofer). |
| $1{ }^{\text {哥 }}$ | $1\}$ | I ${ }_{1}^{1}$ | Do. . | Hon. Walter Rothschild. |



Head of Yellow-backed Duiker.

## YELLOW-BACKED DUIKER (Cephalophus sylvicultor).

This species, which is the type of the genus, is distinguished from most other duikers by its large size, coupled with its blackish colouring, and the presence of a yellowish crest on the back and a similarly coloured longitudinal patch on the rump. Height at shoulder, 34 inches. The N.E. Rhodesian form of the species has been named C. cori, and the Ituri yellow-backed duiker has also received a name, but neither appears entitled to rank even as a distinct race.
Distribution.-The West Coast of Africa from Liberia to Angola, and thence eastwards through the forest-zone.

| Length on front. | Circumference. | Tip to Tip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $7 \frac{1}{2}$ | $4{ }^{\frac{3}{4}}$ | $4 \frac{1}{5}$ | N.E. Rhodesia | . . | E. R, D. Hall. |
| 7 | $3 \frac{1}{2}$ | ... | Sierra Leone | . . | Major C. E. Palmer. |
| $-6 \frac{7}{8}$ | 3 | 3 | N.E. Rhodesia | . . | Dr. Albert von Stephani. |
| $6 \frac{3}{4}$ | 3 3 | $4{ }^{\frac{1}{2}}$ | Fanti | - . | British Museum. |
| 65 | $3+$ | 35 | Luapulu River, Rhodesia | N.E. | G. M. E. Leyer. |
| $6 \frac{1}{2}$ | 33 | 5 | sierra Leone | . . | W. St. J. Oswell. |
| $6 \frac{1}{4}$ | $3 \frac{1}{2}$ | $\ldots$ | Ashanti | - . | C. Beddington. |
| $-6 \frac{1}{8}$ | ... | $\ldots$ |  |  | C. S. Mann. |
| -9 5 \% | $3 \frac{1}{3}$ | $3{ }^{3}$ | Congo | . - | Do, |
| $5^{\frac{1}{2}}$ | 33 | $4 \frac{1}{8}$ | Gabun | - . | Sir Edmund G. Loder, Bart. |
| 5 | $3{ }^{3}$ | $4 \frac{1}{4}$ | Angola | - . | Hon. Walter Rothschild. |
| 5 | $3 \frac{3}{4}$ | $4 \frac{1}{8}$ | Do. | . . | G. W. Penrice. |
| 5 | 3 | $\ldots$ | N.E. Rhodesia | . | H. Cookson. |
| 5 | 3 | $2 \frac{7}{8}$ | Do. | - . | Earl of Kingston. |

## HARVEY＇S DUIKER（Cephalophus harveyi）．

This East African species is in size and its dark chestnut－red colour very similar to the Natal duiker，but with a dark brown or blackish blaze on the face，and the horns thick at the base and rough．C．isaaci is an allied species．

Distribution．－East Africa．


LEOPOLD＇S DUIKER（Cephalophus leopoldi）． Distribution．－Ituri Forest．


RED－FLANKED DUIKER（Cephalophus rufilatus）．

## Gudda－n Kurimi，Hausa．

This species stands about 14 inches，and is orange－rufous in colour， with the front of the face，the dorsal stripe，and the tail and limbs bluish grey，the crest black，the under－parts paler，and the throat whitish．

Distribution．－West Africa，from Senegambia to Nigeria．

| Length on front． | Circum． ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $3{ }^{\text {㒵 }}$ | $3 \frac{1}{2}$ | $1{ }^{3}$ | N．Nigeria | H．de C．Mathews． |
| 35 | $2 \frac{1}{4}$ | 2 | Do． | R．M．Blackwood． |
| $3^{\frac{1}{2}}$ | 3 | 2 | Do． | B．C．B．Tower． |
| $3 \frac{7}{16}$ | $2 \frac{7}{5}$ | $2 \frac{5}{8}$ | Gambaga，Gold Coast | British Museum（Capt．W．Giffard）． |
| 3\％ | 2 量 | I ${ }^{\frac{1}{2}}$ | Nigeria | Capt．C．C．West． |
| $3{ }^{\frac{1}{4}}$ | $3 \frac{1}{8}$ | 15 | Portuguese Guinea | Major P．H．G．Powell－Cotton． |
| $3 \frac{1}{8}$ | $2 \frac{1}{2}$ | 2 | Nigeria ． | Capt．P．A．Clive． |
| 3 | $2 \frac{7}{8}$ | $1 \frac{1}{2}$ | Okutu，S．Borgu | Major B．R．MI．Glossop． |
| 27 | $2 \frac{1}{2}$ | 23 | Lagos | Capt．W．A．Ross． |
| $2{ }^{\text {a }}$ | $2 \frac{1}{3}$ | $1 \frac{1}{1}$ | N．Nigeria | G．W．Webster． |
| 25 | $2{ }^{1}$ | $1{ }^{\text {星 }}$ | Lokoja，Nigeria | Major－Gen．P．S．Wilkinson． |
| 25 | $2!$ | I ${ }^{3}$ | Nigeria | Capt．H．V．Venables Kyrlie． |
| $2 \frac{5}{8}$ | $2 \frac{1}{2}$ | I 1 | Do． | W．D．Downes． |
| 25 | $2 \frac{5}{8}$ | 13 | Do． | Tr．M．WV．Manul． |
| 1寊 | ．．． | I | Ashanti | Capt．B．E．Murray． |



Head of Beira.

## The BEIRA (Dorcotragus melanotis).

Beira or Baira, Somali.
Although at one time classed with the gazelles, this peculiar little Somali antelope is considered to be best placed in the neighbourhood of the dik-diks. The beira is characterised by the moderately long and spike-like horns of the bucks; but its most striking peculiarity is the great size of its ears, which led its discoverer, Mr. Menges, to describe it as a species of klipspringer. Another noticeable feature is the large size of the rounded hoofs, which are supported on globular pads. In colour, the upper-parts and legs are greyish fawn, with a tinge of pink ; a darker band defining the fawn from the white of the under-parts, which (the white) is continued down the inner surfaces of the limbs as far as the knees and hocks. The head, from the ears to the nose, is bright rufous. Height at shoulder, about 23 inches.

Viscount Edmond de Poncins writes that "beira are good hillclimbers, and keep on rocky ground. The general shape is slender, the legs are long, the head is kept erect, the ears are very big and broad, shaped like the dik-dik's, eyes big and dark, nostrils black.
"Colour a sort of greyish blue, a bit like what we call in French gorge-de-pigeon, and exactly matching the colour of the ground, so, unless they are on the move, it is difficult to distinguish them. Unlike a gazelle, the tail is generally kept down. Horns resemble those of the klipspringer, but curve forward slightly more." From nose to root of tail, $32 \frac{1}{4}$; height at shoulder, 21 inches; horns, 4 inches; weight, about 20 lbs .

Distribution.-The interior of Somaliland and the upper part of the Blue Nile. The species appears to be rare and local, going about either singly or in pairs, and inhabiting the open desert. It was first made known to science in 1894.

Length on
front.

| 5 | 1 ${ }^{\frac{8}{4}}$ | $3^{\frac{1}{4}}$ |
| :---: | :---: | :---: |
| $+1 \frac{15}{6}$ | $1 \frac{7}{8}$ | ... |
| $4 \frac{7}{5}$ | 1 $\frac{3}{4}$ | I ${ }_{\text {总 }}$ |
| -4 | I ${ }^{\frac{3}{4}}$ | $2 \frac{8}{16}$ |
| $-4 \frac{3}{19}$ | $1 \frac{3}{4}$ | $2 \frac{1}{2}$ |
| $4{ }^{\frac{5}{8}}$ | 2 | $2 \frac{7}{8}$ |
| $4^{\frac{1}{2}}$ | I $\frac{3}{4}$ | 25 |
| $4^{\frac{1}{4}}$ | 2 | $2 \frac{1}{2}$ |
| $4{ }^{1}$ | 17 | 1 $\frac{3}{4}$ |
| $41^{\frac{38}{5}}$ | $1{ }^{\frac{7}{5}}$ | 25 |
| 4 | 2 | $2 \frac{1}{16}$ |
| 4 | $2 \frac{1}{8}$ | $2 \frac{3}{4}$ |
| $3 \frac{7}{5}$ | 2 | $2 \frac{1}{4}$ |
| $3 \frac{3}{}$ | I $\frac{3}{4}$ | $2 \frac{1}{4}$ |
| $3^{\frac{1}{4}}$ | I ${ }_{4}^{4}$ | $2 \frac{1}{8}$ |
| 3 | I $\frac{1}{1}$ | $2 \frac{3}{4}$ |

Locality.

| Somaliland | J. Rosen. |
| :---: | :---: |
| Do. | Lord Delamere. |
| Do. | Capt. J. H. Brocklehurst. |
| Northern Somaliland | J. H. II. Dodds. |
| Do. | R.E. Mess, Roorkee. |
| Abyssinia | Major P. H. G. Powell-Cotton. |
| Northern Somaliland | F. N. Ransford. |
| Abyssinia | W. F. Whitehouse. |
| Somaliland | A. de L. Long. |
| Do. | Capt. R. A. McClymont. |
| French Somaliland | Viscount Edmond de Poncins. |
| Somaliland | Sir Edmund G. Loder, Bart. |
| Do. | Capt. II. C. Dobbs. |
| Do. | W. Mure. |
| Do. | H. D. Briggs. |
| Do. | P. K. Glazebrook. |



Skull and Horns of Beira, from specimen shot by
Major P. II. G. Powell-Cotton.


Head of Salt's Dik-dik.

## SALT'S DIK-DIK (Madoqua saltiana).

This species, the Beni Israel of the Arabs, is the typical representative of a group of tiny, slenderly built antelopes characterised by the elongated, trunk-like nose, of which the tip is almost entirely hairy, the tuft of hair on the crown of the head, the short and almost rudimentary tail, and the minute size of the lateral hoofs. In the present species the last tooth in the lower jaw lacks the third lobe found in almost all ruminants, the muzzle is but moderately developed, and the general colour yellowish or fulvous grey, scarcely more rufous on the sides than on the back. Height at the shoulder, 14 inches.

## Distribution.-The Coast Range of Eastern Abyssinia and adjacent districts.

| 1.ength on front. | Circumference. | Tip to Tip. | 1.ocality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $3 \stackrel{1}{\square}$ | $1 \frac{1}{2}$ | $1 \frac{3}{5}$ | ? | Hon. Walter Rothschild. |
| $3{ }^{1}$ | I $\frac{1}{2}$ | 13 | Abyssinia | V. Bell. |
| 3 | 1 | I | Do. | Sir Edmund G. Loder, Bart. |
| ${ }^{1} 3$ | .. | $1 \frac{1}{5}$ | Do. | H. Boughton Leigh. |
| 23 | $\ldots$ | 13 | Do. | Major P. H. C. Powell-Cotton. |
| $2 \frac{3}{4}$ | I $\frac{3}{4}$ | $1 \frac{1}{4}$ | E. Sulan | Major II. H. S. Morant. |
| 25 | $\ldots$ | $1{ }^{13}$ | Abyssinia | . Sir Victor Brooke's Collection. |
| $2 \frac{1}{2}$ | I $\frac{1}{2}$ | $\ldots$ | North Kassala | Col. Ralph Vivian. |
| $2 \frac{3}{8}$ | $\ldots$ | $1 \frac{5}{8}$ | ? | British Museum. |



Skull and Horns of Phillips's Dik-dik.


Head of Swayne's Dik-dik.

## SOMALI DIK-DIKS

A.-Madoqua swaynei, M. phillipsi, and M. [Rhynchotragus] guentheri.

Sakáro, Somali.
Different districts of Somaliland are inhabited by several species of dik-diks, of which three are named above. The first of these is allied to Salt's dik-dik but smaller ; it inhabits the northern half of Somaliland. Phillips's dik-dik, which also occurs in Northern Somaliland, is intermediate in size between Salt's and Swayne's dik-dik, from both of which it is distinguished by having the back grey and the sides and shoulders rich rufous or cinnamon. On the other hand, Günther's dik-dik is widely different from both, being nearly allied to the undermentioned Kirk's dik-dik, from which it is distinguished by the form of the nasal bones in the skull. It inhabits the central plateau of Northern Somaliland.

Height of Swayne's dik-dik at shoulder, about I 3 inches. Weight, ơ 6 lbs ; $\uparrow 5$ lbs.

| Length on front. | Girth. | Tip to Tip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ${ }^{1} 3 \frac{5}{8}$ | I ${ }_{6}$ | 2 | Somaliland | . . | Col. II. D. Olivier. |
| $3^{\frac{1}{2}}$ | I $\frac{1}{4}$ | 15 | Do. | - . | J. Fenneth Foster. |
| $3{ }^{\frac{1}{4}}$ | 1電 | 1量 | Do. | - . | W. W. Ashley. |
| $3 \frac{1}{5}$ | ... | $1 \frac{7}{8}$ | Do. | - . | I'. K. Glazebrook. |
| $3 \frac{1}{5}$ | 13 | $\mathrm{I}_{\frac{1}{2}}$ | Do. | - . | Col. C. F. Blane. |
| ${ }^{1} 3 \frac{1}{8}$ | ... | 13 | Do. |  | Sir A be Bailey. |
| $3 \frac{1}{8}$ | - $\mathrm{I} \frac{1}{5}$ | $1{ }^{3}$ | Do. | . . | P. II. Thomas. |


| Length on front． | Girth． | Tip to Tip． | Locality |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ${ }^{1} 3 \frac{1}{8}$ | $1 \frac{1}{2}$ | I ${ }_{4}^{8}$ | Somaliland | － | －A．E．Pease． |
| $3 \frac{1}{8}$ | $1 \frac{1}{2}$ | 13 | Do． | － | Capt．F．L．Livingstone－ Learmonth． |
| 3 | I $\frac{1}{4}$ | 1 ${ }^{\frac{1}{2}}$ | Do． | － | J．H．H．Dodds． |
| 3 | $1 \frac{1}{8}$ | $1 \frac{1}{8}$ | Do． | － | J．H．Miller． |
| 3 | $\cdots$ | 1 | Do． | － | Sir Edmund G．Loder，Bart． |
| 3 | $1 \frac{1}{4}$ | 13 | Do． | － | Capt．G．H．Hastings． |
| $2 \frac{7}{3}$ | $\cdots$ | 13 | Do． | － | －Major P．H．G．Powell－Cotton． |
| $2{ }^{7}$ | 13 | 15 | Do． | － | Lord Delamere． |
| 27 | I $\frac{1}{2}$ | 1 锌 | Do． | － | Lord Hindlip． |
| $2 \frac{1}{1} \frac{8}{6}$ | $1{ }^{\frac{1}{2}}$ | $\frac{7}{5}$ | Do． | ． | Lieut．－Col．E．G．Harrison． |
| 2 量 | $1{ }^{\frac{3}{4}}$ | $1 \frac{3}{8}$ | Do． | － | K．E．Drake－Brockman． |
| $2{ }^{\text {星 }}$ | I | I | Do． | － | －T．W．H．Clarke． |
| 23 | $1 \frac{1}{2}$ | $1{ }^{1}$ | Do． | ． | －A．E．Butter． |
| $2 \frac{3}{1}$ | 1 $\frac{1}{2}$ | ．．． | Do． | － | C．Liddell． |
| ${ }^{2} 2 \frac{3}{4}$ | $\cdots$ | $1 \frac{1}{16}$ | Do． | － | －Major WT．Anstruther Gray． |
| 2 25 | $1{ }^{\frac{1}{4}}$ | $1{ }_{8}$ | Do． | － | A．de L．Long． |
| $2 \frac{1}{2}$ | $1{ }_{1}^{17}$ | 13 | Do． | － | J．C．Monteith． |
| $2 \frac{1}{3}$ | $1{ }^{\frac{1}{4}}$ | $1{ }^{\text {量 }}$ | Do． | － | －Capt．A．H．Mosse． |
| $2 \frac{1}{2}$ | ．．． | 13 | Abyssinia ． | － | －R．Hayne． |
|  |  | I．guentheri． |  |  | M．phillipsi． |

The following are the dimensions of a specimen of $M$ ．guentheri shot at Njemps by Sir F．J．Jackson ：－

Length， $23 \frac{1}{4}$ ．Height， $5 \frac{1}{4}$ ．Horns， $2 \frac{1}{2}$ ．Weight， $8 \frac{1}{4} \mathrm{lbs}$ ．

B．－M．piacentinii．

| Length on front． | Girth． | Tip to Tip． |  | Locality． |  |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $2 \frac{5}{16}$ | $\mathrm{I}_{1 \frac{1}{1 / 5}}$ | $\mathrm{I}_{1} \frac{1}{60}$ | Somaliland | ． |  | British | Museum． |
| 2 年 | I ${ }^{\frac{5}{6}}$ | I $\frac{1}{8}$ | Do． | ． | －． | Hon． | Walter Rothschild． |

## KIRK'S DIK-DIK (Madoqua [Rhynchotragus] kirki).

This dik-dik belongs to a small group of species differing from the one containing $M$. saltiana by the presence of three lobes to the last tooth of the lower jaw, and likewise by the more decidedly trunklike character of the muzzle. From the other members of the group II. damarensis differs by its superior size, and $M$. guentheri by the still greater development of the trunk. They belong to the subgenus Rhynchotragus. Weight, about 7 lbs.

Distribution.-East Africa, from Southern Somaliland to Ugogo, most numerous on the coast.


| Length on front. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 3 | $\ldots$ | $1{ }^{\frac{1}{4}}$ | East Africa | Capt. R. H. Hermon-Hodge. |
| 3 | 2 | 15 | Do. | Capt. the Hon. G. If. DouglasPennant. |
| 3 | ... | $1 \frac{1}{2}$ | Do. | R. de la Huerta. |
| 3 | $1{ }^{\frac{1}{2}}$ | ${ }^{1+1}$ | Do. | - Percy C. Madeira. |
| 3 | $\ldots$ | 2 | Do. | Gerard Buxton. |
| 3 | $\ldots$ | 2 | Do. | S. S. Steele. |
| ${ }^{1} 21 \frac{15}{6}$ | $1{ }^{\text {㝵 }}$ | $\mathrm{I}_{4}$ | Do. | Sir F. J. Jackson. |
| ${ }^{1} 2{ }^{\text {\% }}$ | $\ldots$ | 18 | Lake Baringo . | Rhys Williams. |
|  |  |  | 111. cavend |  |

## DAMARA DIK-DIK (Madoqua [Rhynchotragus] damarensis).

Characteristics mentioned under heading of the preceding species.
Distribution.-Damaraland and Angola.

| Length on | Circum. ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 4 | $1{ }^{\text {妾 }}$ | $1{ }^{\frac{1}{2}}$ | ? | Sir Owen Philipps. |
| $-3 \frac{1}{4}$ | $1{ }^{\frac{1}{2}}$ | $1 \frac{1}{2}$ | ? | P. C. Keytel. |
| -3 | ... | $\ldots$ | ? | Capt. M. Jurich. |
| $-25$ | 15 | $1{ }^{5}$ | Omararu | I. B. Wheelwright. |
| $-2 \frac{5}{8}$ | 15 | $1{ }^{7}$ | Do. | Capt. IV. Jardine. |
| $-2 \frac{1}{2}$ | $\ldots$ | $\ldots$ | Damaraland . | South African Museum. (Type specimen.) |

## HEMPRICH'S DIK-DIK (Madoqua hemprichiana).

Further information is desirable as to the claim of this dik-dik to distinction from $M$. saltiana.

Length on front.

## Circum.

ference.

| 38 | $1 \frac{3}{3}$ |
| :--- | :--- |
| $2 \frac{5}{6}$ | $1 \frac{1}{4}$ |
| 218 | $1 \frac{3}{3}$ |

1.ocality.

Basaland
Blue Nite
Abyssinia

Owner.
Hon. Walter Rothschild.
Capt. J. A. Pollock.
Hon. Walter Rothschild.


Head of Oribi.

The ORIBI (Oribia scoparia).
Also known as Oribia oribi.
Inla, Swazi and Zulu. Pulukudukamani, Basuto.
Nakafwifwi, Chila. Kamunda, Barotsi and Batoka. Mazia, Hausa.

The oribis, grysbok, klipspringer, and their allies constitute a group of comparatively small African antelopes presenting the following characters in common. The muzzle has a naked tip, the head is devoid of a tuft of hair, large face-glands open beneath the eyes by a small aperture on each side, the tail is short or moderate, and lateral hoofs may or may not be retained. Horns are usually present only in the bucks, and are short, almost or quite straight, with smooth tips and ridged bases. The upper cheek-teeth have tall and narrow crowns. The oribis, which are the largest members of the group, have normal hoofs and hair, and are specially distinguished by the presence of a bare glandular spot beneath each ear, and of a large opening in the skull beneath each eye-socket. In the typical species the horns of the bucks are comparatively smooth and slender, with only their basal two inches slightly ridged ; there is a black patch on the forehead between the horns; and the tail is tufted and moderately bushy, with its terminal two-thirds black. Height at shoulders, 24 to 26 inches.
Distribution.-Typically, Africa south of the Zambesi. On grassy plains this graceful little antelope is still plentiful in many districts.

| Length on front | Circum－ ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $7 \frac{3}{10}$ | 2 薷 | $2 \frac{1}{4}$ | Angola | G．W．Penrice． |
| $6 \frac{1}{2}$ | $\ldots$ | $2 \frac{7}{5}$ | Near Ladysmith | －Col．P．J．R．Crampton． |
| 63 | $2 \frac{1}{8}$ | $1{ }^{\frac{1}{8}}$ | N．V．Rhodesia | P．R．Ramsey． |
| $6 \frac{1}{4}$ | 21 | $\ldots$ | E．Griqualand ． | －British Museum（J．ff．Darling）． |
| 6 | $2 \frac{1}{8}$ | $2 \frac{1}{4}$ | Spitzkop | ．H．T．and A．H．Glynn． |
| 6 | $1 \frac{1}{2}$ | $\ldots$ | Rhodesia | H．H．Williams． |
| 6 | 2 | 23 | Angola | C．H．Pemberton． |
| 6 | 2 | 4 | N．V．Rhodesia ． | －R．E．Critchley－Salmonson． |
| $5{ }^{\frac{7}{8}}$ | 2 | $3{ }^{\text {㸓 }}$ | Do． | ．T．D．M．Cardeza． |
| $5{ }^{\frac{7}{5}}$ | 23 | $3{ }^{\frac{1}{2}}$ | Do． | K．C．Vood． |
| $5{ }^{3}$ | $2{ }^{3}$ | $2 \frac{3}{5}$ | Nyasaland ． | ．J．H．Hayes． |
| $5{ }^{3}$ | 2 | 31 | N．W．Rhodesia ． | H．Timmins． |
| $5{ }^{3}$ | 2 | $2 \frac{1}{4}$ | Do． | －Capt．R．Meinertzhagen． |
| $5^{\frac{3}{4}}$ | 2 | $2{ }^{\text {皇 }}$ | Do． | Lady Sarah Wilson． |
| 5尔 | 2 | 23 | Bengueolo | F．Smitheman． |
| 55 | $2 \frac{1}{8}$ | $1{ }^{\frac{7}{8}}$ | Transvaal ． | F．R．N．Findlay． |
| 55 | 2 | $2{ }^{3}$ | N．W．Rhodesia | －Col．Lord Douglas Compton． |
| $5{ }^{5}$ | 2 | $2 \frac{3}{4}$ | Do． | Sir Owen Philipps． |
| 512 | 2 | $3{ }^{\frac{1}{2}}$ | Do． | Capt．H．T．Lumsden． |
| $5^{\frac{1}{2}}$ | $1{ }^{\text {皇 }}$ | 25 | Do． | G．L．Harrison． |
| $5^{\frac{1}{2}}$ | 2 | 2 | N．E．Rhodesia ． | ．Hon．W．Guinness． |
| $5{ }^{\frac{1}{2}}$ | $2 \frac{1}{7}$ | $2{ }^{\frac{1}{4}}$ | N．W．Rhodesia | ．．Hon．Guy Wilson． |

OlvNER＇S MEASUREMENTS．

| $7 \frac{1}{2}$ | $2 \frac{3}{4}$ | $2 \frac{5}{8}$ |
| :--- | :--- | :--- |
| $6 \frac{1}{2}$ | $\ldots$ | $1 \frac{3}{4}$ |
| $6 \frac{1}{2}$ | $\ldots$ | $3 \frac{3}{4}$ |


| Zomba，Nyasaland | ． |
| :---: | :---: |
| Batoka Plateau ． | D．MacAlpine． |
| ？ |  |
| E．Folley． |  |
|  |  |



Head of Abyssinian Oribi. Shot by Lieut.-Col. P. Polovtsoff.

## The ABYSSINIAN ORIBI (Oribia montana or O. cœrulea).

Făckō and Mizvaka, Abyssinian. Mori or Lōyīk, Dinka.
Very similar in most characters to the typical species, but with a shorter and less bushy tail, the tip of which has only a few sparse black hairs. Height at shoulder, 22 to 23 inches. These antelopes are shy and rarely seen in the open, preferring the thick bush and long grass. If disturbed, they go at a great pace with their heads quite close to the ground. The flesh is good.

A male weighing 38 lbs . stood $22 \frac{1}{2}$ inches at the shoulder.
Distribution.-Abyssinia and Bogosland, with part of the Sudan.

| Length on front. | Circum. ference. | Tip to Tip. | Localit 5 : | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $5{ }^{6}$ | $\cdots$ | $2 \frac{1}{8}$ | Bahr-el-Chazal | Capt. I. L. F. Tweedie. |
| 53 | $\cdots$ | $2!$ | Bahr-el-Zaraf | E. M. Tabor. |
| 5 | 2 | I $\frac{1}{8}$ | Kordofan | E. A. T. Bayley. |
| $5{ }^{\frac{3}{8}}$ | 2 | 25 | Alysssinia . | Sir Ahe Bailey. |
| $5 \%$ | 2 | 23 | Sudan | - Capt. G. Wauhope. |

## EAST AFRICAN ORIBIS (Oribia kenyæ, O. cottoni, etc.)

Several oribis allied to the last have been described from B.E.A.; $O$. kenye being from Mt. Kenia, and $O$. cottoni and $O$. microdon from the Guasin-gishu Plateau.

| Length on front. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 67 | $2{ }^{3}$ | $3 \frac{3}{5}$ | E. Africa . | . Lieut.-Col. P. Polovtsoff. (See illustration, page 176.) |
| 63 | $2 \frac{1}{2}$ | 3 | Do. | G. P. L. Cosens. |
| $6 \frac{1}{2}$ | $2 \frac{1}{4}$ | $3 \frac{1}{1}$ | Near Mount Elgon | . Capt. H. C. S. Ashton. |
| $6 \frac{1}{2}$ | $2 \frac{1}{2}$ | 23 | E. Africa | Col. Max. C. Fleischmann. |
| 63 | $2 \frac{3}{8}$ | 2 | Near Lake Victoria | G. J. Muir. |
| $6 \frac{1}{7}$ | $2 \frac{1}{4}$ | 3 | E. Africa | IH. B. Tate. |
| 61 | $2 \frac{1}{4}$ | $2 \frac{1}{4}$ | Do. | C. Bower Ismay. |
| $6 \frac{1}{8}$ | 2 | 3 | Do. | W. A. Baird. |
| $6 \frac{1}{5}$ | 2 | $2{ }^{3}$ | Do. | R. B. Loder. |
| 6 | $2 \frac{3}{8}$ | $2 \frac{7}{8}$ | Do. | H.R.F. the Duke of Connaught. |
| 6 | $2{ }^{1}$ | $2{ }^{3}$ | Do. | Capt. M. L. Pears. |
| 6 | $2{ }^{\frac{1}{4}}$ | 3 年 | Do. | Capt. R. Meinertzhagen. |
| 6 | 2 | $2 \frac{7}{8}$ | Do. | W. N. McMillan. |
| 6 | $2 \frac{1}{2}$ | $2 \frac{1}{4}$ | Do. | . Capt. W. H. Wilkin. |
| $5{ }^{3}$ | $2 \frac{1}{4}$ | $2 \frac{1}{2}$ | Do. | - E. B. Horne. |
| $5{ }^{3}$ | $2 \frac{1}{4}$ | 2 | Do. | G. de P. Colvile. |
| 55 | $2 \frac{3}{8}$ | 2 | Do. | - Lieut. S. R. Bailey, R.N. |
| 51 ${ }^{\frac{1}{2}}$ | 1量 | $3 \frac{1}{8}$ | Do. | Duke of Medinaceli. |
| $5^{\frac{1}{2}}$ | 2 | $2{ }^{\frac{1}{4}}$ | Do. | F. C. Selous. |
| 51 ${ }^{\frac{1}{2}}$ | $2 \frac{1}{21}$ | $2{ }^{3}$ | Do. | - Capt. R. Meinertzhagen. |
| $5^{\frac{1}{2}}$ | $2 \frac{1}{4}$ | 2 | Do. | - A. G. Murray Smith. |
| $5^{\frac{1}{2}}$ | $2{ }^{\frac{1}{4}}$ | $2{ }^{\frac{1}{8}}$ | Do. | - Capt. C. Brook. |
| 512 | 2 | $2 \frac{1}{8}$ | Do. | Sir Richard Dane. |
| 51 ${ }^{\frac{1}{2}}$ |  | 3 | Do. | . L. L. Biddle. |
| $5^{\frac{1}{2}}$ | 25 | $2 \frac{1}{4}$ | Do. | H. Fowler. |
| $5{ }^{3}$ | $2{ }^{1}$ | $2 \frac{1}{2}$ | Do. | . A. de Rothschild. |
| 53 | $2 \frac{1}{4}$ | 2 | Do. | - H. S. Keating. |
| $5 \frac{3}{8}$ | $2 \frac{1}{8}$ | $3{ }^{3}$ | Do. | Sir F. J. Jackson. |
| $5{ }^{3}$ | $2 \frac{1}{3}$ | $1{ }^{\frac{7}{8}}$ | Do. | Duke of Peneranda. |
| $5{ }^{\frac{3}{8}}$ | ... | $2 \frac{1}{2}$ | Do. | R. de la Hueria. |
| 53 | $\ldots$ | 3 | Do. | H. B. Cox. |
| 53 | $\ldots$ | 3 | Do. | C. W. Turner. |
| 51 ${ }^{\frac{1}{8}}$ | 23 | $2{ }^{\frac{7}{8}}$ | Uganda | - Major P. H. G. Powell-Cotton. |

## The GAMBIAN ORIBI (Oribia nigricaudata).

Bersia, Hausa.

A species very close to the Abyssinian oribi, but of smaller size, greyer, and with a distinct black tip to the tail, as in the Cape species. Height at shoulder, 2 I inches.

Distribution.-The open country of Senegal and Nigeria.


## HAGGARD'S ORIBI (Oribia haggardi).

Taya, Swahili.
Nsilatso, Uganda.
Distinguished from other oribis by the stouter horns, which are strongly ridged for rather more than the basal half of their length. Height at shoulder, about 24 inches.

Distribution.-The coast districts of East Africa in the neighbourhood of Lamu. Some of the undermentioned specimens may belong to allied species.



Head of Suni. Shot by Mr. F. C. Selous.

## The SUNI (Neotragus moschatus).

The elegant little antelopes included in the genus Neotragus are near relatives of the oribis, from which they are distinguished by the absence of a naked glandular patch below the ear and the want of lateral hoofs. They are further characterised by the horns being directed backwards nearly or quite in the plane of the face, as also by the large size of the open spaces in the skull in front of the sockets of the eyes, and the breadth of the nasal bones. In the present species the horns, although short, project behind the back of the head, are somewhat elevated above the plane of the forehead, and strongly and closely ridged, while the colour of the upper parts, inclusive of the tailtip, is greyish fawn. Height at shoulder, I 3 to 14 inches.

Distribution.-Zanzibar, adjacent islets, and mainland coast from B.E. Africa, through Kilimanjaro, to Mozambique.

| Length on front. | Circum. ference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $3{ }^{1}$ | $1 \frac{1}{2}$ | 2 | Zanzibar | Sir John Kirk. |
| $3 \frac{1}{4}$ | $1 \frac{3}{5}$ | $1 \frac{1}{2}$ | Do. | British Museum (Capt. Speke). |
| 3 3 | ${ }_{1}^{11}$ | $1 \frac{1}{2}$ | Do. | British Museum (Sir John Kirk). |
| $2 \frac{18}{16}$ | $1{ }^{1}$ | $1{ }^{\text {B }}$ | Kikuyu. | Master of Belhaven. |
| $2 \frac{1}{1} \frac{3}{6}$ | $1 \frac{3}{5}$ | $1{ }^{\text {喜 }}$ | Do. | Sir F. J. Jackson. |
| $2{ }^{\frac{3}{4}}$ | $1 \frac{1}{2}$ | $1 \frac{1}{2}$ | Near Nairobi. | F. C. Selous. (See illustration.) |

## OWNER'S MEASUREMENTS.

| $3 \frac{7}{8}$ | $1 \frac{7}{8}$ | $1 \frac{5}{8}$ | Zanzibar | . | . | . | Dr. Albert von Stephani. |
| :--- | :--- | :--- | :---: | :---: | :---: | :---: | :--- |
| $3 \frac{3}{8}$ | ... | I5 | Do. | . | . | . | F. C. Selous. |



Skull and Horns of Livingstone's Suni.

## LIVINGSTONE'S SUNI (Neotragus livingstonianus).

Lumswi, Shupanga. Inhlengana, Amatonga.
Distinguished from the preceding species by its slightly superior dimensions (height at shoulder, I 4 to I 5 inches), the longer and thicker horns, more rufous coloration, and the blackish upper surface of the tail.

Two specimens killed by Mr. F. Vaughan Kirby measured-
Male. Female.
Extreme length over all, tip of nose to end of tail
$27 \frac{1}{8}$ ins. $25 \frac{3}{4}$ ins. Length of tail Perpendicular shoulder-height Cirple . $14 \frac{1}{4} \quad{ }^{1} 3 \frac{1}{8}$ " Girth behind the shoulder . . . . I $4 \frac{1}{8}$ " I $3 \frac{5}{8}$,
Distribution.-South-East Africa, from Mozambique to Zululand ; the race from Zululand being distinguished as $N$. livingstonianus zuluensis.

| Length on front. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $4^{\frac{1}{2}}$ | 13 | 12 | Zambesia . | Rowland Ward. |
| $4{ }^{3}$ | $2 \frac{1}{8}$ | $\ldots$ | Gungunyana's country | British Museum (H. T. Glynn). |
| $4 \frac{3}{15}$ | $\ldots$ | $1 \frac{7}{8}$ | Inhambani | Major J. Stevenson-Hamilton. |
| $4^{\frac{1}{4}}$ | $1 \frac{7}{8}$ | $1{ }^{\text {星 }}$ | Delagoa Bay | Col. Lord Douglas Compton. |



## OWNER'S MEASUREMENTS.

| 5 | $\mathrm{I} \frac{7}{8}$ | $2 \frac{1}{4}$ | $?$ | C. S. Mann. |
| :--- | :--- | :--- | :--- | :--- |
| $4 \frac{5}{5}$ | 2 | $2 \frac{1}{4}$ | $?$ | Sir Abe Bailey. |
| $4 \frac{1}{2}$ | $\ldots$ | $\mathrm{I} \frac{3}{4}$ | $?$ | F. J. Newnham. |
| $3 \frac{7}{5}$ | $1 \frac{3}{4}$ | $\mathrm{I} \frac{1}{4}$ | Delagoa Bay | Capt. R. Meinertzhagen. |



Skull and Horns of Record Steinbok, the property of Mr. D. Mackintosh.

## The STEINBOK (Rhaphiceros campestris).

Isha, Swahili.
Ingaina, Swazi.
Timba, Barotsi and Batoka.

Impulupudi, Basuto.
Phucduhludur, Bechuana.
Umgzena, Matabili.

From the other members of the oribi group the grysbok and its cousin the steinbok are readily distinguished by the absence of a bare ear-patch, and by horns rising nearly vertically from the skull, in which the open spaces below the eye-sockets are unusually small. As mentioned below, this species is at once distinguished from the grysbok by the absence of the lateral hoofs and the uniform colour of the coat. The general tint of the latter is bright sandy rufous, becoming richer on the head, with a black horseshoe-mark on the crown. Height at withers, about 22 inches. Weight, about 25 lbs.

Distribution.-Africa south of the Zambesi on the east, and the Cuneni on the west, the north-east Transvaal race being separated as R. c. capricornis, and coming nearer to the Nyasa R. c. netmanni, which is paler. Probably owing to its small size, the steinbok has managed to escape the fate that has befallen so many South African antelopes. Wherever the traveller journeys on the veldt, he is
almost certain to meet this species, which may be regarded as the most familiar game-animal of the plains. Like many of its kindred, it is independent of water, and can exist in the heart of the Kalahari, where water may not occur for fifty miles.


1 Killed with hounds.

## OWNER'S MEASUREMENTS.

Griqualand, West
C. S. Mann.

Graaf Reinet, C.C.
American National Collection.
Mr. Justice Hopley.
J. Whitaker.

Major H. Chamney.
Sir Abe Bailey.
A. F. Williams.


Skull and Horns of Sharpe＇s Steinbok．

## SHARPE＇S STEINBOK（Rhaphiceros sharpei）．

This species has the white－speckled chestnut coat of a grysbok， coupled with the feet of a steinbok．The crown of the head has a crescent－shaped black mark；and the large ears are very sparsely haired externally．

Distribution．－Nyasaland and Rhodesia；represented by a local race， R．s．colonicuts，in North－eastern Transvaal and Swaziland．

| Length on | Circum ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality： | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $2 \frac{3}{16}$ | $1{ }^{\text {荽 }}$ | 1星 | B．C．Africa ． | H．S．Buist． |
| $1{ }^{\text {采 }}$ | $\mathrm{I}_{1}{ }_{1}^{7}$ | ．．． | Near Tete | D．D．Lyell． |
| $1{ }^{5}$ | $\ldots$ | 15 | N．E．Rhodesia | Major L．Boyd－Moss． |
| $1{ }_{1} 96$ | $1{ }^{\frac{1}{2}}$ | $1 \frac{1}{2}$ | Lower Shiré River | Lord William Percy． |
| $1{ }^{\frac{1}{2}}$ | $\ldots$ | 2 | B．C．Africa ． | R．C．Wood． |
| $1 \frac{1}{21}$ | $1 \frac{1}{2}$ | $2 \frac{1}{8}$ | Do． | Dr．J．O．Shircore． |
| $1 \frac{1}{2}$ | ${ }_{1} \frac{1}{2}$ | $1 \frac{1}{2}$ | N．W．Rhodesia | Marquis Pizzardi． |
| 11 | ${ }_{1}^{1}+$ | 15 | N．E．Rhodesia | Hon．Walter Rothschild |
| $1{ }_{1}^{1}$ | $1 \frac{7}{8}$ | ${ }^{\frac{5}{5}}$ | B．C．Africa ． | L．H．Cripps． |

OWNER＇S MEASUREMENTS．
N．W．Rhodesia ．．Dr．A．H．B．Kirkman，
Do．
C．S．Mann．


Head of Steinbok.

## The GRYSBOK (Rhaphiceros [Nototragus] melanotis).

Isikupi, Basuto. Kulu, Makua. Timba, Chila.

Grysbok retain the lateral hoofs, which have disappeared in steinbok, and are further distinguished by the fur showing a large admixture of white, instead of being uniformly coloured. Height at shoulder, 22 inches. Weight, 24 lbs. The species has been made the type of a separate genus-Nototragus.

Distribution.-South Africa, extending as far north as Natal and Mozambique.


OWNER'S MEASUREMENTS.


Head of Klipspringer.
The KLIPSPRINGER (Oreotragus saltator).

Alakud, Somali.
Chipomco, Chilala.
Chinkomo, Chinyanja.
Ingululu, Makalaka.
Ikumi, Basuto.

Klipbok, Boer.
Ligoka, Zulu and Swazi.
Njereri, Batoka.
Sassa, Abyssinian.
Ngombani, Chila.

Not only from the other members of the oribi group, but from antelopes of all kinds, the agile little klipspringer, or "rock-jumper," is distinguished by the peculiar conformation of its hoofs and the structure of its hair. The former are large, cylindrical, blunt, and so situated in regard to the rest of the limb that the animal walks on what corresponds to their tips in other antelopes, the whole hoof thus rising vertically from the ground. As regards the hair, this may best be compared with that of the musk-deer, having the same brittle, pithy structure. Lateral hoofs are retained; the tail is reduced to a mere rudimentary stump; and the horns of the bucks rise nearly vertically from the head, with a slight forward curvature, and are ringed for their basal third. The hairs are olive-grey tipped with golden yellow, thus giving the characteristic speckled hue to the coat. Height at shoulder, from about 20 to 22 inches.
Distribution.-Mountainous and rocky districts in South and East Africa, from the Cape northwards to Nigeria in the west and Abyssinia in the east. The species has been divided into several local races of which the typical southern one has relatively short ears, with little black on them. In the East African O. s. schillingsi the females carry horns; the Nigerian race is $O$. s. porteousi.

| Length on front． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $5 \frac{1}{1}$ | 21 | 15 | N．E．Rhodesia | P．M．Stewart． |
| $5{ }^{\frac{1}{2}}$ | $2 \frac{3}{5}$ | $1{ }^{5}$ | P．E．Africa | Hon．Walter Rothschild． |
| $5 \frac{3}{5}$ | 2 | $2 \frac{1}{3}$ | N．E．Rhodesia | Dr．F．O．Stoehr． |
| $5 \frac{1}{1}$ | $2{ }^{\frac{1}{2}}$ | $2 \frac{1}{4}$ | Swaziland | C．H．Taylor， |
| $5{ }^{\frac{1}{5}}$ | 2 | $2{ }^{\frac{1}{4}}$ | Lebombo Mits． | －R．T．Coryndon． |
| $4{ }^{\frac{3}{4}}$ | $1{ }^{\text {量 }}$ | $2{ }^{3}$ | East Africa | －Capt．W．B．Brook． |
| $4{ }^{3}$ | 2 | $2 \frac{1}{31}$ | Nyasaland | －J．Stewart Wells． |
| $4{ }^{\frac{3}{4}}$ | $2 \frac{3}{5}$ | $2 \frac{1}{8}$ | Rhodesia | －Col．Lord Douglas Compton． |
| $4{ }^{\frac{5}{3}}$ | 2 | $2 \frac{1}{2}$ | East Africa | －Capt．J．N．Price Wood． |
| $4^{\frac{1}{2}}$ | $2{ }^{\frac{7}{515}}$ | $2 \frac{11}{16}$ | Witberg，Cape Colony | ．H．A．Bryden． |
| $4^{\frac{1}{2}}$ | ．．． | 23 | N．E．Rhodesia | －Major L．Boyd－Moss． |
| $4{ }^{\frac{1}{2}}$ | $2 \frac{1}{2}$ | $2 \frac{1}{2}$ | ？ | Capt．J．Harington． |
| 4 ${ }^{\frac{1}{2}}$ | $\ldots$ | $1{ }^{\frac{3}{1}}$ | S．Rhodesia ． | －Major L．Williams． |
| $4{ }^{\frac{1}{2}}$ | 2 | $3^{\frac{1}{4}}$ | East Africa | －E．Gedge． |
| $4^{\frac{1}{2}}$ | $\ldots$ | $2{ }^{2}$ | Do． | －Sir Owen Philipps． |
| $4^{\frac{1}{2}}$ | $2 \frac{1}{4}$ | $2 \frac{1}{3}$ | B．C．Africa | E．Homer． |
| $4{ }^{\frac{7}{15}}$ | $2 \frac{1}{6}$ | $2 \frac{1}{6}$ | E．Mashonaland | F．C．Selous． |
| $4{ }^{\frac{3}{5}}$ | $1{ }^{\frac{3}{1}}$ | $2 \frac{1}{4}$ | Matabililand | －Hon．R．A．Ward． |
| $4 \frac{3}{5}$ | $2 \frac{1}{4}$ | $2 \frac{1}{4}$ | N．E．Rhodesia | ．H．Cookson． |
| $4 \frac{3}{3}$ | $2 \frac{1}{4}$ | $2 \frac{1}{8}$ | East Africa ． | －W．H．Levy． |
| $4 \frac{3}{5}$ |  | $2 \frac{1}{5}$ | Do． | ．G．B．Biackwell． |
| $4{ }^{\frac{3}{8}}$ | 2 | 2 | Somaliland | －Capt．C．Steele． |
| $4^{\frac{1}{4}}$ | $2 \frac{1}{4}$ | $2 \frac{5}{8}$ | Do． | －Capt．R．A．Mrcllymont． |
| $4 \frac{1}{4}$ | 2 | $2 \frac{1}{4}$ | Do． | A．de L．Long． |
| $4{ }^{\frac{1}{8}}$ | $2 \frac{1}{2}$ | $1{ }^{\text {㫫 }}$ | North Nyasaland | James Yule． |
| 4 | $1 \frac{7}{8}$ | 2 | Sudan ． | －Major H．H．S．Morant． |
| ¢ 4 | 2 | $2 \frac{1}{1}$ | East Africa | －Capt．R．Hall． |
| $3{ }^{\frac{7}{8}}$ | $1 \frac{7}{8}$ | $2 \frac{1}{4}$ | Abyssinia | －Major P．II．G．Powell－Cotton． |
| $3{ }^{\frac{7}{8}}$ | 2 | 21 | Do． | J．H．Miiler． |
| $3 \frac{1}{17}$ | $\ldots$ | $2 \frac{3}{8}$ | N．Nigeria | British Museum（Dr．E．J． Porteous）． |
| ¢ 3 年 | I星 | 2 | East Africa | ．Stephenson R．Clarke． |

## OUNER＇S MEASUREMENTS．

$5^{\frac{7}{8}} \quad 2 \frac{1}{4}$
if 43

3 Transvaal
C．S．Mann．
${ }_{1}^{1 \frac{1}{5}}$ East Africa
Capt．R．S．Hart．


The WATERBUCK (Cobus ellipsiprymnus).

Chuzu, Chilala and Chizenga.
Kring-gaat, Boer.
Li Tumogha, Matabili.
Mukulo, Chila.

M'dongoma or Matutwi, Barotsi. Kuru, Swahili. Tumoga, Bechuana. Na'Toro, M'Kua.

The waterbucks and their smaller allies the kobs, together with the reedbucks and vaal rhebok, constitute a well-defined group of large or medium-sized African antelopes presenting the following characteristics. They have the muzzle naked, rudimentary face-glands, a moderately long tail, well-developed lateral hoofs, and the horns confined to the bucks. In shape and size the horns are variable, being either long or medium, but never spirally twisted, and always with smooth tips, below which they are ridged; usually they are at first inclined somewhat backwards, after which they are curved upwards and more or less forwards, although they may have a sinuous curvature, and in the vaal rhebok are straight. The upper cheek-teeth are tall and narrow. In the waterbucks and kobs, which include the largest representatives of the
group, there are no naked patches on the head below the ears, the tail is comparatively long, with a slight terminal tuft, and the lateral hoofs are large. A characteristic feature of the skull is the presence of a deep hollow in the forehead. From its allies the true or common waterbuck is recognisable at a glance by the elliptical white ring on the buttocks, which extends downwards to the thighs. Height at shoulder, from 48 to 53 inches. Weight, about 360 lbs . clean.

Distribution.-Africa north of the Limpopo along the eastern coast region as far as the Shebeyli River in Somaliland; thus including Nyasaland and British and German East Africa. Its present strongholds are the districts between the Sabi and Zambesi, the affluents of the latter, and the Chobi, Okavango, and other rivers above Lake Ngami ; it occurs locally in Mozambique and Portuguese Amatongaland ; but in Barotsiland, N.W. Rhodesia, it is stated to be replaced by the defassa. White waterbuck, with eyes of normal colour, occur on the Guasu-nyero, near the Lorian swamp, B.E. Africa. Numerous local races have been named.

| Length on front. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { T'ip. } \end{aligned}$ | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $36 \frac{1}{4}$ | $8 \stackrel{3}{4}$ | 203 | Delagoa Bay . | - . | American National Collection. |
| 35 | $9 \frac{3}{4}$ | 163 | Sabi River | - - | Major J. Stevenson Hamilton. |
| $33 \frac{1}{2}$ | $9 \frac{1}{4}$ | $21 \frac{1}{2}$ | S.E. Africa | - - | Hon. Walter Rothschild. |
| 33 | $S_{ \pm}{ }^{3}$ | 223 | Nyasaland . | - . | Capt. R. Meinertzhagen. |
| 33 | 93 | $11 \frac{1}{2}$ | Mashonaland . | . . | British Museum (F. C. Selous). |
| 33 | $\mathcal{S}_{ \pm} \frac{3}{}$ | 24 | Do. | - . | J. G. Millais. |
| 323 ${ }^{3}$ | $9 \frac{3}{4}$ | 213 | South Africa . | - - | Sir Victor Brooke's Collection. |
| 325 | S ${ }^{3}$ | $25^{\frac{1}{4}}$ | N. Transvaal . | - - | Major F. W. Jarvis. |
| $32 \frac{1}{2}$ | 912 | $29 \frac{1}{2}$ | N.W. Rhodesia | - - | R. T. Coryndon. |
| 32 | 10 | $22 \frac{1}{2}$ | Rhodesia | - . | Val Gielgud. |
| $31 \frac{3}{4}$ | $9 \frac{1}{4}$ | 24 | Zululand |  | Major L. O. Williams. |
| $31 \frac{3}{4}$ | II | $18_{ \pm}^{3}$ | N. W. Rhodesia | . . | J. H. Leche. |
| $31 \frac{3}{4}$ | 81 | $22 \frac{1}{2}$ | P.E. Africa | . . | British Museum (the late Rowland Ward). |
| $31 \frac{1}{2}$ | $9{ }^{\frac{1}{4}}$ | I 31 | Do. | - . | J. Pinto Leite. |
| $31 \frac{1}{2}$ | 9 | $23 \frac{1}{4}$ | Do. | . . | Sir Owen Philipps. |
| $31 \frac{1}{4}$ | 9 | 16 | East Africa |  | A. Saunderson. |
| 351 | $10 \frac{1}{8}$ | $13 \frac{5}{8}$ | Pungwe . . | . . | Earl of Dunmore. |
| $31 \frac{1}{4}$ | 98 | 191 | South Africa . | - | Sir Edmund G. Loder, Bart. |


| Length on front． | Circum－ ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \\ & \text { Tip. } \end{aligned}$ | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 31 | $9^{\frac{1}{2}}$ | 22 | Zululand | ．R．D．Talbot． |
| 31 | $9{ }^{\frac{1}{2}}$ | 15 | Rhodesia | A．W．Griffin． |
| 31 | S ${ }^{3}$ | 32 | Zambesia | R．H．Storey． |
| 31 | $9 \frac{1}{2}$ | 22 | Mashonaland | F．C．Selous． |
| $30 \frac{3}{4}$ | $9{ }^{\frac{1}{2}}$ | 27 | E．C．Africa | C．E．Dashwood． |
| 303 | $9{ }^{1}$ | 241 | Ngamiland | Mervyn G．Williams． |
| $30 \frac{3}{4}$ | 8 | $23 \frac{1}{4}$ | Pungwe ． | Col．Lord Douglas Compton． |
| 30 豆 | S ${ }_{4}$ | $24 \frac{1}{2}$ | Do． | J．C．Phillips． |
| $30 \frac{1}{2}$ | 83 | 25 | Nyasaland | S．Robins． |
| 29 量 | 9 | 151 | Rhodesia | C．W．Adams． |
| $29 \frac{3}{1}$ | S $\frac{3}{4}$ | 25 | East Africa | J．Giffard． |
| 29 | 9 | 10 | P．E．Africa | R．Elliott－Cooper． |
| 29 | 812 | $32 \frac{3}{4}$ | Do． | Rhys Williams． |
| 29 | $9{ }^{\frac{1}{2}}$ | 26 | East Africa | E．Gedge． |
| 29 | 9 | 23 京 | S．E．Africa | R．E．Critchley－Salmonson． |
| 29 | $9{ }^{\frac{1}{2}}$ | $16 \frac{1}{2}$ | East Africa | Col．W．H．Williams． |
| $28 \frac{3}{1}$ | $8 \frac{1}{2}$ | 23 | Lake Baringo． | H．Hyde－Baker． |
| 283 | 83 | 81 | P．E．Africa | Capt．R．A．McClymont． |
| 28 爫 | $10 \frac{1}{2}$ | I $3 \frac{1}{1}$ | Rhodesia | Dr．Sauer． |
| $28 \frac{1}{2}$ | 1012 | $22 \frac{1}{2}$ | Do． | W．Harcourt Webb． |
| $28 \frac{1}{2}$ | 10 | $15^{\frac{1}{2}}$ | S．E．Africa | H．W．Elliott． |
| $28 \frac{1}{2}$ | $9 \frac{1}{4}$ | 20 量 | N．E．Rhodesia | F．H．Melland． |
| $28 \frac{1}{2}$ | 93 | 10 | East Africa | －G．de P．Colvile． |
| $27 \frac{3}{4}$ | 8 | 18 | Somaliland | A．E．Butter． |
| 27 | 8 亲 | 218 | Gallaland | ．Ivor Buxton． |

## OWNER＇S MEASUREMENTS．

| $36 \frac{3}{3}$ | ．．． | 39 |  | ？ |  | C．S．Mann． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 351 | 9 | 14 |  | ？ |  | Mr．Justice Hopley． |
| 34⿳亠口冖口木 | $\ldots$ | $\ldots$ | Limpopo Africa | Valley， | S．E． | H．T．and A．H．Glym． |
| 33 | S ${ }^{3}$ | 17.1 | Do． | ． |  | A．Ohlsson． |
| 31爯 | $8 \frac{1}{1}$ | $21 \frac{7}{8}$ | North of | ungwe |  | Count E．Hoyos， |
| 313 | 9 | 17 |  | ？ |  | Sir Abe Lailey． |



Skull and Horns of Defassa Waterbuck, in the Tervueren Museum.

## The DEFASSA or SING-SING WATERBUCK (Cobus defassa).

Defassa, Abyssinian. Güriumes, Galla. Nsamza, Waganda.

Pior, Dinka.
Katambur, Sudani. Kuru, Swahili.

Distinguished from the typical waterbuck by the general presence of a large white patch on the lower part of the buttocks, instead of a white elliptical ring extending higher up. Several local races of this species have been named. Among these, the West African or sing-sing (C. d. unctuosus), of Senegal, Nigeria, etc., is characterised by its rufous colour and the small amount of white in the region of the eye; Crawshay's defassa (C. d. crazushayi), from Nyasaland, has a dusky coloration and shorter horns; while in the Angola defassa (C.d. penricei), from the interior of Benguela, Angola, the general colour is so dark as to appear almost black at a distance. Then follows the typical Abyssinian defassa (C. d. typicus), from Western Abyssinia, but generally stated to extend through Sennar, Kordofan, and the valley of the White

Nile to British and German East Africa．The ears are longer and more pointed，and there is more white in the region of the eye than in the preceding races；the general colour being brownish rufous．Nearly allied are C．d．matschiei of Lake Abaya and C．d．uganda，of Uganda； the latter characterised by its bright rufous colour，especially on the fore－ head，and having the finest horns of all．Many other names have been given to local forms．

## A．－ABYSSINIAN DEFASSA（C．defassa typicus）．${ }^{1}$

| Length on front． | Circum－ ference． | Tip to Tip． | Locality | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $34 \pm$ | $8 \frac{1}{4}$ | 18 | White Nile | G．WV．Egerton． |
| －33 ${ }^{\frac{1}{2}}$ | $\ldots$ | $\ldots$ | Bahr－el－Ghazal | －A．L．Butler． |
| －331 | $8 \frac{1}{2}$ | $32 \frac{1}{2}$ | G．E．Africa | S．E．White． |
| $33 \frac{1}{1}$ ． | $8 \frac{1}{1}$ | 251 | Sudan | ．Capt．C．E．Hills． |
| $33 \frac{1}{4}$ | $8 \frac{1}{3}$ | $19 \frac{3}{4}$ | Pibor River | ．Capt．H．V．Venables Kyrke． |
| 33 | 8 | 17 | Sudan | ．Lord Desborough． |
| 33 | 9 | $31 \frac{1}{2}$ | East Africa | －J．Jay White． |
| $32 \frac{3}{4}$ | $8 \frac{3}{4}$ | 22 | Do． | ．Hon．H．Brougham． |
| $32 \frac{3}{4}$ | $8 \frac{1}{2}$ | $21 \frac{1}{4}$ | Sudan | ．N．C．Cockburn． |
| 32， | $8 \frac{1}{4}$ | 18 \％ | Bahr－el－Ghazal | R．Colville． |
| 323 | 9 | $18 \frac{3}{4}$ | Do． | －Capt．E．P．Blencowe． |
| 321 | S $\frac{3}{4}$ | 25 ${ }^{\frac{3}{4}}$ | Do． | ．Sir Robert Harvey，Bart． |
| $32 \frac{1}{2}$ | $8 \frac{1}{2}$ | 18 | Suclan | －Major P．M．Dove． |
| $32 \frac{1}{4}$ | § $\frac{3}{4}$ | $20 \frac{1}{4}$ | Do． | －A．J．Grieve． |
| 32 ${ }^{\text {a }}$ | $8 \frac{5}{8}$ | 30 | East Africa | ．Baron M．de Rothschild． |
| 32 ${ }^{\frac{1}{4}}$ | $8_{4}^{\frac{3}{4}}$ | $24^{\frac{3}{4}}$ | Dinder Valley | －C．E．Russell． |
| 32 $\frac{1}{4}$ | $9 \frac{1}{4}$ | $17 \frac{3}{4}$ | Abyssinia Border | ．Capt．J．A．Pollock． |
| $32 \frac{1}{4}$ | 8 | 2012 | Sudan | Lieut．－Gen．Sir B．T．Mahon． |
| 32 | 9 | 22⿺𠃊⿳亠丷厂彡 | Bahr－el－Ghazal | ．Lieut．－Col．G．Christian． |
| 32 | 9 | 20 | Sudan | －Major C．S．Cumberland． |
| 32 | 9 | 263 | Do． | －C．E．Oakley． |
| 313 | 83 | $16 \frac{1}{2}$ | Do． | －Capt．J．P．V．Hawksley． |
| $31 \frac{1}{2}$ | 8 | $15^{\frac{1}{4}}$ | Do． | －F．W．Greswolde－Williams． |
| $31 \frac{3}{8}$ | 8 | $20 \frac{3}{4}$ | Do． | ．S．H．Whitbread． |
| $31 \frac{1}{4}$ | $10 \frac{1}{4}$ | 223 | East Africa | ．E．H．Litchfield． |
| 31年 | $9{ }^{\text {星 }}$ | $11 \frac{3}{4}$ | Do． | －Major G．A．Swinton Home． |
| 31雪 | 7.1 | 24 | Sudan | －Capt．E．C．Hamilton． |
| 3 I | 9 | 20 | East Africa | ．B．Dominick． |
| 31 | 81 | $17 \frac{1}{2}$ | Sudan | ．Earl of Kingston． |
| 31 | $8 \frac{1}{2}$ | $14 \frac{3}{1}$ | Do． | ．Lieut．－Col．J．W．Yardley． |
| 31 | 9 9 | $18 \frac{1}{2}$ | East Africa | －N．E．F．Corbet． |
| $30 \frac{3}{4}$ | $8 \frac{1}{2}$ | 34 | Suclan | ．W．F．Wailes－Fairbairn． |
| 30．9 | $9 \frac{1}{2}$ | I 5 | Do． | ．E．M．Tabor． |

－Owner＇s measurements．

[^8]| Length on front． | Circum－ ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $30 \frac{3}{4}$ | 11 | $28 \frac{1}{2}$ | East Africa | － | W．N．McMillan． |
| $30 \frac{3}{1}$ | 10 | $12 \frac{3}{4}$ | Do． | ． | Duke of Alba． |
| $30 \frac{3}{4}$ | $10{ }^{3}$ | $20 \frac{3}{4}$ | Do． | ． | －II．Sampson． |
| 303 | $8 \frac{1}{2}$ | 24 | Dinder Valley | － | Lord Villiers． |
| 303 | 83 | 20 | Sudan | ． | －Capt．Lord R．Innes－Ker． |
| $30 \frac{1}{2}$ | 83 | 21 | ？ |  | N．E．Waterfield． |
| $30 \frac{1}{2}$ | 10 | 16 | East Africa | ． | －H．G．Watson． |
| $30 \frac{1}{2}$ | $8 \frac{1}{2}$ | $17 \frac{1}{2}$ | Sudan | ． | －W．D．Roberts． |
| $30 \frac{1}{2}$ | 83 | 921 | Do． | ． | －N．Macklin． |
| $30 \frac{1}{2}$ | $9{ }^{\text {号 }}$ | $15 \frac{1}{2}$ | Do． | ． | －Major F．F．Carroll． |
| $30 \frac{1}{2}$ | 83 | 25 | East Africa | ． | －Earl of Warwick． |
| $30 \frac{1}{2}$ | $9{ }^{\text {s }}$ | 16 | Do． | ． | －Capt．H．C．S．Ashton． |
| $30 \frac{1}{2}$ | $9 \frac{1}{1}$ | $14 \frac{3}{4}$ | Do． | ． | －J．G．Millais． |
| $30 \frac{1}{2}$ | $8{ }^{1}$ | $19 \frac{1}{2}$ | Sudan | ． | －Major R．M．Sanders． |
| 301 | $8 \frac{1}{2}$ | 283 | Do． | ． | R．H．Willan． |
| $30 \frac{1}{4}$ | 8 | $18 \frac{1}{2}$ | Do． | ． | Col．A．Colville． |
| $30 \frac{1}{1}$ | 8 | $19 \frac{1}{2}$ | Do． | ． | W．Mure． |
| $30 \frac{1}{4}$ | ıо | $21 \frac{3}{4}$ | East Africa | ． | －Gerard Buxton． |
| $30 \frac{1}{7}$ | $9 \frac{1}{2}$ | $13 \frac{3}{5}$ | Do． | ． | －Capt．R．Clemm． |
| $30 \frac{1}{1}$ | $9{ }^{\text {星 }}$ | $12 \frac{1}{2}$ | Do． | ． | G．P．L．Cosens． |
| 30 | 8 年 | 18 | Sudan |  | R．McD．Hawker． |
| 30 | $8 \frac{1}{2}$ | $30 \frac{1}{2}$ | Do． | ． | －Capt．O．C．Downes． |
| 30 | S1 ${ }^{1}$ | 21 | Do． | ． | －Capt．G．S．Nickerson． |
| 30 | $8{ }^{\text {a }}$ | 16 | Do． | － | －Capt．H．Craufurd． |
| 30 | 9 | 12 | East Africa | ． | Duke of Medinaceli． |
| 30 | $10 \frac{1}{4}$ | 15 | Do． | ． | R．B．Loder． |
| 30 | $9 \frac{1}{2}$ | 18 | Do． | ． | －Sutton Timmis． |
| 30 | 8 | $10 \frac{1}{1}$ | Do． | ． | H．Fowler． |
| 30 | 81 | 2114 | Sudan | ． | －C．C．Branch． |
| 30 | $9{ }^{\frac{3}{4}}$ | 12 | Do． | ． | －W．R．Rhinelander Stewart． |
| $29 \frac{3}{4}$ | $9 \frac{1}{2}$ | $14{ }^{\frac{1}{2}}$ | East Africa | ． | S．S．Steel． |
| 293 | 91 | 201 | Do． |  | －A．G．Murray Smith． |
| $29 \frac{3}{4}$ | 812 | $21 \frac{1}{2}$ | Do． | ． | ．F．C．Havemeyer． |
| 293 | 83 | $15 \frac{1}{3}$ | Sulan | ． | －Major A．J．B．Percival． |
| 293 | 8 䍃 | 18 | Do． | ． | －Capt．E．S．Stephenson． |
| 294 | 8 星 | 12 | Do． | ． | G．Munu． |
| 293 | 83 | $16 \frac{3}{4}$ | Do． | ． | －C．A．Munn． |
| 29 年 | 8 星 | $21 \frac{1}{2}$ | Do． | ． | －Capt．R．F．Balfour． |
| $29{ }^{\frac{3}{4}}$ | $9{ }^{1}$ | 23 | Do． | － | －W．H．Lindsay． |
| $29 \frac{1}{2}$ | $8{ }_{4}$ | ${ }^{17}$ | Do． | ． | －Capt．C．Leigh． |
| $29 \frac{1}{2}$ | $8{ }^{3}$ | 185 | Do． | ． | －Capt．the Hon．M．P．Macnaghten |
| $29 \frac{1}{2}$ | $9{ }^{\frac{1}{2}}$ | 188 | Do． |  | －Capt．J．G．A．Massy． |
| $29 \frac{1}{2}$ | 10 | 20 | East Africa | ． | －O．Mosley． |
| $29 \frac{1}{2}$ | 9 | $19 \frac{1}{3}$ | Do． | ． | －G．P．Gough． |
| $29 \frac{1}{2}$ | 83 | 15 | Do． | ． | W．Sewall． |
| 2913 | 10 | $15 \frac{1}{2}$ | Do． | ． | ．Capt．M．L．Pears． |


| $\begin{aligned} & \text { Length on } \\ & \text { front. } \end{aligned}$ | Circum． ference． | $\begin{gathered} \text { Tip to } \\ \text { Tip }_{\text {Tip. }} \end{gathered}$ | Locality． |  |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 29를 | 9 | $17 \frac{1}{1}$ | East Africa | ． |  | A．Vonwiller． |
| $29 \frac{1}{2}$ | $9{ }^{\frac{1}{2}}$ | 193 | Do． | ． | ． | ．G．de P．Colvile． |
| $29 \frac{1}{2}$ | 9 | 22 | Sudan | ． |  | ．Major C．P．B．Wood． |
| 291 | 8 | 21 | Do． | ． |  | ．C．R．Gurney． |
| 293 | $7{ }^{\frac{3}{4}}$ | 33 | Do． | ． |  | －Major the Hon．H．Fraser． |
| 29.1 | $8^{3}$ | $16 \frac{1}{2}$ | Do． | ． | ． | ．F．L．Slade． |
| 293 | $9{ }^{1}$ | 24 | Do． | ． | ． | －Capt．P．M．Larken． |
| $29 \frac{1}{1}$ | 98 | 19 | Do． | ． | ． | ．Norman B．Smith． |
| 29 年 | S | $10 \frac{3}{5}$ | Do． | ． | ． | ．H．W．Thornton． |
| 29 年 | 9 | $21 \frac{1}{2}$ | Do． | ． | ． | －A．Robinson． |
| $29 \frac{1}{4}$ | $8_{12}^{1}$ | $23 \frac{1}{4}$ | Do． | ． | ． | ．C．D．Eyre． |
| $29 \frac{1}{4}$ | 9 | 17 | East Africa | ． | ． | －Sir Kenneth Crossley． |
| $29 \frac{1}{\text { 崖 }}$ | 9 | $19 \frac{1}{2}$ | Do． | ． | ． | Viscount Ennismore． |
| $29 \frac{1}{\text { a }}$ | $9 \frac{1}{2}$ | 21 量 | Do． | ． |  | －Sir H．Seton Karr． |

## B．－－UGANDA DEFASSA（C．defassa ugandæ）．

| Length on front． | Circum－ ference． | $\begin{gathered} \text { Tip to } \\ \text { Tip. } \end{gathered}$ | Locality． |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 37\％ | 83 | $25 \frac{3}{8}$ | Kivu District |  | Tervueren Museum．（See illus－ tration．） |
| 363 | $9{ }^{\frac{3}{5}}$ | 36 | Nr．Lake Albert E | Edward | ．A．F．R．Wollaston． |
| 363 | 9 | $20 \frac{1}{2}$ | Do． |  | F．A．Knowles． |
| $36 \frac{3}{4}$ | $8 \frac{1}{2}$ | $19 \frac{1}{2}$ | Semliki Valley | ． | Duke of Peneranda． |
| ${ }^{3} 35{ }^{\frac{1}{2}}$ | $10 \frac{1}{2}$ | 22，$\frac{1}{2}$ | Uganda | － | Major de Courcy Ireland． |
| 35 | $9{ }^{\frac{1}{4}}$ | $29 \frac{3}{4}$ | Lake George |  | Col．C．F．Blane． |
| $34{ }^{\frac{3}{1}}$ | $9{ }^{\frac{1}{2}}$ | $22 \frac{1}{2}$ | Do． | ． | Dr．H．B．Owen． |
| $34{ }^{\frac{5}{8}}$ | $9 \frac{1}{2}$ | $35^{\frac{1}{2}}$ | Semliki Valley |  | The late G．G．Longden． |
| $34 \frac{1}{2}$ | $8{ }_{8}^{5}$ | 27 | Uganda |  | British Museum（Sir F．J．Jackson）． |
| $34 \frac{3}{5}$ | $10^{\frac{1}{8}}$ | 181 | Edward Nyanza． | ． | Major P．H．G．Powell－Cotton． |
| $34 \frac{1}{1}$ | 10 | 32 | Uganda |  | Capt．R．H．Leeke． |
| $34^{\frac{1}{7}}$ | $10 \frac{1}{1}$ | $23^{\frac{1}{2}}$ | Semliki Valley | － | Hon．G．Legge． |
| $34 \frac{1}{4}$ | 9 ${ }^{\frac{1}{2}}$ | 311 | Uganda | － | Douglas M‘Douall． |
| 341 | 8 妥 | $20 \frac{1}{4}$ | Toru，Uganda |  | ．British Museum（Sir H．H． Johnston）． |
| 33\％ | $S_{\frac{1}{2}}$ | $27 \frac{3}{3}$ | Do． |  | Sir F．J．Jackson． |
| $33 \frac{1}{2}$ | $9^{\frac{3}{4}}$ | 17 | Lado ． | ． | Major P．H．G．Powell－Cotton． |
| $33^{\frac{1}{4}}$ | 10 | 29 量 | Semliki Valley | ． | G．Blaine． |
| $33 \frac{1}{4}$ | 9 | $19{ }^{\frac{1}{2}}$ | Uganda |  | E．Canaple． |
| $33^{\text { }}$ | 9 ${ }^{\frac{1}{3}}$ | $22{ }^{\frac{3}{1}}$ | Do． |  | Hon．Walter Rothschild． |
| 323 | 9 | 183 | Do． |  | H．Twyford． |
| $32 \frac{1}{2}$ | $8 \frac{1}{1}$ | $27 \frac{3}{4}$ | Semliki Valley ${ }^{\text {® }}$ | ． | Col．R．Bright． |
| $32 \frac{1}{1}$ | $10 \frac{1}{2}$ | 18 | E．Congo | ． | Hon．M．W．Elphinstone． |
| $32 \frac{1}{8}$ | 9 | $19 \frac{1}{2}$ | Edward Nyanza ． |  | Mrs．P．H．G．Powell－Cotton． |
| 32 | $9{ }^{\text {星 }}$ | 22 | Semiki Valley | － | R．de la Huerta． |
| 318 | 9 | 21 | Do． | ． | －Major R．A．Markham． |
| 31 年 | 10 | $26 \frac{1}{4}$ | Do． | ． | D．Carruthers． |
| 3113 | $9 \frac{1}{2}$ | 21 | Gondokoro |  | Major A．W．Jennings Bramly． |

## C.-RHODESIAN DEFASSA (C. defassa crawshayi).

## Idcitwi, Barotsi. Ingonduma, Matoko.

| Length on | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 29 | 9 | 22 | Lake Mweru | Hon. Walter Rothschild. |
| $27 \frac{3}{\text { 号 }}$ | S | 20 | N. W. Rhodesia | Capt. C. G. Leslie. |
| $27 \frac{1}{2}$ | 73 | $12 \frac{1}{2}$ | N.E. Rhodesia . | G. Sandeman. |
| $27 \frac{1}{2}$ | 9 | 12 | Do. | P. M. Stewart. |
| $27 \frac{1}{4}$ | 8 | 163 | Lake Mweru | K. C. North. |
| 27 | $9 \frac{1}{4}$ | $17 \frac{1}{2}$ | Do. | Capt. H. E. Hambro. |
| 27 | $9{ }^{\frac{3}{4}}$ | 12 | N. W. Rhodesia | Capt. J. F. Laycock. |
| 27 | $8{ }^{3}$ | $17 \frac{5}{5}$ | N.E. Rhodesia . | W. A. Conduitt. |
| $26 \frac{7}{8}$ | 83 | 133 | Do. | Capt. L. E. H. Molyneux-Seel. |
| 263 | 9 | $13 \frac{1}{2}$ | Nyasaland | . L. H. Cripps. |
| 263 | 9 | 15 | N.E. Rhodesia | - Major L. Boyd-Moss. |

D.--WESTERN DEFASSA, or SING-SING (C. defassa unctuosus).

Dadoko and Gwombaza, Hausa. Sing-sing, Gambian.
Height at shoulder, 47 to 48 ins.

E.-ANGOLA DEFASSA (C. defassa penricei).

Length on
front. $\begin{aligned} & \text { Circum- } \\ & \text { ference. }\end{aligned} \begin{gathered}\text { Tip to } \\ \text { Tip. }\end{gathered}$

Locality.
Owner.
Benguela .
Do. . . . . Major Boyd A. Cuninghame.
Do. . . . . W. C. Neilson.
Do. . . . . Hon. Walter Rothschild.

## OWNER'S MEASUREMENTS




Head and Fore-quarters of Lechwe. From a photograph by Mr. Poulett-Weatherley.

## The LECHWE (Cobus [Onotragus] leche).

Umbundu, Angola.
Lechzui, Barotsi and Ngami. Mumembi (male), Noia (female),

Chilala and Chibisa.

Lechi or Li-gwi, Makololo.
Inya, Masubia.
Unya, Makuba.
Bainanja, Mushu Kulumbwi. Nainja, Chila.

In this antelope the horns are relatively long, considerably exceeding twice the length of the head, and show a tendency to a double curvature ; the front of the fore-legs is black, and the hair is long and coarse. Height at shoulder, 40 or 41 inches.

Like the puku, this antelope was discovered by Livingstone and his companions Oswell and Murray during their journey to Lake Ngami in I849. In point of size it approximates to the true waterbucks.

The general colour is fulvous, of a lighter tint than in the Uganda kob.

Seldom found very far from water, this antelope is most abundant in the lagoons and swamps formed by the annual rising of the Upper Zambesi, the Botletli, Chobi, Tamulakan, and other rivers of the interior, in localities where the surrounding flats are inundated for some part of the year. Lechwe seldom venture into the deep rivers from fear of the crocodiles, but frequent the reed-beds, shallow lagoons, and flooded flats, and in the less accessible regions frequently occur in vast herds. Excellent swimmers they progress by a succession of splashing bounds at great speed through the lagoons and shallows. They are extremely tenacious of life.

Distribution.-Zambesia, Barotsiland, and Nyasaland.

| Length on front. | Circum. ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $34 \frac{7}{8}$ | S $\frac{1}{2}$ | $14{ }^{5}$ | N.W. Rhodesia . | O. C. Bevan. |
| 33 | 9 | $19 \frac{1}{4}$ | Do. | Major G. A. Swinton Home. |
| 33 | S $\frac{1}{2}$ | 26 | Do. | Major P. G. A. Cox. |
| $32 \frac{3}{5}$ | 8 | $29 \frac{1}{4}$ | Do. | R. C. Wood. |
| $32 \frac{1}{4}$ | $7 \frac{3}{1}$ | $19 \frac{3}{4}$ | Do. | G. L. Harrison. |
| $32 \frac{1}{4}$ | $8 \frac{1}{4}$ | $18 \frac{1}{4}$ | Do. | Earl of Kingston. |
| 32 年 | 91 | $26 \frac{1}{2}$ | Do. | C. M. Rolker. |
| $31 \frac{1}{2}$ | 8 | 22 | Do. | Hon. Guy Wilson. |
| $31 \frac{1}{2}$ | 7 | 18 | Do. | Col. C. Harding. |
| $31 \frac{1}{2}$ | 8 | $19 \frac{3}{5}$ | Do. | Capt. A. Willis. |
| $31 \frac{1}{2}$ | $8{ }^{3}$ | $21 \frac{1}{2}$ | Do. | Major G. J. Fitzgerald. |
| $31 \frac{1}{4}$ | 83 | $24 \frac{1}{2}$ | Do. | Capt. F. W. Reichwald. |
| $31 \frac{1}{4}$ | 81 | $22 \frac{1}{4}$ | Do. | Capt. F. O. Grenfell. |
| 31 | 8 | $18 \frac{1}{2}$ | Do. | A. de L. Long. |
| 31 | 84 | $23^{\frac{1}{4}}$ | Do. | W. H. Rawnsley. |
| 31 | 83 | 13 | Do. | P. K. Glazebrook. |
| $30 \frac{3}{4}$ | 8 | 25 ${ }^{\frac{1}{4}}$ | Do. | G. de P. Colvile. |
| $30 \frac{1}{2}$ | 8 | 18. | Do. | Lieut.-Col. R. W. R. Barnes. |
| $30 \frac{1}{2}$ | $7 \frac{7}{8}$ | 253 ${ }^{\frac{3}{4}}$ | Do. | H. M. P. Hewett. |
| $30 \frac{2}{5}$ | S ${ }_{5}$ | $19 \pm$ | Do. | Sir Edmund G. Lorler, Bart. |
| 301 | 8 | $20 \frac{3}{4}$ | Do. | Capt. R. A. McClymont. |
| 301 | $8 \frac{1}{2}$ | $21 \frac{1}{4}$ | Do. | . G. F. Watherston. |


| Length on front. | Circumference. |
| :---: | :---: |
| $30 \frac{1}{4}$ | S |
| 30 | 8 |
| 30 | $8 \frac{1}{4}$ |
| 293 | S $\frac{1}{2}$ |
| 293 | 8 |
| 291 | S $\frac{1}{4}$ |
| 293 | 73 |
| $29 \frac{1}{4}$ | $8 \frac{1}{4}$ |
| 29 | 8 |
| 29 | 8 |
| 283 | 8 |
| 283 | $7 \frac{1}{4}$ |
| $28 \frac{3}{4}$ | 8 |
| 283 | 81 |
| $28 \frac{3}{ \pm}$ | $7 \frac{1}{2}$ |
| $28 \frac{3}{4}$ | 8 |
| $28 \frac{3}{1}$ | 81 |
| $28 \frac{1}{2}$ | $6 \frac{1}{2}$ |
| $28 \frac{1}{2}$ | 8 |
| 28 | 712 |
| $27 \frac{3}{4}$ | 8 |
| $27 \frac{1}{2}$ | $7 \frac{1}{2}$ |
| $27 \frac{1}{2}$ | $10 \frac{3}{4}$ |
| $27 \frac{1}{2}$ | 8 |
| $27 \frac{1}{2}$ | 8 |
| $27 \frac{1}{2}$ | 83 |

Tip to Tip.
Locality.
Owner.
front. ference.
19플
N.W. Rhodesia

Capt. Viscount Bury.
Do.
V. F. Bishop.

Nyasaland. . . J. H. Hayes.
N. W. Rhodesia . . Capt. G. M. Lumsden.

Do. . . Duke of Westminster.
Do. . . B. Ryan.
Do. . . Sir J. Walton, Bart.
Do. . . Major J. Carden.
Do. . . P. B. Vander Byl.
Do. . . Col. Lord Douglas Compton.
Do. . . R. T. Coryndon.
Do. . . H. H. Williams.
Do. . . Capt. P. R. Bald.
Do. . . T. D. M. Cardeza.
Do. . . Capt. the Hon. G. H. DouglasPennant.
Do. . . Capt. J. F. Laycock.
Do. . . Hon. Mrs. Guy Wilson.
Do. . . Dr. Russell.
Do. . . R. D. Waterhouse.
Do. . . R. Beaumont.
Ngamiland. . . A. G. Stigand.
$14 \frac{1}{2}$
Do.
F. T. Garbutt.

Chobi Valley
British Museum (F. C. Selous).
N.W. Rhodesia . . Lord H. Seymour.

Chobi Valley . . R. Campbell Heathcote.
Do. . . Capt. C. G. Leslie.

OWNER'S MEASUREMENTS.

| $34 \frac{15}{2}$ | $8 \frac{1}{4}$ | 17 | N.W. Rhodesia . | . A. Faulkener. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $33 \frac{1}{2}$ | 7 | $26 \frac{9}{4}$ | Lake Bangweolo | . Poulett-Weatherley. |
| $33 \frac{3}{4}$ | $\ldots$ | 27 | N.W. Rhodesia . | . Major W. Q. Winwood. |

In the Field of September 17, 1910 (vol. cxvi. p. 551 ), Mr. H. W. Martin states that he once came across a herd of white lechwe with black points, of which one was killed, but the skin subsequently lost. The locality is not mentioned.

Head of Black Lechwe.

## The BLACK LECHWE (Cobus [Onotragus] smithemani).

Nearly allied to the last, of which it may be only a local race, but the upper-parts of adult males blackish brown, and the horns with a more distinct double curvature.
Distribution.-Lake Mweru district, and thence to Lake Bangweolo, North-east Rhodesia. A North Rhodesian black lechwe has been separated as C. robertsi.


[^9]

Head of Mrs. Gray's Lechwe.

## MRS. GRAY'S LECHWE (Cobus [Onotragus] maria).

This handsome species is distinguished by the long, slender, doubly curved horns, ridged nearly to the tips, and the blackish brown bodycolour of the old bucks ; the dark colour being relieved by a whitish patch in front of the withers, the yellowish white ears, a yellowish white patch in front of and behind each eye, and the yellowish muzzle, chin, and lower part of the throat. The limbs and much of the underparts are wholly dark-coloured. Coat long and rough. Height at shoulder, about 38 inches. Young males and females of all ages are chestnut-coloured.

It seems not improbable that Mrs. Gray's lechwe is the supreme development of the lechwe stock (with which it agrees in its long, rough coat) ; thus occupying a position analogous to that held by the white-eared kob as compared with Buffon's kob. The black lechwe forms in some respect a connecting link between the true lechwe and
the present animal, in which the extreme blackness is doubtless due to the hot, moist climate of the Bahr-el-Ghazal.

Distribution.-The swamps bordering the White Nile and its tributaries.

| Length on front. | Circumference. | Tip to Tip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $34 \frac{1}{4}$ | $6 \frac{7}{8}$ | 24 | Sudan | . . | J. C. Phillips. |
| -33⿺𠃊 | $\ldots$ | $\cdots$ | Do. |  | Lieut. W. Scott-Hill, R.N. |
| $32 \frac{3}{4}$ | $6 \frac{1}{4}$ | 18 | Do. | . . | Col. A. Colville. |
| $-32 \frac{3}{8}$ | ... | ... | Do. | . . | C. S. Mann. |
| 321 | $7 \frac{1}{4}$ | $16 \frac{1}{4}$ | Do. | . | Sir Abe Bailey. |
| 32 | $6 \frac{7}{8}$ | $\cdots$ | Near Junction of el-Gebel and Nile | of Bahrd White | Major H. N. Dunn. |
| 313 | $6 \frac{1}{4}$ | $19 \frac{1}{4}$ | ? |  | R. H. Willan. |
| $-3118$ | 73 | I $8_{1}^{1}$ | Bahr-el-Ghazal | 1 | Sir W. Garstin. |
| 31 $\frac{1}{8}$ | 63 | I $1 \frac{3}{4}$ | Do. | . . | Norman B. Smith. |
| 31 | $7 \frac{1}{2}$ | 1912 | Sobat-Pibor Dis | istrict | Capt. J. A. Pollock. |
| 31 | $6 \frac{1}{4}$ | $21 \frac{1}{2}$ | ? |  | Col. J. J. Asser. |
| $30 \frac{3}{4}$ | 7 | 213 | Bahr-el-Ghazal | 1 | Capt. A. H. Vivian. |
| 305 | 7 | 14 | Do. | . | Capt. H. Gordon. |
| $30 \frac{1}{2}$ | 7 | 9 | Do. | . . | R. A. Colvin. |
| $30 \frac{1}{4}$ | 7 | $14 \frac{3}{4}$ | Bahr-el-Zaref | . . | Capt. C. E. Hills. |
| 30 | 7 | $14 \frac{1}{2}$ | Do. | - . | Major W. H. Drake. |
| 30 | $6 \frac{1}{2}$ | $14{ }^{\frac{1}{2}}$ | Do. | . . | IH. St. C. Garrood. |
| $29 \frac{3}{4}$ | $6 \frac{1}{2}$ | $10 \frac{1}{4}$ | White Nile | - . | Major P. M. Dove. |
| $29 . \frac{3}{4}$ | 75 | 173 ${ }^{\frac{3}{4}}$ | Do. | . . | Countess of Sefton. |
| $29 \frac{3}{4}$ | $6 \frac{1}{4}$ | 12 | Do. | - . | Hon. Walter Rothschild. |
| $29 \frac{1}{2}$ | $7 \frac{1}{4}$ | 16 | Do. | . | C. H. Goschen. |
| 293 | $7 \frac{1}{8}$ | 19 ${ }^{\frac{1}{4}}$ | Do. | . $\cdot$ | Major A. W. Jennings Bramly. |
| 2912 | $7 \frac{1}{2}$ | $\ldots$ | Do. |  | N. C. Cockburn. |
| $29 \frac{1}{4}$ | $7 \frac{1}{4}$ | $17 \frac{1}{4}$ | Sudan |  | Capt. C. Hankey. |
| $29 \frac{1}{4}$ | 7 | $20 \frac{3}{4}$ | Do. | . . | Duke of Alba. |
| $29 \frac{1}{4}$ | 65 | 125 | Do. | . . | G. L. Wingfield. |
| 29 | $7 \frac{3}{4}$ | 123 | Do. | . | Col. E. G. T. Bainbridge. |
| 29 | 7 | 16 | Tonga Island, Nile | White | Col. W. Hayes-Sadler. |
| 29 | 7 | $24 \frac{1}{2}$ | Sudan | . . | G. W. Egerton. |



Head of TVestern Kob. Shot by Lady Constance Stewart Richardson in Nigeria.

## THE KOB (Cobus [Adenota] cob).

Maria, Hausa.
There is little doubt of the existence of a more or less complete gradation from the wholly fulvous typical or Buffon's kob to the white-eared kob, in which the general colour of old bucks is blackish brown. The simpler form and smaller size of the horns affords a sufficient distinction from C. maria.

Distribution.-The Forest Zone and Swamps of the White Nile.

$$
\text { A.-WESTERN RACES (C. cob typicus), etc. }{ }^{1}
$$

This race has the back of the ears rufous like the body: the horns are less than twice the length of the head, the hair is short, and the front of the fore-legs black. The approximate height at the shoulder is from 32 to 35 inches.

Distribution.-Gambia to Nigeria and Lake Chad district.

Length on front．

| $22 \frac{1}{1}$ | 7 | II ${ }^{\text {星 }}$ |
| :---: | :---: | :---: |
| $22 \frac{1}{8}$ | $7 \frac{3}{5}$ | $7{ }^{\text {星 }}$ |
| 22 | $6 \frac{1}{2}$ | 11 $\frac{3}{4}$ |
| 21年 | $7{ }^{3}$ | 10 |
| $21 \frac{1}{2}$ | $7 \frac{1}{1}$ | 9 表 |
| 2 I | $6 \frac{1}{2}$ | $8 \frac{1}{4}$ |
| 2 I | 6 | $14 \frac{1}{4}$ |
| $20 \frac{5}{8}$ | $6 \frac{1}{2}$ | $9 \frac{3}{4}$ |
| $20 \frac{1}{2}$ | 63 | $10 \frac{1}{2}$ |
| $20 \frac{1}{2}$ | $7{ }^{1}$ | 10 |
| $-20 \frac{1}{2}$ | 7 | $7 \frac{1}{2}$ |
| $20 \frac{1}{4}$ | $6 \frac{1}{4}$ | $12 \frac{1}{4}$ |
| 20 | 7 | 7 |
| 20 | 7 | $7 \frac{3}{4}$ |
| 20 | 65 | 63 |
| 20 | $7 \frac{3}{8}$ | $14 \frac{1}{2}$ |
| 20 | 7 | $10 \frac{1}{8}$ |
| 193 | 7 | $3{ }^{1}$ |
| $19 \frac{3}{4}$ | $7 \frac{3}{5}$ | 9 |
| $19{ }^{3}$ | $6 \frac{7}{3}$ | $7 \frac{1}{4}$ |
| 19 ${ }^{\frac{1}{2}}$ | 61 | 8 |
| 1912 | $6 \frac{1}{4}$ | $6 \frac{1}{2}$ |
| $19 \frac{1}{2}$ | 6 | $14 \frac{1}{2}$ |
| 1912 | 6 年 | $5 \frac{1}{2}$ |
| $19 \frac{1}{1}$ | 7 | $8 \frac{7}{8}$ |
| $19 \pm$ | 6 | I $1 \frac{1}{8}$ |
| 1919 | 61 | $6 \frac{1}{2}$ |
| $19 \pm$ | $6 \frac{3}{1}$ | 13 |
| $19 \frac{1}{4}$ | $6 \frac{8}{5}$ | 11 |
| 19 | 63 | $13 \frac{1}{2}$ |
| 19 | $6 \frac{1}{2}$ | II |
| 19 | $6 \stackrel{3}{4}$ | $8 \frac{3}{4}$ |
| 19 | $6 \frac{1}{2}$ | 94 |
| 181 | 6 | $5 \frac{3}{5}$ |
| $17 \frac{3}{5}$ | $5 \frac{3}{1}$ | $6 \frac{1}{5}$ |
| $17 \frac{1}{2}$ | $6 \frac{1}{2}$ | 10 量 |
| $17 \frac{1}{1}$ | 6 | $8 \frac{3}{4}$ |
| 167 | 6 | $10 \frac{8}{4}$ |
| 165 | 61 | 95 |
| 15\％ | 6 | $7{ }^{\text {星 }}$ |
| 15 | $5 \frac{1}{2}$ | 54 |

Locality：
N．Nigeria
Do．
Do．
Do．．．J．Goold Adams．
Do．．．Capt．L．C．Brodie．
Do．．．Dr．C．W．O’Keefe．
Do．．．Lady Constance Stewart Richardson．
French Congo ．W．S．Race．
Nigeria
Capt．W．H．Wilkin．
Capt．L．C．Jackson．
Capt．P．Chapman．
Capt．A．B．Baillie－Hamilton．
W．F．Gowers．
Sir E．Stewart Richardson，Bart．
Sir Edmund G．Loder，Bart．
Major J．B．Cockburn．
C．S．Burnett．
Major Lord J．S．Cavendish．
Maj．－Gen．T．L．N．Morland．
Major A．H．Festing．
Major T．Astley Cubitt．
Capt．R．W．Fox．
L．C．Murray．
Capt．W．V．Nugent．
C．S．Mann．
Dr．Gr．J．Pirie．
Capt．F．E．Bissell．
Capt．J．C．Parker．
Major C．A．Booth．
Capt．A．Noel Woods．
Capt．S．B．B．Dyer．
Capt．G．C．Kelly．
D．W．Pawle．
G．Blaine．
C．E．Stewart．
C．Cary Barnard．
Portuguese Guinea ．M．V．Hay．
Sierra Leone ．．Major W．Gillman．
Portuguese Guinea ．Major P．II．G．Powell－Cotton．
Senegambia ．．G．Fenwick Owen．
Gold Coast ．．Capt．G．H．Hastings．


Skull and Horns of Uganda Kob.
B. - UGANDA RACE (Cobus cob thomasi).

Nsuna, N'Sumu, or Sumu, Waganda.
From the typical Buffon's kob the eastern or Uganda race is distinguished mainly by its superior size, and the presence of a complete white ring round each eye, instead of having only a white line above the same. General colour rich fulvous, with the muzzle, lips, chin, under-parts, and inner surfaces of upper portion of fore-legs and thighs white; front of fore-legs with a black line, and hind-legs with a similar line, which does not, however, ascend within some distance of the hocks. Height at shoulder, about 35 inches.

Distribution.-East Africa, from Kavirondo to Uganda.

Locality.
Wadelai
Mruli .

Owner.



## C.-VAUGHAN'S RACE (Cobus cob vaughani).

Very similar to the last, but the general colour of old bucks at one season bright foxy red, much as in the typical race; the red extends on to the bases of the ears, and there is rather less white on the face than in the next race. Adult bucks may become more or less black at one season. Possibly the name vougrami will have to be replaced.

Distribution.-The south-western districts of the Bahr-el-Ghazal province.

D.-WHITE-EARED RACE (Cobus cob leucotis).

Hamaraia dyl, Sudani.
Kcla, Niam-Niam.
Jwil, Dinka and Shooli.
The old bucks of this race are of the same blackish-brown colour as those of C. maria, but have no light patch in front of the withers, and are further characterised by the ears, a large patch extending from the same to surround each eye, the muzzle, chin, upper portion of the throat, the under-parts, and portions of the inner and front surfaces of the limbs being pure white. The direction of the hair on the middle line of the back is reversed from the loins instead of from the middle of the back. Young bucks and females are red. Height at shoulder, about 34 or 35 inches.

Distribution.-The region of the Upper Nile, including the Sobat, Bahr-el-Ghazal, and their tributaries.


Head of White-eared Kob.

Length on Circum front. ference.

Tip to Tip.

II
$12 \frac{1}{4}$
103
$11 \frac{1}{4}$
10
II ${ }^{3}{ }^{3}$
$15 \frac{3}{\text { 童 }}$
II 1
105
$11 \frac{1}{2}$
10

13
$21 \frac{3}{4} \quad 6 \frac{1}{2}$
21星

| $124 \frac{3}{4}$ | $7 \frac{1}{4}$ | 11 |
| :--- | :--- | :--- |
| $23 \frac{1}{4}$ | $6 \frac{1}{4}$ | $12 \frac{1}{4}$ |
| $23 \frac{1}{4}$ | $6 \frac{1}{4}$ | $10 \frac{3}{5}$ |
| $23 \frac{1}{4}$ | $6 \frac{3}{4}$ | $11 \frac{1}{4}$ |
| 23 | $6 \frac{1}{2}$ | 10 |
| 23 | $6 \frac{1}{4}$ | $11 \frac{3}{4}$ |
| $22 \frac{7}{5}$ | $7 \frac{1}{2}$ | $15 \frac{3}{4}$ |
| $22 \frac{3}{4}$ | $6 \frac{3}{4}$ | $11 \frac{1}{4}$ |
| $22 \frac{1}{4}$ | 6 | $10 \frac{5}{8}$ |
| $22 \frac{1}{4}$ | $5 \frac{3}{4}$ | $11 \frac{1}{2}$ |
| 22 | $6 \frac{1}{2}$ | 10 |
| 22 | 6 | 13 |
| $21 \frac{3}{4}$ | $6 \frac{1}{2}$ | $13 \frac{1}{2}$ |
| $21 \frac{3}{4}$ | 6 | $14 \frac{1}{2}$ |

Owner.

Capt. J. P. V. Hawksley.
Major A. J. B. Percival.
C. Bulpett.

Capt. J. A. Pollock.
Capt. A. H. Vivian.
Sir Robert Harvey, Bart.
Capt. G. L. Cameron.
W. H. Lindsay.

Capt. H. V. Venables Kyrke.
E. M. Tabor.
F. W. Greswolde-Williams.

Do. . . . Capt. A. Craufurd.
Do. . . . Major J. H. Rivers.
Do. . . . Lord Desborough.

| Length on front. | Circumference. | Tip to Tip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 213 | $6 \frac{1}{2}$ | 9 ${ }^{\frac{3}{4}}$ | White Nile | - . | E. C. Crispin. |
| $21 \frac{3}{4}$ | $6 \frac{3}{1}$ | 812 | Do. | , | F. C. Selous. |
| 21妾 | $6 \frac{1}{4}$ | $7^{\frac{1}{2}}$ | Do. | - - | P. M. Tottenham. |
| $21 \frac{3}{4}$ | $6 \frac{7}{3}$ | $13 \frac{3}{5}$ | Do. | - . | F. L. Slade. |
| $21 \frac{1}{2}$ | $7 \frac{1}{4}$ | $12 \frac{1}{4}$ | Do. |  | Lieut.-Gen. Sir B. T. Mahon. |
| $21 \frac{1}{2}$ | 7 | $11 \frac{1}{2}$ | Do. | - - | H. Fitzroy. |
| $21 \frac{1}{2}$ | $6 \frac{3}{1}$ | 12 | Do. |  | R. McD. Hawker. |
| $21 \frac{1}{2}$ | $6 \frac{3}{4}$ | $10 \frac{1}{4}$ | Do. |  | Capt. E. C. Hamilton. |
| $21 \frac{1}{2}$ | $6 \frac{1}{2}$ | 7 | Do. |  | C. Bower Ismay. |
| $211 \frac{1}{2}$ | $6 \frac{1}{2}$ | 13 | Do. | - | C. de la Ifuerta. |
| $2 \mathrm{I} \frac{1}{2}$ | 6 | $9 \frac{1}{4}$ | Do. | - | C. C. Branch. |
| $21 \frac{1}{2}$ | $6 \frac{3}{1}$ | $7 \frac{1}{2}$ | Do. | . . | Major W. F. Sweny. |
| $21 \frac{1}{4}$ | $7 \frac{1}{2}$ | $12 \frac{1}{4}$ | Do. | - . | E. D. H. Tollemache. |
| $21 \frac{1}{4}$ | 6 | $13 \frac{3}{4}$ | Do. |  | Capt. G. Stewart. |
| 219 | 67 | I I | Do. |  | Major W. Hayes-Sadler. |
| $21 \frac{1}{4}$ | $6 \frac{1}{4}$ | 8 | Do. | . . | Major R. M. Sanders. |
| $21 \frac{1}{4}$ | $6 \frac{1}{2}$ | S $\frac{1}{2}$ | Do. | . . | Capt. H. R. Headlam. |
| 213 | 612 | 4 | Do. | - . | W. R. Rhinelander Stewart. |
| $21 \frac{1}{4}$ | 7 | I $1 \frac{1}{2}$ | Do. | - . | N. C. Cockburn. |
| $21 \frac{1}{4}$ | $7 \frac{1}{4}$ | $9 \frac{3}{4}$ | Do. | $\cdots \cdot$ | G. Munn. |
| $21 \frac{1}{4}$ | $7 \frac{1}{4}$ - | 15 | Do. | - | Capt. R. G. C. Brock. |
| $21 \frac{1}{4}$ | 6 | $11 \frac{1}{2}$ | Do. | - | Duke of Alba. |
| 213 | $6 \frac{3}{1}$ | $10 \frac{1}{3}$ | Do. | , | G. L. Wingfield. |
| 21 | $6 \frac{1}{2}$ | 83 | Do. | - | Capt. G. F. Pridham. |
| 21 | $6 \frac{1}{2}$ | $10 \frac{1}{2}$ | Do. | - | J. H. Greathead. |

## E.-LODER'S PUKU (C. cob loderi).

Typified by the under-mentioned skull, but probably identical with a puku-like kob subsequently described as Adenota pousarguesi. Horns of a somewhat puku-like type.

Length on
front curve. $\begin{aligned} & \text { Circum- } \\ & \text { ference. }\end{aligned} \quad$ Tip to Tip. Locality. Owner.
?
Sir Edmund_G. Loder, Bart.


Skull and Horns of Puku.

## The PUKU (Cobus [Adenota] vardoni).

Imputur, Masubia.<br>Muntinya, Barotsi.<br>Puku, Ngami.<br>Seūlda, Chilala and Chibisa.<br>Sichisumu, Chila.

From the other small kobs with the back of the ears rufous, the puku is distinguishable at once by the uniformly foxy colour of the fore-legs, as well as by the greater length of the hair, especially in the region of the back and loins, where it has a tendency to curl. General colour reddish yellow. Height at shoulder, about 39 or 40 inches. Weight, about igo lbs.
Distribution.-Chobi and Zambesi valleys, including Barotsiland, very common, and found in small herds of ten to twenty in North-west and North-east Rhodesia.

| Length on front curve． | Circum． ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $20 \frac{3}{4}$ | $7 \frac{7}{8}$ | 17 | N．E．Rhodesia | ．Hon．Walter Rothschild． |
| $20 \frac{1}{2}$ | $6 \frac{3}{1}$ | 11 | N．W．Rhodesia． | －Dr．Cole． |
| －20 $\frac{1}{2}$ | 7 | 15 | Do． | －C．S．Mann． |
| 201 | $8 \frac{1}{3}$ | $12 \frac{1}{4}$ | Lake Bangweolo | －F．Smitheman． |
| 20 | 73 | 71 | N．WV．Rhodesia ． | ．T．D．M．Cardeza． |
| 195 | 78 | $6 \frac{7}{3}$ | N．E．Rhodesia | ．W．A．Conduitt． |
| 191 $\frac{1}{4}$ | $6 \frac{1}{2}$ | 4 | Do． | ．H．Cookson． |
| $19 \frac{1}{4}$ | $7 \frac{1}{2}$ | $9 \frac{1}{4}$ | ？ | T．G．Davey． |
| $19 \frac{1}{8}$ | $6 \frac{3}{4}$ | S $\frac{1}{2}$ | ？ | J．Carr Saunders． |
| 19 | $7 \frac{3}{ \pm}$ | $5 \frac{3}{1}$ | N．W．Rhodesia ． | ．Major J．Carden． |
| 19 | $7 \frac{1}{4}$ | 8 | N．E．Rhodesia | －F．H．Melland． |
| －19 | $7 \frac{1}{2}$ | 6 | Do． | －J．C．Phillips． |
| $18 \frac{7}{5}$ | 8 | 65 | Do． | －Earl of Kingston． |
| $18 \frac{3}{1}$ | $6 \frac{3}{3}$ | S $\frac{1}{2}$ | N．W．Rhodesia． | －R．T．Coryndon． |
| $18 \frac{3}{4}$ | 7 | $6 \frac{1}{2}$ | ？ | J．L．Drège． |
| $18 \frac{3}{4}$ | 6 | 6 | Nyasaland ． | －Dr．A．MacCarthy Morrogh． |
| $18 \frac{1}{2}$ | 61 ${ }^{\frac{1}{2}}$ | $9 \frac{1}{4}$ | ？ | S．R．Price． |
| $18 \frac{1}{2}$ | $6 \frac{1}{2}$ | $4 \frac{1}{2}$ | ？ | Sir Owen Philipps． |
| I $8 \frac{1}{2}$ | $7 \frac{1}{4}$ | $7{ }^{\text {星 }}$ | N．E．Rhodesia | －Col．C．F．Blane． |
| $18_{1}^{1}$ | 7 | 8 $\frac{3}{1}$ | ？ | W．H．Fountain． |
| $18 \frac{1}{4}$ | $7 \frac{1}{4}$ | 8 | ？ | Capt．G．M．Spencer－Smith |
| $18 \frac{1}{1}$ | $7 \frac{1}{4}$ | $7 \frac{1}{2}$ | N．E．Rhodesia | －P．M．Stewart． |
| 18 | 7 | $9{ }^{1}$ | N．W．Rhodesia | －Capt．H．E．Hambro． |
| 18 | 7 | $11 \frac{1}{4}$ | Do． | ．Col．C．Harding． |
| 18 | 73 | 6 | Do． | －The late George Grey． |
| 178 | $6 \frac{1}{2}$ | 81 $\frac{1}{2}$ | Do． | ．Capt．A．L．Godman． |
| $17 \frac{3}{1}$ | 6 | $7{ }^{\frac{1}{2}}$ | Do． | ．J．Ripley． |
| $17 \frac{3}{4}$ | $7 \frac{1}{4}$ | 8 | Ulanga Valley | ．R．Berridge． |
| $17 \frac{5}{8}$ | $6 \frac{1}{4}$ | 912 | N．E．Rhodesia ． | －J．Turner． |
| $17 \frac{1}{2}$ | 63 | $7 \frac{1}{4}$ | Tanganyika Plateau | Claude Francis． |
| $17 \frac{1}{2}$ | $7 \frac{1}{8}$ | 58 | N．E．Rhodesia ． | ．Col．A．Colville． |
| $17 \frac{1}{2}$ | $7 \frac{1}{1}$ | 14 | N．WY．Rhodesia | －Capt．H．L．Archer－Houblon． |
| $17 \frac{1}{2}$ | 7 | 125 | Do． | ．Major A．H．Daukes． |
| $17 \frac{1}{2}$ | 7 | 7 | Do． | ．E．McClellan． |
| $17 \frac{1}{2}$ | $7 \frac{1}{2}$ | $5{ }^{\text {星 }}$ | Do． | ．J．H．Leche． |
| $17 \frac{1}{2}$ | $6 \frac{3}{4}$ | 8 | Do． | ．E．Fowler． |
| ㅇ 5 哥 | $3{ }^{5}$ | 51 | Loru Valley | ．J．Gibson Hall． |

－Owner＇s measurements．


Head of Vaal Rhebok.

## The GREY or VAAL RHEBOK (Pelea capreolus).

Vaal Rhebok, Cape Dutch. Iliza, Swazi.

Pslizatla, Basuto.<br>Peeli, Bechuana.

The short, upright, straight, and slender horns, together with the somewhat woolly nature of the hair, serve to differentiate the vaal rhebok from the antelopes of the kindred genera. The tail, like that of the reedbucks, is moderately long and bushy; the ears are tall and narrow ; the build is slight and graceful ; and the general colour is uniformly pale grey, tending somewhat to fawn on the head and limbs. Height at shoulder, about 28 inches in females and 30 or 31 inches in males. The chief distinctions between this antelope and reedbuck are the form of the horns and the absence of the bare patches below the ears.

Distribution.-The open hilly districts of Africa south of the Zambesi. In the mountain ranges of the eastern and northern districts of Cape Colony, and thence onwards to the Zambesi, the vaal rhebok
affords good sport ; and although its somewhat stiff and stilty appearance is not at first suggestive of unusual activity, yet the pace and regularity with which a party of these antelopes will race up the steep flank of a mountain are wonderful. A peculiar feature of the vaal rhebok is the soft and woolly nature of the grey coat; the horns afford insignificant trophies, and the flesh is of poor quality.

| Length on front. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $11 \frac{1}{2}$ | $2 \frac{1}{2}$ | $4{ }^{\frac{1}{2}}$ | ? | Sir Owen Philipps. |
| $10_{4}^{3}$ | 2 | $2 \frac{1}{2}$ | Basutoland | Sir Abe Bailey. |
| $10 \frac{3}{18}$ | $2 \frac{1}{8}$ | 3 | Cape Colony | H. Hodgson. |
| $1 \mathrm{IO}_{18}^{18}$ | 2 | $3{ }^{\frac{7}{8}}$ | Near Middelburg | Major E. H. E. Abadie. |
| $9 \frac{1}{4}$ | $2 \frac{1}{2}$ | $2 \frac{3}{4}$ | ? | Dr. Oakeshott. |
| 9 | 25 | $2{ }^{\text {亳 }}$ | ? | Mr. Justice Hopley. |
| 85 | $2{ }^{5}$ | $2 \frac{1}{2}$ | Cape Colony | R. H. Venables Kyrke. |
| 858 | $2 \frac{1}{2}$ | 2 25 | South Africa | British Museum (Dr. Burchell). |
| $8 \frac{1}{2}$ | $2 \frac{1}{2}$ | 2 | ? | G. Richards. |
| 8 | $2 \frac{1}{4}$ | $2{ }^{3}$ | ? | Capt. R. Meinertzhagen. |
| S | 2 | $4^{\frac{1}{8}}$ | ? | R. E. Critchley-Salmonson. |
| 8 | 2 | $3 \frac{1}{2}$ | ? | V. Ryves. |

## OIVNER'S MEASUREMENTS.

| $11 \frac{1}{2}$ | ... | ... | Spitzkop | American National Collection. |
| :---: | :---: | :---: | :---: | :---: |
| $1{ }_{1} \frac{1}{2}$ | $\ldots$ | $\ldots$ | Cape Colony | South African Museum. |
| $\mathrm{IO}_{5}$ | ... | 6 | Do. | E. T. Murray. |
| $10 \frac{1}{2}$ | $2 \frac{1}{8}$ | $4{ }^{5}$ | Transvaal | H. T. and A. H. Glynn. |
| $10 \frac{1}{4}$ | $2{ }^{2}$ | 512 | ? | Major H. Chamney. |
| $9 \frac{1}{2}$ | .. | 3年 | ? | Major W. Anstruther Gray. |
| $9{ }^{\frac{3}{8}}$ | 2 | $4 \frac{1}{4}$ | Basutoland | Lord Milner. |
| $9{ }^{\frac{1}{4}}$ | $2{ }^{1}$ | $2 \frac{1}{2}$ | Near Cape Town | Capt. W. Jardine. |
| 9 | $22_{4}$ | $3 \frac{1}{2}$ | Natal | C. S. Mann. |



Head of Reedbuck.

## The REEDBUCK (Redunca ${ }^{1}$ arundinum).

Rietbok, Cape Dutch.
Bushmat, Sudani.
Bemba, Masara.
Inzigi, Amandebili.
Im-vwi, Masubia.
Um-vwi, Makuba.
Inhlango, Swazi.
Iklabu, Basuto.

Impoyo, Lower Zambesi.
Msiki, Zulu and Matabili.
Natafwi, Mashukulumbwi.
Mutobo, Barotsi.
Sibughat, Ngami.
Mpoyo, Chilala and Chibisa.
$N^{\prime} t o b i$, M'Kua.
Maluvavi, Chila.

Reedbucks, none of which is so large as a waterbuck, differ from the latter and the kobs by their lighter build, and the presence of a completely bare or very short-haired patch on each side of the head immediately beneath the ear. The tail is more bushy and shorter, the

[^10]lateral hoofs are relatively smaller，and the black horns，which are of medium length and stoutness，diverge in an upward and outward direction，with a forward curvature at the tips，which may be hooked． Till very late in life the basal portion of the horns is of a pasty con－ sistence，and sportsmen＇s measurements on the field often include this． The present species，the true rietbok of the Boers，is the largest of the genus，standing about 36 or 37 inches at the shoulder；and has the ear－patch completely bare，and the horns curving regularly forwards without terminal hooks．Reedbuck are generally met with in small family parties，and when excited or alarmed utter a shrill whistle． Their flesh is of fair quality．
Distribution．－Africa，from the Cape to Angola on the western side， and on the eastern side through Mozambique and South Nyasa－ land to lat． $8^{\circ} 25^{\prime} \mathrm{N}$ ．in the Bahr－el－Ghazal district．As their name implies，reedbuck frequent the reed－brakes fringing so many African rivers；some of the rivers where they are still fairly abundant being the Lotsani in Bamangwato and those of Ngami－ land and the country between Mashonaland and the east coast． The under－mentioned Rhodesian specimens probably belong to $R$ ．a occidentalis，distinguished by a greyish tinge in the coat．

| Length ${ }^{1}$ on front curve． | Circum． ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality． |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 17 | 6 | 153 | N．W．Rhodesia ． | ．． | C．Mathews． |
| $16 \frac{3}{1}$ | $6 \frac{1}{4}$ | $15 \frac{3}{4}$ | Sabi River ． | ．． | Major J．Stevenson－Hamilton． |
| 16⿺𠃊 ${ }^{2}$ | $5 \frac{3}{4}$ | $14 \frac{1}{2}$ | P．E．Africa ． | － | British Museum（the late Rowland Ward）． |
| －161 ${ }^{\frac{1}{2}}$ | 6 | 123 | Do． | ．． | Hon．Walter Rothschild． |
| $16 \frac{3}{8}$ | $6 \frac{3}{8}$ | 1 I | N．W．Rhodesia． | ．． | Capt．P．R．Bald． |
| $16 \frac{1}{4}$ | 6 | 163 | Matabililand ． | ．． | R．C．Batley． |
| $16 \frac{1}{4}$ | $6 \frac{1}{2}$ | $15 \frac{1}{2}$ | N．W．Rhodesia ． | ．． | Col．Lord Douglas Compton． |
| $16 \frac{1}{4}$ | 512 | $20 \frac{1}{2}$ | Barotsiland，N．W．Rhodesia |  | R．T．Coryndon． |
| 16 | $7 \frac{1}{2}$ | $9^{\frac{1}{2}}$ | Do． |  | Col．C．Harding． |
| 16 | 73 | 113 | N．W．Rhodesia． | ． | Capt．F．W．Reichwald． |
| $15 \frac{7}{5}$ | $6 \frac{1}{4}$ | $10 \frac{1}{2}$ | ？ |  | C．D．Rudd． |
| $15^{\frac{7}{8}}$ | $6 \frac{1}{4}$ | $14 \frac{1}{4}$ | ？ |  | British Museum． |
| ${ }^{2} 15 \frac{3}{4}$ | $6 \frac{1}{8}$ | $13 \frac{1}{2}$ | Transvaal． | ．． | Sir Abe Bailey． |
| I 5 年 | 6 | 19 | Tanganyika Plateau | 1. | Hon．Walter Rothschild． |
| $15 \frac{3}{\text { 星 }}$ | $7 \frac{1}{4}$ | $16 \frac{1}{4}$ | N．W．Rhodesia． | ． | Lieut．－Col．R．W．R．Barnes． |
|  |  | 1 Horn | ly，not the pad． |  | 2 Abnormal head． |

Length on front curve.

Circumference.

| $15 \frac{1}{2}$ | $5 \frac{1}{2}$ | $19 \frac{1}{2}$ | Mpimbi, Nyasaland | . | British Museum (the late Col. F. |  |
| :--- | :--- | :---: | :--- | :--- | :--- | :--- |
| Trollope). |  |  |  |  |  |  |
| $15 \frac{1}{2}$ | $6 \frac{1}{2}$ | 13 | Nyasaland . | . | . | Capt. J. Harington. |

## OWNER'S MEASUREMENTS.




Skull and Horns of Eastern Mountain-Reedbuck.

## MOUNTAIN-REEDBUCK or ROOI RHEBOK (Redunca fulvorufula).

This reedbuck is considerably smaller than the type species, measuring from about 28 to 3 I inches at the shoulder, but has horns of much the same type, without distinct hooks to the tips. The general colour is greyish fawn, showing in some cases a more or less distinct rufous tinge.

Distribution.-Eastern Africa to the south of the Zambesi, particularly Natal, Zululand, and Bechuanaland ; represented farther north by the undermentioned race. Rooi (red) rhebok differ from the typical representative of the genus in being inhabitants of the basal slopes of mountains, at a lower level than the tract frequented by the vaal rhebok. They are generally found in small troops of a dozen head or less ; and from their active habits and the difficult nature of the ground they frequent, afford excellent stalking. In the neighbourhood of the tributaries of the Limpopo, on the Mabubi, Tamulikan, Machabi, Sunta, and Chobi rivers, as well as the tributaries of the Zambesi east of the Victoria Falls, they are still abundant. Those from the Manica plateau, north of the Zambesi, may be the East African race.

Certain reedbuck from the Lydenburg range of the Transvaal exhibit a tendency to albinism, and have been described as a distinct race (Redunca fulvorufula subalpina), but are more probably " sports."

A reedbuck from the Mount Kenia district of East Africa appears to be a local race of this species ( $R$. fulvorufula chanleri). In the original specimen the nose shows a dark streak like the one often seen in this and the typical reedbuck.

## A.-TYPICAL RACE (R. fulvorufula typica).

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 8 | $3{ }^{\frac{7}{8}}$ | $3 \frac{1}{2}$ | S.E. Africa | H. W. Elliott. |
| 73 | $4{ }^{\frac{3}{4}}$ | $4{ }^{\text {8 }}$ | ? | Hon. Walter Roth by F. C. Selous. |
| $7 \frac{3}{8}$ | $3{ }^{\frac{3}{4}}$ | 418 | Zululand | Sir Owen Philipps. |
| $7{ }^{\frac{1}{9}}$ | 5 | 3 | Near Bloemfontein | Major R. Rankin. |
| $7 \frac{1}{8}$ | $3{ }^{\frac{3}{4}}$ | $3{ }^{1}$ | ? | R. T. Coryndon. |
| 7 | $3^{\frac{1}{2}}$ | $4{ }^{\frac{1}{4}}$ | Zululand | A. Cameron. |
| 7 | $3{ }^{3}$ | $4{ }^{3}$ | ? | II. E. Berry. |
| 7 | $3{ }^{\frac{1}{2}}$ | 6 | ? | P. H. Stewart. |
| 7 | $3^{\frac{1}{2}}$ | $5 \frac{3}{4}$ | ? | G. Bateman. |
|  |  | OWNER'S MEASUREMENTS. |  |  |
| $9 \frac{1}{16}$ | 5 | $6 \frac{1}{2}$ | Zululand | C. S. Mann. |
| 87 | $4{ }^{\frac{7}{8}}$ | $4{ }^{\frac{3}{x}}$ | Humansdorp | F. Vaughan Kirby. |
| $8{ }_{16}^{5}$ | 5 ${ }^{\frac{1}{3}}$ | 5 | ? | P. C. Keytel. |
| $8 \pm$ | $3 \frac{3}{1}$ | $4 \frac{1}{1}$ | Transvaal | F. R. N. Findlay. |
| $7{ }^{\text {星 }}$ | $\ldots$ | $2 \frac{1}{2}$ | Do. | J. L. Drège. |
| $7{ }^{\frac{1}{2}}$ | 4 | $3{ }^{\frac{1}{2}}$ | Lebombo Range, S.A | Count E. Hoyos. |

## B.-EASTERN RACE (R. fulvorufula chanleri).

Length on Circumfront curve. ference.

Locality:

## East Africa

Do. . . . Earl of Kingston.
Do.
Do.
Do
Do.
Do.
Do.
Owner.




Frontlet and Horns of Eastern Bohor Reedbuck.

> The BOHOR REEDBUCK (Redunca redunca). Kwantan Rafi, Hausa. $\quad$ Njaza, Waganda.

Distinguished from the mountain-reedbuck (with which it agrees approximately in size) by the distinct forward curvature of the tips of the horns, so as to form hooks. General colour uniformly bright fawn, usually with somewhat darker markings on the face and part of forelimbs; tail only slightly bushy, fawn-coloured above and white beneath. The height of the East African race is about 28 inches.

Distribution.-West, East, and North-east Africa.
In addition to one other the following races are recognised :-
R. redunca typica.-Senegal, Gambia, and Gold Coast. Size small; horns short and stout, very thick at base, curved in front, points turned inwards.
R. redunca nigeriensis.-N. Nigeria. Size larger and horns larger and depressed below level of frontal plane.
R. redunca cottoni.-KKordofan, White Nile, and Isle of Meroë, to east of Lado and western Somaliland. Horns long and thin, much curved outwards and backwards, with the points curled straight over, or turning outwards or inwards. ${ }^{1}$
R. redunca bohor.-Central Abyssinia. Horns shorter, stouter, and less curved than in cottoni.
R. redunca wardi.-East Africa. Horns larger, stout, curved outwards, with the points much turned inwards.

[^11]
## A.-TYPICAL RACE (R. r. typica).

| Length on <br> front curve. | Circum- <br> ference. |
| :---: | :---: |
| 10 | $4^{\frac{3}{4}}$ |
| $8 \frac{3}{4}$ | $5 \frac{3}{4}$ |
| $S_{\frac{1}{4}}^{1}$ | $5 \frac{1}{2}$ |
| $S_{\frac{1}{8}}^{2}$ | $4 \frac{1}{2}$ |

Tip to Tip.
$6 \frac{1}{4}$
$4 \overline{8}$
5
$5 \frac{3}{4}$

Locality.
Owner.

- Capt. G. H. Hastings.
- Commr. A. A. Ellison, R.N.
G. Fenwick-Owen.

Major P. H. G. Powell-Cotton.

## B.-NIGERIAN RACE (R. r. nigeriensis).

Length on Circum-
front curve. ference.

| 11 | 5 | 7 |
| :--- | :--- | :--- |
| $10 \frac{3}{4}$ | $6 \frac{1}{3}$ | 7 |
| $10 \frac{5}{3}$ | 6 | $4 \frac{1}{4}$ |
| $10 \frac{3}{3}$ | $6 \frac{1}{2}$ | $2 \frac{7}{8}$ |
| $10 \frac{3}{8}$ | $5 \frac{1}{2}$ | 8 |
| $-10 \frac{1}{4}$ | $5 \frac{1}{4}$ | $4 \frac{1}{2}$ |
| $10 \frac{1}{4}$ | 5 | $4 \frac{3}{4}$ |
| 10 | $5 \frac{3}{4}$ | $5 \frac{3}{4}$ |
| 10 | $5 \frac{1}{2}$ | $6 \frac{7}{3}$ |
| 10 | $5 \frac{1}{2}$ | $5 \frac{1}{4}$ |

$$
9 \frac{3}{4}
$$

$$
9 \frac{3}{9}
$$

$$
9 \frac{1}{2}
$$

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9 \frac{1}{2}
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9 \frac{1}{2}
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91
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9 \neq
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9 \frac{1}{\frac{1}{2}}
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9 \frac{1}{\frac{1}{3}}
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9会

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9 \frac{1}{3}
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$$
9
$$

$$
9
$$

Locality.

| N. Nigeria | . | L. Donisthorpe. |  |
| :--- | :--- | :--- | :--- |
| Do. | . | . | Major C. A. Booth. |
| Do. | . | . | F. Beckles Gall. |
| Lake Chad . | . | . | Capt. S. B. B. Dyer. |
| N. Nigeria | . | . | Capt. O. Oakes. |
| Do. | . | . | Capt. C. F. Watson. |
| Do. | . | . | Capt. G. C. Kelly. |
| Do. | . | . | Capt. J. C. Parker. |
| Do. | . | . | Capt. L. C. Brodie. |

Nigeria . . . Capt. W. H. Wilkin.
N. Nigeria . . . A. A. Smith.

Do. . . . H. C. Bridges.
Do. . . . Capt. A. Noel Woods.
Do. . . . Major J. W. Carroll.
Do. . . . Capt. A. C. Aubin.
Do. . . . G. L. Harrison.
Do. . . . Capt. W. C. N. Hastings.
Do. . . . Major Lord J. S. Cavendish.
Do. . . . Major W. Anstruther Gray.
Do. . . . Capt. S. C. Peck.
Do. . . . Capt. G. Bonham-Carter.
Do. . . . Lady Constance Stewart-
Richardson.
Do. . . . Sir E. Stewart-Richardson, Bart.


Skull and Horns of Abyssinian Bohor Reedbuck.

| C.-ABYSSINIAN RACE (R. r. bohor). |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Length on front curve. | Circum- <br> ference. | Tip to Tip. | Locality. | Owner. |
| $10 \frac{3}{4}$ | '5 ${ }^{\frac{3}{4}}$ | $1)^{\frac{3}{4}}$ | West of Lake Tana | - Major P. H. G. Powell-Cotton. |
| $10 \frac{5}{8}$ | $5^{\frac{1}{2}}$ | 5 | Abyssinia . | - D. P. MacGillivray. |
| Io | $4^{\frac{1}{2}}$ | $3^{\frac{1}{4}}$ | Do. . | - Sir Edmund G. Loder, Bart. |
| $9 \frac{3}{4}$ | $5 \frac{3}{4}$ | 5 | Lake Zuay . | . Lord Hindlip. |
| 93 | 6 | S | Zuguala Mt. | - A. E. Butter. |
| $9^{\frac{1}{2}}$ | 5 ${ }^{\frac{7}{5}}$ | 9 ${ }^{\frac{1}{2}}$ | Abyssinia . | . R. Hayne. |
| $9{ }^{\frac{1}{4}}$ | $5 \frac{3}{4}$ | $5^{\frac{1}{2}}$ | Do. | . Hon. Walter Rothschild. |
| D.-SUDANI RACE (R. r. cottoni). |  |  |  |  |
| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| 16 | 5 | 233 | Mongalla . | - E. M. Sinauer. |
| I 5 | 4 ${ }^{\frac{1}{2}}$ | 17 | Dinder Valley | - R. von Rothermann. |
| 15 | $5 \frac{1}{4}$ | $12 \frac{5}{5}$ | Do. | - C. Bower Ismay. |
| $14 \frac{3}{4}$ | $5^{\frac{1}{7}}$ | $16 \frac{5}{8}$ | Do. | . Capt. B. W. V. Danford. |
| $14 \frac{5}{8}$ | 6 | 11 ${ }^{\frac{3}{4}}$ | Do. | - Col. A. Colville. |
| $14 \frac{1}{2}$ | $5^{\frac{1}{ \pm}}$ | 13 | Do. | - Lord Villiers. |
| $14 \frac{1}{2}$ | $4^{\frac{3}{4}}$ | 15 | Blue Nile | . G. L. Harrison. (See illustration, p. 222.) |



FIead of Sudani Bohor Reedbuck, showing the divergent type of horns.
Shot by Mr. G. L. Harrison.

| Length on front curve. | Circum- <br> ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $14 \frac{3}{8}$ | $5 \frac{1}{2}$ | 13 | Sudan | Prince Colloredo Mannsfeld. |
| 14 | 6 | $16 \frac{3}{8}$ | Dinder Valley | Norman B. Smith. |
| -I4 | $\ldots$ | ${ }^{16}{ }^{7}$ | Blue Nile | A. L. Butler. |
| -14 | $\ldots$ | 18 | Do. | G. B. Middleton. |
| $13 \frac{3}{4}$ | $5{ }^{1}$ | 9 | Sudan | Douglas M'Touall. |
| $13 \frac{3}{4}$ | 512 | $7 \frac{1}{2}$ | Dinder Valley | - C. D. Eyre. |
| $13 \frac{3}{4}$ | $5 \frac{1}{4}$ | 15 | White Nile . | P. Santos Saurez. |
| 13 量 | 6 | 918 | Dinder Valley | Miss C. Buxton. |
| 13 \% | 5 | $12 \frac{1}{2}$ | Do. | Major C. P. B. Wood. |
| $13 \frac{3}{4}$ | 6 | 95 | Do. | - Prince F. Liechtenstein. |
| 133 | 6 | 12 | Do. | . Capt. J. C. Graham. |
| 133 | 51 | $7 \frac{1}{2}$ | Dc. | Capt. A. Craufurd. |
|  |  |  | - Owner's measur | ments. |

Length on front curve.

Circum

5

| $\mathrm{I} 3 \frac{1}{4}$ | 5 | $\mathrm{I} 8 \frac{1}{4}$ |
| :--- | :--- | :---: |
| $\mathrm{I} 3 \frac{1}{4}$ | $5 \frac{3}{3}$ | $\mathrm{I} 2 \frac{3}{3}$ |
| $\mathrm{I} 3 \frac{1}{4}$ | $5 \frac{1}{2}$ | $\mathrm{I} 5 \frac{1}{4}$ |
| $\mathrm{I} 2 \frac{3}{4}$ | $6 \frac{1}{4}$ | 8 |
| $\mathrm{I} 2 \frac{3}{4}$ | 5 | I 5 |
| $\mathrm{I} 2 \frac{3}{4}$ | $5 \frac{7}{8}$ | $\mathrm{II} \frac{7}{4}$ |

Locality.
Dinder Valley
Mongalla
White Nile
Blue Nile
Sudan
Mongalla

Owner.
C. E. Russell.

Capt. P. A. Wilson.
Duke of Alba.
Hon. T. G. B. Morgan-Grenville.
Major P. M. Dove.
Capt. R. F. Balfour.
E.-EASTERN RACE (R. r. wardi).

Length on
front curve.

Circum-
ference.



Head of Dibatag.

## The DIBATAG (Ammodorcas clarkei).

Although resembling the gazelles in the face-markings, the dibatag approximates in foot-structure and the form of the horns to the reedbuck group, to which it may be related. The horns of the males are rather short, and have a regular upward and forward curvature, somewhat like those of a reedbuck; they are ridged on the front for a considerable portion of their length. The neck is considerably elongated, and the tail long and thin. The general colour of the upper-parts is a deep cinnamon. Height at shoulder, about 33 inches; weight, from 65 to 70 lbs . When running, the long neck is thrown back towards the tail, which is elevated, so that the two look as though they would touch. Discovered by Mr. T. W. H. Clarke in 1890.

Distribution.-Central Somaliland, in the eastern districts of the Haud.

| Length on front curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Owner. |
| :---: | :---: | :---: | :---: |
| 125 | $5 \frac{1}{4}$ | 45 | Hon. Walter Rothschild. |
| 11 $\frac{3}{4}$ | $4^{\frac{7}{4}}$ | $3{ }^{\frac{5}{8}}$ | Gen. Sir Arthur Paget. |
| 113 | $4{ }^{4}$ | $3 \frac{5}{8}$ | T. W. H. Clarke. |
| $11 \frac{1}{4}$ | $4 \frac{1}{1}$ | 6 | R. McD. Hawker. |



## OWNER'S MEASUREMENTS.

| 13 | $\ldots$ | $\ldots$ | J. D. Inverarity. |
| :--- | :--- | :--- | :--- |
| $12 \frac{3}{4}$ | $\ldots$ | $\ldots$ | Capt. G. G. S. Brander. |
| 12 | $\ldots$ | $\ldots$ | C. S. Mann. |
| $1 \frac{3}{4}$ | $4 \frac{1}{4}$ | 5 | Capt. I. Brander-Dunbar. |
| $1 \frac{1}{5}$ | $4 \frac{1}{2}$ | $5 \frac{5}{18}$ | Capt. M. McNeill. |
| $10 \frac{7}{3}$ | $4 \frac{1}{4}$ | 5 | P. C. Keytel. |



The PALA or IMPALA (尼pyceros melampus).

Rooibok, Cape Dutch.
Inzero, Masubia.
Swala, Swahili. Impala, Zulu, Swazi, and Matonga.
Luondo and Mpala, Barotsi, Luboudar, Chila. Ngami, Chilala, and Chibisa.

Pala, Waganda, Basuto, and Bechuna.

The pala, saiga, and chiru have been generally classed with the gazelles, but apparently form independent groups. The specific name (black-footed) of the first refers to the pair of black tufts on each hind-foot. The horns of the bucks, which are of considerable length in proportion to the size of the animal, show a characteristic and graceful double curvature ; and the bright foxy-red hue of the shining hair of the upper-parts is very characteristic. Height at shoulder, from about 34 to 37 or 38 inches. Weight, from about 130 to 160 lbs .
Distribution.-Southern and Eastern Africa, extending as far north as Lower Kordofan. In Angola replaced by an allied form, usually regarded as a distinct species, but which is perhaps only a local race ( $\mathbb{E}$. melampus petersi), distinguished by the presence of a purplish-black streak down the middle of the face and another through the line of each eye. In the days of their abundance pala
were found in big troops, such as are still to be met with on the Upper Zambesi, in East Mashonaland, and parts of British East and Central Africa. Some half-century ago they were to be found in similar numbers among the covert on the banks of every river in the Transvaal and Bechuanaland ; but it is not till the northern border of the former country that they are now to be met with, and then only in small parties. Pala are some of the fleetest of all antelopes, and are in the habit of leaping high in the air ; their presence always implies the neighbourhood of water.

## A.-TYPICAL RACE (压. melampus typicus).

Length.
On front
curve. Straight.
Circum-
ference.
Locality.


Length.
On front
curve. $\quad$ Straigh


Length．
On front
curve．Straight
Circum－Tip to Tip
Locality．
Owner．

| 28 | $23 \frac{1}{4}$ | $5^{\frac{3}{8}}$ | 22 | East Africa | ． | ． | Hon．E．Coke． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 28 | 23爯 | 5妾 | 173 | Do． | － | ． | C．H．Tritton． |
| 28 | 24 | 6 | $22 \frac{3}{4}$ | Do． | ． | ． | H．B．Tate． |
| 28 | 22 $\frac{1}{3}$ | 6 | 12 | Do． | ． | ． | Sir F．J．Jackson． |
| 28 | 21 | $5^{\frac{7}{8}}$ | $12 \frac{1}{4}$ | Do． | ． | ． | G．E．Smith． |
| 2 S | 22 | $5^{\frac{1}{2}}$ | $16 \frac{1}{4}$ | Do． | ． | ． | Capt．F．W．Barrett． |
| 28 | 22 ${ }^{\frac{3}{4}}$ | 52 | $13^{\frac{1}{2}}$ | Do． | － | － | The Master of Belhaven． |
| 28 | 23 $\frac{1}{2}$ | $6 \frac{1}{7}$ | 22 | Do． | ． | ． | Capt．C．J．Murray． |
| 28 | 223 ${ }^{\frac{3}{4}}$ | $5 \frac{3}{4}$ | $24 \frac{1}{8}$ | Do． | － |  | Capt．W．H．Wilkin． |
| 28 | 22 $\frac{1}{2}$ | $5 \frac{3}{4}$ | 193 | Do． | ． |  | Capt．J．Fitzgerald． |
| 28 | $22 \frac{1}{4}$ | 6 | 13 | Do． | ． | － | D．Davies． |
| 28 | 22 $\frac{3}{4}$ | $6 \frac{1}{4}$ | 92 | Do． | － | － | G．O．Sloper． |
| 28 | 2212 | $6 \frac{1}{1}$ | 183 | Do． | － | ． | P．Fleming． |
| $27 \frac{3}{4}$ | 23 | $6 \frac{1}{4}$ | 19 | Do． |  | ． | Lord Wodehouse． |
| 273 ${ }^{\frac{3}{4}}$ | 223 | 6 | 119 | Do． | － | ． | Capt．G．F．Phillips． |
| 27 年 | 22 | $5 \frac{3}{1}$ | $16 \frac{3}{4}$ | Do． | ． | － | Capt．the Hon．G．H．Douglas－ Pennant． |
| 27妾 | 21 | 6 | 92 | Do． | － | ． | Lieut．Col．the Hon．IV．A．W． Lawson． |
| $27 \frac{3}{4}$ | 23 | $5 \frac{3}{4}$ | 18 | Do． | ． | ． | Hon．Mrs．Blyth． |
| $27 \frac{3}{4}$ | 23年 | 6 | 13 ${ }^{\frac{1}{2}}$ | Do． | ． |  | Major H．F．T．Fisher． |
| 27 年 | $21 \frac{1}{2}$ | 6 | $12 \frac{3}{4}$ | Do． | － | ． | F．Garside． |
| $27 \frac{1}{2}$ | $22 \frac{1}{4}$ | $5 \frac{3}{4}$ | $15^{\text {号 }}$ | Do． | ． | ． | Major S．Belfield． |
| $27 \frac{1}{2}$ | $23 \frac{1}{4}$ | $5 \frac{3}{}$ | $12 \frac{2}{1}$ | Do． | － | ． | Rhys Williams． |
| 27⿺ | $22 \frac{1}{4}$ | 6 | 113 | Do． | － | － | F．C．Selous． |
| $27 \frac{1}{2}$ | $21 \frac{1}{2}$ | $5 \frac{3}{4}$ | $13 \frac{1}{2}$ | Do． | ． | ． | Lord Hindlip． |
| $27 \frac{1}{2}$ | 23 | 6 | 191 $\frac{1}{2}$ | Do． | － | － | G．C．Whitaker． |
| $27 \frac{1}{2}$ | 221 | $6 \frac{1}{4}$ | $14 \frac{3}{1}$ | Do． | － | ． | A．Brocklehurst． |
| $27 \frac{1}{2}$ | 227 | $6 \frac{1}{4}$ | $10 \frac{1}{2}$ | Do． | ． | ． | Major C．U．Price． |
| 2712 | 23 $\frac{1}{8}$ | 6 | $18 \frac{3}{4}$ | Do．＇ | － | － | A．Bayley－Worthington． |
| $27 \frac{1}{2}$ | $21 \frac{1}{2}$ | $6 \frac{1}{5}$ | $10 \frac{3}{4}$ | Do． | ． | － | G．de P．Colvile． |
| $27 \frac{1}{2}$ | $23 \frac{1}{2}$ | $5{ }^{5}$ | $21 \frac{1}{2}$ | Do． | － | － | H．C．Phipps． |
| 272 | $22 \frac{1}{4}$ | $6 \frac{1}{4}$ | 17 $\frac{1}{4}$ | Do． | ． | － | Capt．J．A．Morrison． |
| $27 \frac{1}{2}$ | $23 \frac{1}{2}$ | $5{ }^{\frac{3}{4}}$ | $19 \frac{1}{4}$ | Do． | ． | － | Arthur James． |
| $27 \frac{1}{2}$ | 21 | 53 | $14 \frac{1}{4}$ | South Africa | ． | － | British Museum（Dr．Burchell）． |
| 24 | $19 \frac{1}{4}$ | $6 \frac{1}{4}$ | 12 | N．Zululand | － | － | Col．Lord Douglas Compton． |
| 23爯 | $18 \frac{5}{8}$ | $5 \frac{1}{2}$ | $10 \frac{7}{8}$ | Ngamiland |  | ． | A．G．Stigand． |

## B．－NYASA RACE（在．melampus johnstoni）．

Most of the following specimens are only referred proisisionally to this race．

Mr．R．T．Coryndon writes that although in N．E．Rhodesia horns of 20 inches are rare，in the Northern Transvaal and Swaziland，where pala abound，horns of 22 inches are not uncommon，and a few specimens are still longer．

Length．
On front Straight．
curve．

| 221 $\frac{1}{2}$ | 189 | $5{ }^{13}$ | 9 ${ }^{\frac{1}{2}}$ | N．W．Rhodesia |  | － | － | H．D．Hannay． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 22 $\frac{1}{4}$ | I 1 $_{\frac{1}{2}}$ | $5^{\frac{1}{2}}$ | 93 | N．E．Rhodesia |  | － | － | R．D．Waterhouse． |
| 22 | 181 | $5^{\frac{1}{7}}$ | I I | Nyasaland ． |  | － | － | A．V．Willcox． |
| 2 I | IS $\frac{1}{2}$ | $4^{\frac{3}{4}}$ | 11 ${ }^{\frac{3}{4}}$ | Do． |  | ． | － | Capt．J．S．Brogden． |
| 21 | 172 | 5 ${ }^{\frac{1}{4}}$ | 151 | Rhodesia |  | － | － | A．W．Griffin． |
| $20 \frac{1}{4}$ | 17 | 6 | $9{ }^{\frac{1}{2}}$ | N．W．Rhodesia |  | ． | ． | J．Bell． |
| 20 | 16 | $5 \frac{1}{4}$ | $S_{2}^{1}$ | N．E．Rhodesia | ． | － | － | F．H．Melland． |
| 20 | 16 | 5 | $6 \frac{1}{2}$ | Do． |  | ． | － | H．Cookson． |
| 20 | ı 6 | 5 | $6 \frac{1}{2}$ | N．W．Rhodesia | ． | ． | － | Hon．J．Cunliffe－Lister． |
| 193 | $16 \frac{1}{2}$ | $5^{\frac{1}{3}}$ | 65 | Do． | ． | ． | － | Major J．Carden． |
| 193 | 16 | $4{ }^{3}$ | $9{ }^{13}$ | Do． | ． | ． | － | R．C．Wood． |
| 1912 | I $5 \frac{3}{4}$ | 5 | $6 \frac{1}{4}$ | Nyasaland ． | ． | ． | － | K．L．Storey． |
| 1912 | 17 | 5 | 73 | N．WV．Rhodesia | ． | ． | － | J．H．Leche． |
| 1912 | 164 | $5^{\frac{1}{2}}$ | 129 ${ }^{\text {星 }}$ | Do． |  | ． | ． | H．R．Phillips． |
| $19 \frac{1}{4}$ | 153 | $4^{\frac{3}{4}}$ | $7 \frac{1}{2}$ | N．E．Rhodesia | ． | ． | － | Col．A．Colville． |
| －194 | $15 \frac{1}{4}$ | 5 | $6 \frac{1}{4}$ | N．W．Rhodesia |  | ． | － | Capt．the Hon．G．H． Douglas－Pennant． |

## C．—ANGOLA RACE（退．melampus petersi）．

Length．
On front
curve．
$\xrightarrow{\text { Cir }}$

## Circum－

 Circum－Tip to Tip．ference．

Locality，
N．W．Rhodesia
Owner．

| $23 \frac{3}{4}$ | 193 | 6 | $14 \frac{3}{5}$ | Angola | －－ | C．W．Sharp． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 232 | 19 ${ }^{\frac{1}{2}}$ | $5^{\frac{1}{2}}$ | $13 \frac{3}{4}$ | Do． | －• | Sir Edmund G．Loder，Bart． |
| $23 \frac{1}{4}$ | $\ldots$ | 512 | 15 | Do． | －． | A．H．Harrison． |
| 233 | 181 | $5 \frac{3}{8}$ | $9 \frac{3}{5}$ | Do． | ．． | W．C．Neilson． |
| 214 | 18 | $5 \frac{1}{7}$ | 1919 | S．W．Africa | ．． | A．N．Henderson． |
| 2 I | $17 \frac{7}{8}$ | $5 \frac{7}{8}$ | I 1 䍃 | Angola | －． | Hon．Walter Rothschild． |



Horns of Saiga. From the Hon. Walter Rothschild's specimen.

## The SAIGA (Saiga tatarica).

One of the most remarkable of all antelopes is the Centrai Asian saiga, which differs from most of its kindred by the inflated and puffy nose. This forms a kind of trunk, comparable to that of the dik-diks, with the nostrils directed downwards. The tail is short, and lateral hoofs are present. In summer the colour is dull yellowish above and whitish beneath, but in winter the whole coat is uniformly whitish. The short and blunt ears are thickly covered with hair, and the horns of the males pale amber-colour. Height at shoulder, about 30 inches.

Distribution.-The Kalmuk steppes of Southern Russia, Northern Russian Turkestan, particularly between the Sea of Aral and Lake Balkash; and locally throughout Zungaria as far east as the western edge of the Gobi. Formerly the range extended to the confines of Poland.

Length
on front curve.

| $14 \frac{3}{5}$ | $5 \frac{1}{3}$ | $3 \frac{1}{2}$ | Siberia . | - | Hon. Walter Rothschild. <br> (See illustration.) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| I 3 ${ }^{\frac{3}{1}}$ | 5 | ... | Volga Steppe . | - | Sir Edmund G. Loder, Bart. |
| $13 \frac{3}{4}$ | $4{ }^{3}$ | $3^{\frac{1}{2}}$ | ? |  | Sir Victor Brooke's Collection. |
| 135 | 5 | 5 ${ }^{1}$ | Sarepta, South Russia | - | British Museum. |
| $13 \frac{1}{2}$ | 5 | $3{ }^{\frac{3}{5}}$ | Eastern Zungaria | . | J. H. Miller. |
| $-12 \frac{3}{4}$ | 5 | 2 | ? |  | Imperial Museum, Vienna. |

Length on front curve.


- Owner's measurements.


Head of Saiga.


Chiru. Shot by Mr. H. C. V. Hunter.

## The CHIRU or TIBETAN ANTELOPE (Pantholops hodgsoni).

Among several animals peculiar to the Tibetan plateau none is more interesting than the chiru, whose beautiful horns form some of the most cherished trophies of the sportsman. Although very unlike in general appearance, the chiru is related to the saiga, having the nose even more swollen at the sides, at least in the male, but less bent downwards at the tip. The long black horns of the bucks, which are somewhat compressed, rise almost vertically from the head, and are slightly divergent, nearly straight below, but evenly curving forwards above, and ridged in front. General colour of hair, which is very dense and short, pale fawn above, with a pinkish suffusion, but the face and part of the limbs of the males black or dark brown. Height at shoulder, about 3I or 32 inches; weight, from 90 to 120 lbs . The genus is peculiar in having only two pairs of premolar teeth in each jaw.

Distribution.-The plateau of Tibet, at elevations of from 13,000 to i6,000 feet, or even more ; the species associates in pairs or small parties.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $27 \frac{3}{4}$ | $6 \frac{1}{5}$ | $13 \frac{1}{2}$ | North of Beansi Pass . | British Museum (Hume Collection). |
| 27 \% | $5{ }^{\frac{1}{2}}$ | $11 \frac{1}{4}$ | Tibet. | Sir Robert Harvey, Bart. |
| 278 | $5{ }_{5}^{\frac{7}{5}}$ | $15 \frac{1}{8}$ | North of Beansi Pass . | British Museum (Hume Collection). |
| 27 | 6 | $14 \frac{1}{2}$ | ? | Hon. Walter Rothschild. |
| 27 | 5 | $13{ }^{\frac{1}{2}}$ | Tibet. | P. F. Hadow. |
| 26 | $4{ }^{\frac{7}{8}}$ | $12 \frac{7}{5}$ | Do. . | Capt. G. Campbell. |
| 255 | $5^{\frac{1}{2}}$ | $12 \frac{3}{4}$ | ? | Arnold Pike. |
| $25^{\frac{1}{2}}$ | $5 \frac{3}{\text { a }}$ | $11 \frac{1}{3}$ | Tibet. | Major C. B. Vandeleur. |
| $25 \frac{3}{4}$ | $5{ }^{\frac{3}{4}}$ | $14 \frac{1}{4}$ | ? | Major Sir IV. Codrington. |
| $25 \frac{1}{2}$ | $5^{\frac{1}{2}}$ | $12 \frac{3}{4}$ | ? | Miss Barber. |
| $24 \frac{3}{4}$ | 5 | 11 | ? | E. L. Phelps. |
| $24 \frac{3}{4}$ | $5^{\frac{1}{2}}$ | $15 \frac{1}{2}$ | Tibet. | Capt. J. A. Stewart-Balmain. |
| $24 \frac{3}{1}$ | 5 | $19 \frac{1}{4}$ | Do. | Royal Scottish Museum. |
| $24 \frac{1}{2}$ | 5 | 123 | Do. . | Capt. H. H. P. Deasy. |
| $24 \frac{1}{2}$ | 5 | $13^{\frac{1}{2}}$ | Do. | Capt. J. F. Turner. |
| $24 \frac{1}{1}$ | $4 \frac{3}{4}$ | $18 \frac{1}{4}$ | ? | Capt. D. L. R. Lorimer. |
| 241 | $5 \frac{1}{4}$ | $13 \frac{1}{\frac{1}{2}}$ | ? | Capt. W. F. Corbett. |
| 24 | $5^{\frac{1}{2}}$ | 15 | ? | Capt. L. Oldfield. |
| 24 | 53 | $11^{\frac{1}{2}}$ | Tibet. | Sutton Timmis. |
| 24 | 5 | 121 ${ }^{1}$ | Do. | P. Radclyffe. |

OWNER'S MEASUREMENTS.

| 27 | 6 | 17 | Mansarawar Lake | Capt. F. M. Bailey. |
| :---: | :---: | :---: | :---: | :---: |
| 27 | $5{ }^{5}$ | 141 | Tibet. | Major G. K. Channer. |
| 27 | $\ldots$ | 12 | ? | J. D. Inverarity. |
| 26 星 | 6 | 13 䍃 | Tibet. | Dr. Albert von Stephani. |
| $26 \frac{1}{2}$ | $\ldots$ | $\ldots$ | Chang-chenmo | Lieut.-Col. A. E. Ward. |
| $26 \frac{1}{8}$ | 5 ${ }^{\frac{3}{4}}$ | 123 | Tibet . | J. C. Phillips. |
| 259 | 5 | $10 \frac{3}{4}$ | Do. | Major P. H. G. Powell-Cotton. |
| 25 | $5{ }^{3}$ | II | Chang-chenmo | Sir Edmund G. Loder, Bart. |
| $24 \frac{1}{2}$ | $4{ }^{\frac{3}{1}}$ | .. | Tibet . | Major-General A. A. A. Kinloch. |



Skull and Horns of Blackbuck. From the late Mr. A. O. Hume's specimen.

## The BLACKBUCK or INDIAN ANTELOPE (Antilope cervicapra).

Although in former days nearly all the then known species of antelopes were included in the genus Antilope, the extent of the latter has been gradually whittled down until it now comprises the Indian blackbuck alone. In addition to being the sole representative of the genus, this species is also the type of a subfamily or group of antelopes, embracing the springbuck, gazelles, and gerenuk. These are small or medium-sized antelopes, with hairy muzzles, generally short tails, and tall, narrow-crowned cheek-teeth, like those of sheep. In
the springbuck and the majority of the gazelles horns are present in both sexes, but in the rest are confined to the males. From all the other members of this assemblage the blackbuck is distinguished by the beautiful spiral formed by its horns. It has large, expansile face-glands, a short and compressed tail, and lateral hoofs. Height at shoulder, about 32 inches; average weight, 85 lbs . It is only in adult males that the characteristic dark tint from which the species takes its name is developed, young males being uniformly brownish fawn above like the does; the latter, like gazelles, have two teats.
Distribution.-India, from the foot of the Himalaya to Cape Comorin, and from the Punjab to Lower Assam; unknown in Ceylon and the countries to the eastward of the Bay of Bengal.

| $\begin{aligned} & \text { Length } \\ & \text { straight. } \end{aligned}$ | Circum. ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $28 \frac{1}{7}$ | 5 | $17 \frac{3}{4}$ | Near Delhi | British Museum (Hume Collection). |
| $27 \frac{3}{4}$ | $5 \frac{1}{4}$ | $\ldots$ | Central Provinces | A. H. Morris. |
| $27 \frac{3}{8}$ | 5 | 185 | Bikanir | H.H. the Maharaja of Bikanir. |
| 27 | 53 | 193 | Patiala | Major W. Cox. |
| $26 \frac{7}{8}$ | $4 \frac{3}{1}$ | 26 | Alwar | Lieut. Col. L. Impey. |
| $26 \frac{3}{4}$ | $4 \frac{3}{4}$ | $25 \frac{1}{4}$ | Bhurtpore | Lieut.-Gen. Sir E. T. H. Hutton. |
| $26 \frac{1}{2}$ | $5 \frac{1}{2}$ | $11 \frac{1}{2}$ | Alwar | Hon. E. S. Montagu. |
| $26 \frac{1}{2}$ | 5 | $27 \frac{3}{4}$ | United Provinces | Capt. C. B. Oldfield. |
| $26 \frac{1}{2}$ | $4{ }^{\frac{7}{8}}$ | $14^{\frac{3}{1}}$ | Bikanir | Lord Hardinge. |
| 263 | 5 | $17 \frac{7}{8}$ | Sirsa, Punjah | British Museum (Hume Collection). |
| $26 \frac{5}{10}$ | $5{ }^{\text {呆 }}$ | 22 | Bikanir | Col. G. D. F. Sulivan. |
| $26 \frac{3}{10}$ | $4^{\frac{1}{2}}$ | 20 | ? | Sir Edmund G. Loder, Bart. |
| $26 \frac{1}{4}$ | 5 | 19 | Alwar | H.H. the Maharaja of Alwar. |
| $26 \frac{1}{4}$ | 5 | $23 \frac{1}{8}$ | Oudh | E. St. J. Lawson. |
| $26 \frac{1}{4}$ | 5 | $23 \frac{1}{1}$ | Bikanir | H. H. the Maharaja of Kotah. |
| 26 | 5 | 218 | Do. | Lieut.-Col. H. W. Codrington. |
| 259 | $4{ }^{\frac{3}{4}}$ | 19 | Jeypore | Hon. A. Holland-Hibbert. |
| $25 \frac{3}{1}$ | $4 \frac{3}{1}$ | ... | Agra | Capt. F. W. Van der Kiste. |
| 255 | 5 | 19 | ? | Lady Jenkins. |
| $25^{\frac{1}{2}}$ | $4 \frac{7}{8}$ | 18 | Punjab | Lieut. - Col. R. H. Rattray. |
| $25 \frac{1}{1}$ | $4 \frac{3}{}$ | 19 | Jeypore | A. B. Graves. |
| $25^{\frac{1}{8}}$ | $5 \frac{1}{8}$ | 15 | Kathiawar | Lieut. -Col. L. L. Fenton. |
| 25 | 5 | $18 \frac{1}{4}$ | ? | Lieut. -Col. H. G. Mainwaring. |
| 243 | 5 | 20 | Jeypore . | Lieut. -Col. J. B. Buchanan. |
| 24 爯 | $4 \frac{1}{2}$ | $17 \frac{1}{4}$ | Dholpur . | A. J. Coppinger. |


| Length <br> straight. | Circum. <br> ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :--- |
| $24^{\frac{1}{2}}$ | $5^{\frac{1}{2}}$ | $1 S^{\frac{1}{4}}$ | ? | Capt. G. S. Bull. |
| $24 \frac{1}{2}$ | 5 | 15 |  | $?$ |
| $24 \frac{1}{2}$ | 5 | 18 | Bikanir | The late Earl of Minto. |
|  |  |  | P. B. Vander Byl. |  |

OUNER'S MEASUREMENTS.

| $30 \frac{1}{2}$ | $\ldots$ | $\ldots$ | ? | Capt. J. MacRae-Gilstrap. |
| :---: | :---: | :---: | :---: | :---: |
| ${ }^{1} 283$ | $\ldots$ | $\ldots$ | Jeypore | General Sir B. Blood. |
| 28 | $\ldots$ | 20 | Do. | Lieut.-Col. P. Durell Pank. |
| 28 | 5 | 15 | Near Ahmedabad | T. Le Mesurier. |
| 273 ${ }^{\frac{3}{4}}$ | 512 | 161 ${ }^{2}$ | Jeypore | R.E. Mess, Roorkee. |
| 27 | 5 | 20量 | Rajputana | Brig.-Surg. A. D. Campleell. |
| 27 | 5 | 19 ${ }^{\frac{1}{2}}$ | Bikanir | Capt. Harry V. Brooke. |
| $26 \frac{3}{7}$ | 5 | 213 | Punjab | Major R. P. Wemyss Quin. |

1 Measured and recorded by the late Mr. A. O. Hume, but not now in the possession of General Sir B. Blood.


Head of Blackbuck.


Head of Goa.

## The GOA or TIBETAN GAZELLE (Gazella [Procapra] picticaudata).

The goa is the typical representative of a subgenus of gazelles characterised by the short tail, the absence or small size of the face-glands and the tufts of hair on the knees, and the lack of horns in the female. Face-markings are also wanting. As a species, the goa is distinguished by its comparatively small size, and the strongly marked backward curvature of the horns, which are not hooked at the tips, as well as by the large size of the white rump-patch, and the pale colour of the coat. Height at shoulder, about 24 or 25 inches. Weight, about 45 lbs .

## Distribution.-The plateau of Tibet and some of the adjacent parts of Central Asia.

Length on Circum-
front curve. ference.

| $14^{\frac{1}{8}}$ | $3 \frac{3}{}$ | 5 | Ladak | Sir Edmund G. Loder, Bart. |
| :---: | :---: | :---: | :---: | :---: |
| $14 \frac{1}{5}$ | 35 | 2 | Hanle, Spiti | Hon. Walter Rothschild. |
| $13^{\frac{7}{8}}$ | $3 \frac{1}{2}$ | 83 | Gyantse, Tibet | Capt. R. S. Kennedy. |
| 13 辛 | $3{ }^{3}$ | 3 | Ladak | Major G. F. Mockler. |
| $13 \frac{1}{2}$ | $3{ }^{5}$ | $5^{\frac{1}{4}}$ | N. of Sikhim | British Museum (Hume Collection). |
| $13^{\frac{1}{2}}$ | $3^{\frac{7}{8}}$ | 5 | Tibet | C. Hamilton. |
| $13 \frac{1}{8}$ | $4{ }^{\text {爯 }}$ | $3{ }^{3}$ | Ladak | Major Neill Malcolm. |


| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 138 ${ }^{\frac{1}{8}}$ | 4 | $3 \frac{5}{5}$ | Tibet | H. C. V. Hunter. |
| 13 | $4 \frac{1}{8}$ | 4 $\frac{1}{2}$ | East Ladak | Col. J. Biddulph. |
| 13 | $3 \frac{3}{1}$ | $1 \frac{1}{2}$ | ? | Major C. B. Vandeleur. |
| 13 | $3^{\frac{7}{8}}$ | $4^{\frac{5}{8}}$ | ? | Capt. W. T. Hodgson. |
| 13 | $3 \frac{3}{8}$ | $4^{\frac{1}{4}}$ | Tibet | P. K. Wise. |
| 13 | $3 \frac{3}{}$ | 53 | N, of Sikhim | Major A. Pearse. |
| 123 | $3 \frac{3}{1}$ | $6 \frac{1}{2}$ | ? | E. McClellan. |
| $12 \frac{3}{4}$ | 4 | $6 \frac{1}{4}$ | Ladak | Baroda State Museum. |
| $12 \frac{3}{4}$ | 4 | $4^{\frac{3}{4}}$ | Do. | Earl of Ilchester. |
| 125 | $3^{\frac{1}{2}}$ | $2 \frac{1}{4}$ | Do. | K. C. Zarzhetsky. |
| $12 \frac{1}{2}$ | $3 \frac{3}{5}$ | 5 | Do. | Dr. T. G. Longstaff. |
| 123 | $3 \frac{7}{8}$ | $2 \frac{1}{2}$ | ? | Major Lord Charles M. Nairne. |
| I $2 \frac{1}{2}$ | $3^{\frac{1}{2}}$ | ... | ? | G. W. Grabham. |
| 123 | $3 \frac{1}{2}$ | 512 | South of Hanle | Col. F. C. Lister-Kay. |
| $12 \frac{1}{4}$ | $3 \frac{3}{}$ | $2 \frac{1}{2}$ | ? | T. R. Ubsdell. |
| $12 \frac{1}{4}$ | $3 \frac{1}{2}$ | $6 \frac{1}{4}$ | Ladak | The late David T. Hanbury. |
| $12 \frac{1}{4}$ | 3吾, | 4 | Tibet | W. A. Conduitt. |
| $12 \frac{1}{1}$ | $3 \frac{3}{4}$ | $4 \frac{1}{2}$ | Do. | Major F. G. T. Deshon. |
| 12 | 3童 | 35 | Kan-su, Tibet P | der K. K. Horn. |

## OWNER'S MEASUREMENTS.

| 14 | $\ldots$ | $\ldots$ | Ladak | Major Brown. |
| :---: | :---: | :---: | :---: | :---: |
| 14 | $\ldots$ | $\ldots$ | Do. | C. C. Winn. |
| $13 \frac{3}{8}$ | $3 \frac{1}{2}$ | $6 \frac{1}{8}$ | Do. | Capt. F. M. Bailey. |
| $13^{\frac{1}{4}}$ | $3 \frac{1}{2}$ | 3 | Do. | Lieut.-Col. H. W. Codrington. |
| $13 \frac{1}{8}$ | $3{ }^{5}$ | $6 \frac{1}{4}$ | S.E. of Hanle | Major P. II. G. Powell-Cotton. |
| 13 | $3 \frac{3}{4}$ | $5^{\frac{3}{4}}$ | Tibet | Bombay Natural History Society. |
| 13 | $3 \frac{1}{2}$ | 4 | Do. | Capt. F. W. A. Wells. |
| $12 \frac{15}{15}$ | 35 | 4 | Do. | Officers' Mess, 3rd Gurka Rifles. |
| $12 \ddagger$ | $3 \frac{1}{2}$ | 712 | Gyantse, Tibet | Capt. A. O. Creagh. |



Head of Przewalski＇s Gazelle．Shot by Mr．G．Fenwick－Owen．

## PRZEWALSKI＇S GAZELLE（Gazella［Procapra］przewalskii）．

Nearly allied to the goa，from which it differs by its rather larger size，and the distinct hooks formed by the tips of the horns of the bucks．General colour in summer，deep fawn；in winter，pale finely grizzled fawn；white of buttocks running up in an angle on each side of the tail，which is very short，and almost concealed by the fur． Front of limbs more or less brown．

> Distribution.-Northern Kan-su and Ordos.

| Length on front curve． | Circum－ <br> ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 12 $\frac{1}{2}$ | $4 \frac{3}{\text { 崖 }}$ | $4 \frac{1}{2}$ | Nr．Shiakou， 2 days S．E．of Kanchow | G．Fenwick－Owen． |
| $10 \frac{1}{1}$ | 43 | 2 量 | ？ | British Museum． |
| 10 | 4 | 45 | ？ | II．R．IF．Menri de Bourbon，Comte de Bardi． |
| 93 | $4 \frac{1}{8}$ | $4{ }^{3}$ | North of Pekin | British Museum（R．Swinhoe）． |
| 9 管 | 45 | $1{ }^{1}$ | Nr．Shiakou， 2 days <br> S．E．of Kanchow | H．F．Wallace． |
| $-8 \frac{1}{1} \frac{1}{5}$ | $3{ }^{\text {a }}$ | $4 \frac{3}{5}$ | North China ．． | Paris Iuseum（Père A．David）． |



Frontlet and Horns of Altai Zeren Gazelle.

## The ZEREN or MONGOLIAN GAZELLE (Gazella [Procapra] gutturosa).

Zeren or Seren, Mongolian. Hzuang-yang, Chinese.
Much larger than the goa, this species takes its name from the swollen condition of the throat of the bucks during the pairing-season. In addition to its size (height at shoulder, about 30 inches), it is characterised by the comparatively slight backward curvature of the light brown or grey horns, which are relatively small and not hooked at the tips ; the general colour of the upper-parts and fronts of the legs in summer being pale fawn, with the front of the face light brown, and the white of the rump reaching to the sides of the short tail. The ears are relatively small. Rudimentary knee-tufts and small faceglands, as well as inguinal glands (lacking in the goa) are present.

Distribution.--The whole of northern Mongolia from the Kosh-Agatch steppe in the west to the Khingan region in the east. Also the central Gobi.

Two closely allied races are recognised, the typical $G$. gutturosa typica and the Altai $G$. g. altaica. The following specimens belong to the Altai race.

| Length on front curve. | Circumference. | Tip to 7ip. | Locality | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $13 \frac{3}{4}$ | $4{ }^{3}$ | $3 \frac{1}{2}$ | Altai | . Sir Edmund G. Loder, Bart. |
| 12 | $4 \frac{3}{8}$ | 6 | Do. | , J. H. Miller. |
| 113 | $4^{\frac{1}{2}}$ | 512 | Do. | - Sir Edmund G. Loder, Bart. |
| I I | 43 | 43 | Do. | St. George Littledale. |
| 11 | 412 | $6 \frac{1}{4}$ | Do. | A. Louw. |
| 11 | 4 | 7 | Do. | - British Museum (R. Hayne). |
| $10 \frac{7}{5}$ | 4 | 65 | Do. | - P. B. Vander Byl. |
| $10 \frac{1}{2}$ | 4 | 5 ${ }^{\frac{1}{8}}$ | Do. | . Hon. Walter Rothschild. |



Head of Goitred Gazelle. Shot by Mr. G. Fenwick-Owen.

## The GOITRED GAZELLE (Gazella subgutturosa).

With this species we come to the true gazelles, in which the tail is considerably longer than in gutturosa, prsezoalskii, and picticoudata, being from six to eight inches in length and black, while tufts of long hair on the knees, glands on the face and in the groin are always developed. In immature animals a dark streak in front of the eyes is present, but in many adult specimens this and the light fawn of the upper part of the face are very indistinct and often wanting in the winter coat. Horns, which are absent in the female, relatively large
and divergent. The rump-patch extends to the root of the tail, and the ears are small. Height at shoulder, from 26 to 27 inches. The larynx is swollen in males during the breeding-season, when it forms a prominence on the front of the upper part of the throat of the bucks. The Marica gazelle is smaller, with horns in the females.

There are two races of this gazelle, the Caspian and Persian G. s. typica, and the Altai G. s. sairensis, in which the size is large but the horns are relatively small.

Distribution.-From north-west Persia, eastern Asia Minor, and Caucasia in the west, through Russian Turkestan and Zungaria to the southern Gobi in the east.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $15 \frac{3}{4}$ | $4{ }^{\frac{3}{4}}$ | 43 ${ }^{\frac{1}{2}}$ | Persia | Sir W. Preece. |
| $-15 \frac{1}{8}$ | $4{ }^{\frac{1}{4}}$ | $7 \frac{1}{4}$ | Sheraz | Dr. Albert von Stephani. |
| $14 \frac{3}{4}$ | $4^{\frac{1}{2}}$ | 912 | ? | Hon. Walter Rothschild. |
| ${ }_{13} 3^{\frac{7}{8}}$ | 4 | $7 \frac{3}{4}$ | Ili Valley . | Capt. J. N. Price Wood. |
| 13 呈 | $4^{\frac{1}{2}}$ | 6 | Saissan, W. Siberia | British Museum (Dr. O. Finsch). |
| 135 | $4 \frac{5}{8}$ | $4 \frac{1}{4}$ | S. Zungaria | J. H. Miller. |
| $13 \frac{1}{3}$ | $4^{\frac{1}{2}}$ | 54 | San-cao-tion, Kan-su | G. Fenwick-Owen. |
| 13 | $4{ }^{\text {星 }}$ | 4 | Persia | E. Rennie. |
| 121 | $4{\frac{1}{}{ }^{1}}$ | 513 | San-cao-tion, Kan-su | H. F. Wallace. |

## The SAIKIK GAZELLE (Gazella yarcandensis).

Saikik, Turki.
A larger species than the goitred gazelle, standing some 28 inches, with the ears much longer, the face-markings distinct, and the general colour darker. The horns, present only in the bucks, are somewhat heavier and longer than in the typical form, and the white markings on the rump extensive.

Distribution.-Chinese Turkestan from Yarkand to Lob Nor.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 17 | $4 \frac{1}{2}$ | $6 \frac{7}{3}$ | Eastern Turkestan | Sir Edmund G. Loder, Bart. |
| 16 | 5 | 33 | Yarkand | British Museum (Hume Collection). |
| -15 | $\ldots$ | 5 | Maralbashi | Sir M. Lennard, Bart. |
| $14 \frac{3}{1}$ | $4^{\frac{7}{8}}$ | 3 | Eastern Turkestan | Major C. S. Cumberland. |



Skull and Horns of Saikik Gazelle, in the possession of Sir Edmund G. Loder, Bart.

| Length on íront curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $14 \frac{1}{1}$ | 5 | 54 | Tien Shan | G. L. Harrison. |
| 14 | 5 | $5{ }^{\frac{3}{1}}$ | Eastern Turkestan | Col. J. Biddulph. |
| $13 \frac{3}{4}$ | 5 | 4 | Chinese Turkestan | J. V. Phelps. |
| 13 呈 | $4^{\frac{7}{5}}$ | $4{ }^{\frac{1}{2}}$ | Do. | E. L. Phelps. |
| $13 \frac{1}{2}$ | $4 \frac{3}{4}$ | 65 | Maralbashi | The late David T. Hanbury. |

OWNER'S MEASUREMENTS.
14豪 $3 \frac{3}{1} \frac{3}{3}$ Lob Nor . . . Paris Museum (Prince Henri d'Orléans).

## THE SEISTAN GAZELLE (Gazella seistanica).

The Seistan gazelle of Eastern Persia differs by the much smaller extent of the white on the rump, which does not reach the root of the tail, and the white muzzle.



Heads of Seistan Gazelle and Kennion's Gazelle. The three upper figures are the Seistan, and the three lower (of which the middle one is a doe) Kennion's gazelle.

## KENNION'S GAZELLE (Gazella fuscifrons).

Allied to the last (which it serves to connect with the Indian gazelle), but with horns in both sexes, and no goitre in the throat of the bucks.

Distribution.-Typically Jalk, but ranging over Seistan and Kain to Baluchistan.

| Length on front curve. | Circum. ference. | Tip to Tip. | Locality. |  |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $14 \frac{1}{2}$ | $4^{\frac{3}{4}}$ | $4 \frac{1}{2}$ | Baluchistan | - | - | Capt. T. W. Greenfield. |
| 12 | 4 | $3{ }^{\frac{1}{8}}$ | S.E. Persia | - | - | Lieut.-Col. R. L. Kennion. |
| 119 | 4 | $3^{\frac{1}{4}}$ | Do. | - | - | Capt. C. T. Daukes. |
| 92 | $3{ }^{\text {a }}$ | 33 | Do. | . | - | Capt. A. McCleverty. |



Head of Indian Gazelle. Shot by Lieut.-Col. P. C. Palin.

## The CHINKARA or INDIAN GAZELLE (Gazella bennetti).

Closely allied to the last species, this gazelle (the ravine-deer of many Anglo-Indian sportsmen) is characterised by the absence of in-turning of the tips of the horns, the restriction of the white on the rump to the back and inner sides of the thighs, so that it does not reach the root of the tail: the height at the shoulder varies from 25 to 26 inches, and the general colour of the upper-parts is dull fawn.

Distribution.--Peninsular India.

| Length on front curve. | Circum. ference. | Tip to Tip. | Locality. | Owner, |
| :---: | :---: | :---: | :---: | :---: |
| $15 \frac{5}{5}$ | $4^{\frac{3}{4}}$ | $5 \frac{1}{2}$ | ? | Lieut.-Col. P. C. Palin. (See illustration.) |
| $15 \frac{5}{8}$ | $4{ }^{1}$ | $\ldots$ | Ferozepore | Mess of the 14th Sikhs. |
| -15 | 5 | $\ldots$ | Rajputana | H.II. Maharaj Rana Bahadur of Jhalawar. |
| $14{ }^{3}$ | $4 \frac{1}{2}$ | 8 | Punjab | C. H. Shanan. |
| 143 | $4{ }^{5}$ | $7 \frac{1}{4}$ | Sind | Capt. J. L. Sleeman. |
| $14 \frac{1}{2}$ | $4 \frac{1}{2}$ | 85 | Dholpur | L. M. le Champion. |
|  |  |  | Owner's meas |  |


| Length on front curve． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 142 ${ }^{\frac{1}{2}}$ | $4{ }^{3}$ | $7{ }^{\frac{1}{8}}$ | Patiala | Major J．F．P．Langdon． |
| $14 \frac{1}{1}$ | $4{ }^{3}$ | 6 | Bikanir | J．A．ffolliott Powell． |
| $14 \frac{1}{1}$ | $4{ }^{\frac{1}{4}}$ | 3 | Wana Plain，Wazir istan． | A．J．Grant． |
| 14 | $3{ }^{\frac{7}{8}}$ | $7{ }^{\frac{1}{8}}$ | Patiala ． | Major R．P．Wemyss Quin． |
| 14 | $4^{\frac{1}{2}}$ | $6 \frac{5}{8}$ | Bikanir | Maharaja of Bikanir． |
| 13 星 | $4{ }^{\frac{1}{4}}$ | 7 | ？ | R．H．Edmondson． |
| 133 | $4{ }^{\frac{3}{3}}$ | $8 \frac{1}{2}$ | Sind | L．Napier． |
| 135 | $4{ }^{\frac{3}{5}}$ | $7 \frac{1}{2}$ | Bikanir | Capt．C．F．Vander Byl． |
| $13 \frac{1}{2}$ | $4 \frac{1}{4}$ | 63 | Muttra | Major G．F．Mockler． |
| ${ }_{13} 3$ | $4^{\frac{1}{2}}$ | 61 | Punjab | R．H．Heath． |
| $13 \frac{1}{4}$ | 4 | $4^{\frac{1}{4}}$ | ？ | Sir Edmund G．Loder，Bart． |
| $13 \frac{1}{4}$ | 4 | $6 \frac{1}{4}$ | ？ | Major O．A．Chambers． |
| $13 \frac{1}{4}$ | 41 | 4 | Khelat | British Museum（Hume Collection）． |
| $13 \frac{1}{8}$ | $4 \frac{1}{2}$ | 63 | ？ | Mess of the and Central Indian Horse． |
| 13 | $3{ }^{\frac{1}{2}}$ | 6 | Bikanir | Lieut．－Col．H．C．Morland． |
| 13 | $3{ }^{3}$ | 6 | ？ | Lieut．－Col．R．H．Rattray． |
| 123 | $4 \frac{1}{4}$ | 5 | Goorgaon，Punjab | British Museum（Hume Collection）． |
| 123 | $4 \frac{3}{3}$ | $7{ }^{\frac{1}{2}}$ | ？ | H．C．V．Hunter． |
| 123 | $4 \frac{1}{4}$ | $5^{\frac{7}{8}}$ | North Punjab | Col．J．Biddulph． |
| 12 量 | $4 \frac{1}{4}$ | 7 | ？ | Major L．I．B．Hulke． |
| 123 | 4 ${ }^{\frac{1}{8}}$ | $5^{\frac{3}{4}}$ | Bikanir | Capt．E．N．Jones－Vanghan． |
| $12{ }^{\text {星 }}$ | 4 | 6 | Jodhpore ． | H．H．the Maharaja of Bikanir． |
| 125 | 4 | 8 | ？ | J．Gouldsmith． |
| $12 \frac{1}{2}$ | $4^{\frac{3}{5}}$ | 63 | ？ | Major A．D．Greenhill－Gardyne． |
| $97 \frac{1}{4}$ | 2 | $2 \frac{1}{2}$ | ？ | Sir Edmund G．Loder，Bart． |
| ¢ $7 \frac{1}{8}$ | 5 | 21 | ？ | Sir Victor Brooke＇s Collection． |



Horns of the Edmi Gazelle.

## The EDMI or ATLAS GAZELLE (Gazella cuvieri).

The African representative of Kennion's gazelle and the chinkara, characterised by the horns in the bucks diverging more or less regularly upwards, and not incurving at the tips. There is a blackish spot on the tip of the muzzle, and the coat is rough. General colour dull fawn, with a very indistinct lateral band, well-defined face-markings, the lower portion of the tail crested with black, and the under-parts, buttocks, and inner surfaces of fore-legs white. Height at shoulder, 26 to 27 inches. Distribution.-The mountains of Morocco, Algeria, and Tunisia, where it is known by the name of edmi or admi.

| Length on front curve. | Circum. ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $14{ }^{7}$ | 5 | $3 \frac{5}{8}$ | Algeria . | . Sir Edmund G. Loder, Bart. |
| $14{ }^{5}$ | $4 \frac{3}{}$ | $4{ }^{1}$ | N. Tunis | - J. I. S. Whitaker. |
| $14{ }^{98}$ | $4 \frac{7}{5}$ | S | Constantine | . British Museum (E. Richardson Cox). |
| 14\% | $4 \frac{3}{8}$ | 7 | Do. | - Royal Scottish Museum (E. Richardson Cox). |
| $14 \frac{1}{1}$ | 37 | $5^{\frac{1}{2}}$ | Algeria | A. Louw. |
| -14 ${ }^{\frac{1}{4}}$ | $\ldots$ | $\ldots$ | Do. | C. S. Mann. |
| $-14 \frac{1}{4}$ | 4 | $3{ }^{1}$ | Do. | American National Collection. |
| $913 \frac{7}{8}$ | $3 \frac{1}{2}$ | $7 \frac{1}{5}$ | Do. | E. N. Buxton. |
| 133 | $4{ }^{\frac{1}{2}}$ | $7 \frac{1}{6}$ | 1) | Iton. G. Gordon. |
| 13 | 3 3 | $6 \%$ | Do. | - A. F. Williams. |
| 13 | 4 | 5 | Do. | . G. L. Harrison. |
| ¢ 11 | $2 \frac{1}{2}$ | $5^{\frac{7}{8}}$ | Do. | - . J. I. S. Whitaker. |

## The ARABIAN GAZELLE (Gazella arabica).

From the edmi the ordinary Arabian race of this gazelle, as met with at Aden, may be distinguished by its smaller size, smoother hair, and darker colour, the general tint of the upper-parts being dark smoky fawn, with a distinct dark flank-band, the central face-band rufous fawn, and a black spot on the tip of the nose. The horns are relatively small. Height at shoulder, 24 or 25 inches. The Aden race has been named G. a. erlangeri ; the typical race, G. a. typica, which is from the island of Farsan, in the Red Sea, being lighter, with no dark flank-band. The Sinaitic G. a. rueppelli is coloured like dorcas with the face-markings of a.erlangeri ; the nose being reddish brown with a distinct blackish spot.

Distribution.-Western and South Arabia, where it is known as ghasal, its Syrian title being ariel or aiel.

| Length on front curve | Circum. ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $10 \frac{3}{4}$ | $4 \frac{3}{1}$ | 43 | Syria | II. H. Youssouf Kamal. |
| $-10 \frac{1}{2}$ | 4 $\frac{1}{8}$ | $4^{\frac{1}{8}}$ | S. Arabia | . Dr. Albert von Stephani. |
| $8 \frac{1}{2}$ | 4 | 2 | Mocha, South Arabia | - British Museum (the late W. T. Blanford). |
| $-97 \frac{1}{2}$ | 2 | $4 \frac{3}{4}$ | ? | Charterhouse Museum. |
| $4^{\frac{7}{8}}$ | $3 \frac{1}{8}$ | $3 \frac{5}{8}$ | South Arabia | - Sir Victor Brooke's Collection. |
| ¢ $4 \frac{1}{2}$ | 1 $\frac{3}{4}$ | 21 $\frac{1}{2}$ | ? | Col. H. G. C. Swayne. |



Head of Dorcas Gazelle.

## The DORCAS GAZELLE (Gazella dorcas).

Rozal or Hemar, Algerian Arabic. Ghasal, Syria.
The typical race of this species is characterised by the indistinctness of the dark lateral band dividing the fawn of the upper-parts from the white beneath, and the perfectly lyrate form of the horns, which are of medium length, with the middle portion twisted outwardly, and the tips converging towards one another ; ears short ( 125 mm .). Height at shoulder, 21 to 22 inches; total length, about 42 inches. General colour of upper-parts pale fawn, of rather variable tint, with the facemarkings distinct.

Distribution.-Typically Lower Egypt ; thence eastwards to Palestine and Syria; westwards to the plains of Morocco, Algeria; and southwards to Nigeria and the Sudan.
A.-TYPICAL RACE.

| Length on front curve | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ |  | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $13 \frac{1}{2}$ | $3 \frac{5}{8}$ | 21 |  | ? | Sir Edmund G. Loder, Bart. |
| $13 \%$ | 4 | $2{ }^{3}$ | Kordofan | . . | F. P. Nathan. |
| $13 \frac{1}{8}$ | 4 | $3 \frac{1}{2}$ | Syria . | . | H. II. Youssouf Kamal. |
| $-13 \frac{1}{8}$ | ... | $\ldots$ | Kordofan | . . | Capt. L. Buxton. |
| 13 | $4{ }^{1}$ | 2 | Sudan | . . | Capt. B. W. Y. Danford. |


| Length on front curve． | Circum－ ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 13 | 4 | $3{ }^{\frac{1}{2}}$ | El Obeid，Kordofan | Capt．J．G．A．Massy． |
| $12 \frac{7}{8}$ | 4 | $2 \frac{1}{2}$ | Sudan | －Capt．C．P．Heywood． |
| 123 | $3^{\frac{7}{5}}$ | 4 | Algeria | A．Louw． |
| 123 | 4 | $4{ }^{5}$ | Kordofan | Capt．J．C．Graham． |
| 123 | 4 | $1{ }^{\frac{3}{1}}$ | Do． | L．ord Villiers． |
| 125 | 4 | 3 | ？ | P．K．Glazebrook． |
| 125 | 33 | 45 | Sudan | Lieut．－Gen．Sir B．T．Mahon． |
| $12 \frac{1}{2}$ | 4 | $3{ }^{3}$ | Kordofan | Capt．P．E．Vaughan． |
| $12 \frac{1}{2}$ | $3 \frac{5}{8}$ | $3{ }^{3}$ | Southern Sahara | －J．I．S．Whitaker． |
| 121 $\frac{1}{2}$ | 4 | $2{ }^{3}$ | Kordofan | Lieut．－Col．C．J．Hawker． |
| $12 \frac{1}{2}$ | $4{ }^{\frac{1}{2}}$ | 3 | Do． | －Major C．S．Cumberland． |
| $12 \frac{3}{5}$ | $3{ }^{3}$ | ．．． | Southern Sahara | ．British Museum． |
| 123 | $3{ }^{3}$ | 2 | Sudan | －H．H．Prince Omar Toussoun． |
| 123 | $4{ }^{\frac{1}{4}}$ | 3 | Palestine | ．P．B．Vander Byl． |
| $12 \frac{1}{4}$ | $3{ }^{13}$ | 5 | Kordofan | G．L．Harrison． |
| $12 \frac{1}{8}$ | $4^{\frac{1}{7}}$ | $3{ }^{\frac{1}{2}}$ | Do． | Major J．H．Rivers． |
| $12 \frac{1}{8}$ | $3 \frac{1}{2}$ ， | $2 \frac{3}{8}$ | Do． | －Capt．R．A．McClymont． |
| 12 | 3 3 | $3^{\frac{1}{2}}$ | Do． | ．Capt．F．L．Livingstone－Learmonth． |
| 12 | $3{ }^{\text {a }}$ | $3^{\frac{1}{2}}$ | Do． | B．Chew． |
| 12 | $3^{\frac{3}{4}}$ | $5^{\frac{1}{8}}$ | Do． | Sir Robert Harvey，Bart． |
| 12 | $3^{\frac{1}{2}}$ | $2{ }^{3}$ | Do． | ．Capt．J．P．V．Hawksley． |
| 12 | 4 | $3{ }^{3}$ | Southern Sahara | ．J．H．Thomas． |
| $11^{\frac{7}{8}}$ | $3{ }^{3}$ | $4{ }^{\frac{3}{8}}$ | ？ | R．E．Fawkes． |
| $11 \frac{7}{8}$ | 4 | 4 | Kordofan | Major G．Lumsden． |
| $\mathrm{II}^{\frac{7}{8}}$ | 4 | 2 | Do． | Capt．C．E．Hills． |
| $11{ }^{\frac{3}{4}}$ | $4 \frac{1}{4}$ | $5^{\frac{1}{8}}$ | Do． | Walter Jones． |
| $11 \frac{3}{4}$ | 4 | 4 | Do． | Norman B．Smith． |
| II ${ }_{\text {年 }}$ | 4 | $3{ }^{\frac{3}{4}}$ | Algeria | E．C．Miller． |
| 113 | $3{ }^{5}$ | $1{ }^{\frac{3}{1}}$ | Dongola | Capt．W．H．Wilkin， |
| ¢ 1 1 ${ }^{\text {年 }}$ | $2 \frac{3}{18}$ | $5{ }^{\frac{3}{4}}$ | Kordofan | Major J．H．Rivers． |
| ［1雵 | 4 | $3^{\frac{1}{2}}$ | N．Nigeria | C．S．Burnett． |
| 103 | $4 \frac{1}{1}$ | 21 | Lake Chad | Major J．K．Cochrane． |
| －99 $9 \frac{7}{8}$ | ．．． | ．．． | Algeria | ．A．E．Pease． |

## B.-ABYSSINIAN (ISABELLA) RACE (Gazella dorcas isabella).

Gannai of the natives.
The so-called Isabella gazelle is now regarded as the Abyssinian race of dorcas. It is typically characterised by the tips of the horns being strongly hooked inwards so as to form nearly or completely a right angle. The colour of the upper-parts is rufous fawn, with the lateral band well developed. Height at shoulder, about 25 inches.

Distribution.—Abyssinia.

| Length on <br> front curve.Circum- <br> ference. | Tip to Tip. | Locality. | Owner. |  |
| :---: | :---: | :---: | :---: | :---: |
| $10 \frac{1}{8}$ | $3 \frac{3}{4}$ | 4 | Komayli, Abyssinia | British Museum (the late Wlanford). T. |

## ERYTHRÆAN GAZELLE (Gazella littoralis).

Ghazal of the Sudanese.
Rather smaller than $G$. dorcas; general colour pale reddish fawn, with a pale lateral band, and the dark flank-band rich rufous or madderbrown; nose-spot blackish; ears very long, i 44 mm . Skull long and low, with the brain-case flatter, the profile from crown to occiput less nearly vertical, and the basisphenoid more inclined than in dorcas; auditory bullæ small ; row of upper cheek-teeth larger ( 56 mm .) than in dorcas but the molars narrower.

Distribution.-The African coast of the Red Sea, from Suakin northwards, and adjacent parts of Nubian desert.

| Length on <br> front curve. | Circum. <br> ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :--- |
| II $\frac{1}{8}$ |  |  |  |  |



## SPEKE'S GAZELLE (Gazella spekei).

Dhero, Somali.
From the edmi and its allies, with which it agrees in its leading characteristics, this gazelle is readily distinguished by the development of a flabby corrugated elevation on the skin of the nose of both sexes. The coat is thick and the general colour of the upper - parts pale brownish fawn, with the lateral band darker than in the other members of the sub-group. Height at shoulder, from 23 to 24 inches.

The protuberance on the nose is connected with the sexual function ; in dead specimens it exhibits a slight cavity beneath the skin which can be inflated by blowing air into the nostrils, and it seems therefore capable of distension during life.

Distribution.-The plateau of Somaliland.

| Length <br> on front <br> curve. | Circum- <br> ference. | Tip to <br> Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :--- |
| I2 $\frac{1}{2}$ |  |  |  |  |


| Length on front curve． | Circum－ ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 113 | $3{ }^{7}$ | $2{ }_{3}$ | Somaliland | Capt．H．du B．O＇Neill． |
| $111{ }^{1}$ | 4 | $4{ }^{1}$ | Do． | Col．H．D．Olivier． |
| $11{ }^{\frac{1}{4}}$ | 4 | 4 | Do． | W．H．Cobb． |
| $11 \frac{1}{4}$ | $4^{\frac{1}{8}}$ | 4 | Do． | －Capt．H．W．Thorpe． |
| $1 \mathrm{I}_{\frac{1}{4}}$ | $3^{\frac{1}{2}}$ | 4 | Do． | ．A．de L．Long． |
| 1118 | 4 | 4 | Do． | －Major P．C．Elliott－Lockhart． |
| $11{ }^{\frac{1}{4}}$ | 4 | $4{ }^{1}$ | Do． | ．Capt．F．R．Tarleton． |
| $-11 \frac{1}{4}$ | 4 | $5{ }^{\frac{1}{4}}$ | Do． | －R．E．Mess，Roorkee． |
| $11{ }^{\frac{1}{3}}$ | 4 | 5 圭 | Do． | ．C．Liddeli． |
| 11 | 4 | $4^{\frac{1}{2}}$ | Do． | J．H．Whitehouse． |
| ${ }^{11}$ | 4 | 4 | Do． | ．A．H．Straker． |
| 11 | $3{ }^{\frac{7}{3}}$ | 5 | Do． | Lieut．－Col．H．C．Morland． |
| 11 | $4^{\frac{1}{8}}$ | $3{ }^{5}$ | Do． | ．Lord Delamere． |
| 11 | $3^{\frac{1}{2}}$ | 4 | Do． | －Capt．A．E．H．Breslin． |
| 11 | 4 | $2{ }^{3}$ | Do． | ．Dr．R．E．Drake－Brockman． |
| 103 | 4 | $4{ }^{\frac{3}{1}}$ | Do． | P．H．Thomas． |
| 10 ${ }^{\frac{3}{4}}$ | $3^{\frac{1}{4}}$ | $3{ }^{3}$ | Do． | Sir Edmund G．Loder，Bart． |
| 10 䍃 | $3{ }^{\text {是 }}$ | $4{ }^{5}$ | Do． | J．H．Miller． |
| $10 \frac{3}{4}$ | $4 \frac{5}{8}$ | $5{ }^{1}$ | Do． | －Major B．R．M．Glossop． |
| $10^{\frac{3}{4}}$ | 4 | 4 | Do． | R．McD．Hawker． |
| $10 \frac{3}{4}$ | $3^{\frac{7}{5}}$ | 3 | Do． | C．N．Welsh． |
| 10를 | $3{ }^{\text {稱 }}$ | $3 \frac{3}{1}$ | Do． | ．E．Lort－Phillips． |
| ${ }^{10} \frac{3}{4}$ | 4 | $3{ }^{3}$ | Do． | －Major B．Vincent． |
| 10量 | 4 | $4{ }^{\text {星 }}$ | Do． | ．A．Louw． |
| 10量 | 4 | $3{ }^{\frac{1}{4}}$ | Do． | Col．E．St．C．Pemberton． |
| $99 \frac{1}{2}$ | $2 \frac{7}{8}$ | $3{ }^{\frac{1}{4}}$ | Do． | －T．W．H．Clarke． |



Head of Pelzeln's Gazelle.

## PELZELN'S GAZELLE (Gazella pelzelni).

Dhero, Somali.
This species, the lowland gazelle of Somaliland, is nearly related to the last, from which it differs by the absence both of the corrugated elevation on the nose and of the black spot on the muzzle. It is also slightly larger than Speke's gazelle, the height at the shoulder being about 25 inches; and its colour is somewhat more rufous, the light flank-band being distinct, and the dark band rufous brown, only slightly darker than the back, without any tendency to blackness. The dark and light bands on the cheeks are relatively short and indistinct.

Distribution.-The plains of northern Somaliland, bordering the sea. Within fifty miles of the shore this gazelle is exceedingly numerous, and may often be seen in large herds.

$\underset{\substack{\text { Length on } \\ \text { front } \\ \text { curve. }}}{ } \quad \begin{gathered}\text { Circum. } \\ \text { ference. }\end{gathered} \quad$ Tip to $\quad$ Tip.

| 13 | 4 | $6 \frac{1}{4}$ | Somaliland | . | - | . H. D. Briggs. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 127 ${ }^{\frac{7}{8}}$ | $3 \frac{1}{2}$ | 58 | Do. | . |  | . Capt. H. McLear. |
| $12 \frac{7}{8}$ | $3 \frac{7}{8}$ | $5^{\frac{3}{4}}$ | Do. | . | . | . Capt. H. C. Dobbs. |
| $12 \frac{3}{4}$ | $4 \frac{1}{4}$ | $4 \frac{3}{3}$ | Do. | . | . | . R. P. Dennistoun-Webster. |
| $12 \frac{1}{4}$ | $3 \frac{3}{4}$ | $4 \frac{1}{4}$ | Do. | . | - | - Col. H. G. C. Swayne. |
| $12 \frac{1}{4}$ | $4 \frac{1}{8}$ | $5^{\frac{1}{2}}$ | Do. | - | - | - Lord Delamere. |
| $12 \frac{1}{4}$ | 4 | $4{ }^{\frac{5}{8}}$ | Do. | - | - | . Major K. L. W. Mackenzie. |
| 12 | $3{ }^{1}$ | $5{ }^{\text {星 }}$ | Do. | - | . | . Capt. F. W. Richey. |
| 12 | $3 \frac{3}{4}$ | $4^{\frac{1}{2}}$ | Do. | - | . | . Major A. G. Stevenson. |
| 12 | $3 \frac{3}{4}$ | $5^{\frac{1}{1}}$ | Do. | . | . | Viscount Edmond de Poncins. |
| 12 | $3 \frac{1}{2}$ | $5^{\frac{1}{4}}$ | Do. | . | - | . Major C. R. Kelly. |
| 11 $\frac{3}{4}$ | 4 | 5 | Do. | - | - | . Lieut. H. V. B. Firman, R.N. |
| II $\frac{3}{4}$ | $4 \frac{1}{8}$ | 4 | Do. | . | - | . Dr. R. E. Drake-Brockman. |
| 115 | 4 | $3 \frac{1}{2}$ | De. | . | - | . Capt. H. du B. O'Neill. |
| I $1 \frac{1}{2}$ | $3 \frac{1}{2}$ | $5^{\frac{1}{2}}$ | Do. | . | - | T. W. H. Clarke. |
| 1 $1 \frac{1}{2}$ | $3 \frac{1}{2}$ | $4^{\frac{1}{4}}$ | Do. | - | - | . Lieut. -Col. H. C. Morland. |
| 119 | $3 \frac{1}{2}$ | 5 | Do. | . | - | . Capt. W. H. Williamson. |
| II $\frac{1}{2}$ | $3{ }^{3}$ | $4^{\frac{1}{4}}$ | Do. | - | - | - C. S. Mann. |
| II $1 \frac{1}{2}$ | $3 \frac{3}{4}$ | 4 ${ }^{\frac{5}{8}}$ | Do. | - | - | WV. F. Whitehouse. |
| $1 I^{\frac{1}{2}}$ | $3 \frac{1}{2}$ | $4^{\frac{1}{2}}$ | Do. | - | - | . Capt. G. W. Denison. |
| $\dagger 9$ | $\cdots$ | $\cdots$ | Do. | - | - | . C. S. Mann. |
| 981 | $2 \frac{1}{8}$ | $3 \frac{1}{2}$ | Do. | . | . | . W. F. Whitehouse. |



Horns of Loder's Gazelle.

## The RHIM or LODER'S GAZELLE (Gazella leptoceros).

Rhim, Arabic.
Although originally described so long ago as the year i842, very little was known of this gazelle till specimens were procured by Sir E. G. Loder, and described as a new species under the name of $G$. loderi. Further investigation proved them to be inseparable from the species named by F. Cuvier. This species is easily recognisable by the long and slender form of the nearly straight horns of the bucks, and the very pale tone of colouring of the upper-parts, which may be described as pale sandy fawn, with the characteristic gazellemarkings only indistinctly defined. On the face the dark streaks are sandy instead of rufous, and the light bands on the flanks are almost imperceptible, while the dark ones below them are pale sandy with the very slightest tinge of brown ; the tail being sandy at the base, and gradually darkening to brownish black towards the tip. In the male the horns are about twice the length of the head, very slender, and closely and heavily ridged almost to the tips. Knee-brushes very small. Height at shoulder, about 28 inches. Weight, 34 lbs .

Distribution．－The desert tracts of the interior of Western Egypt， thence extending southwards into Nubia and Sennar ；represented by a distinct race on the sand－dunes of the Algerian and Tunisian Sahara．

## A．－TYPICAL RACE．

| Length on front curve． <br> 13本 | Circum－ ference． <br> $4 \frac{1}{1}$ | Tip to Tip． <br> $5^{\frac{1}{5}}$ | Locality． <br> Fayum，Egypt | Owner． <br> Capt．S．S．Flower． |
| :---: | :---: | :---: | :---: | :---: |
| B．－TUNISIAN RACE（G．leptoceros loderi）． |  |  |  |  |
| Length on front curve． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| $15 \frac{7}{\frac{7}{8}}$ | 33 | $7 \frac{1}{2}$ | Tunisian Sahara | Sir Edmund G．Loder，Bart． |
| $15 \frac{7}{7}$ | $3 \frac{1}{2}$ | $6 \frac{1}{4}$ | South of Biskra | Dr．Dawtrey Drewitt． |
| $15 \frac{3}{4}$ | 4 | $4 \frac{1}{4}$ | Tunisian Sahara | J．I．S．Whitaker． |
| 15 | $3{ }^{3}$ | $7{ }^{3}$ | Algerian Sahara | G．L．Harrison． |
| 15 | $3 \frac{1}{2}$ | $4{ }^{\frac{1}{4}}$ | ？ | J．C．Phillips． |
| $14 \frac{1}{2}$ | $3 \frac{1}{2}$ | $5 \frac{1}{2}$ | South of Biskra | American National Collection． |
| $14{ }_{18} \frac{7}{6}$ | $3{ }^{\frac{7}{3}}$ | $4 \frac{3}{4}$ | Algerian Sahara | Sir Abe Bailey． |
| $14^{\frac{3}{5}}$ | $3{ }^{\frac{1}{2}}$ | 8 | ？ | C．S．Mann． |
| $14 \frac{1}{4}$ | $3{ }^{3}$ | $6 \frac{1}{2}$ | Algerian Sahara | H．H．Prince Omar Toussoun． |
| $14 \frac{1}{4}$ | $3^{\frac{1}{2}}$ | $10 \pm$ | Do． | Sir Edmund G．Loder，Bart． |
| 14 | $3{ }^{7}$ | 3 | Do． | Hon．R．A．Ward． |
| $13 \frac{5}{5}$ | $3{ }^{\text {S }}$ | $5^{\frac{1}{2}}$ | Do． | W．E．Pease． |
| $13 \frac{1}{2}$ | $3{ }^{3}$ | 8 8 | Tunisian Sahara | Sir Edmund G．Loder，Bart． |
| $13^{\frac{1}{2}}$ | $3 \frac{1}{2}$ | 10 | Algerian Sahara | British Museum． |
| $13 \frac{1}{4}$ | $3 \frac{1}{2}$ | $3{ }^{3}$ | ？ | A．Louw． |
| $13 \frac{1}{4}$ | 3年 | 5 | Tunisian Sahara | J．I．S．Whitaker． |
| ¢ 11委 | 2 | $3{ }^{3}$ | Do． | Sir Abe Bailey． |



Head of Heuglin's Gazelle.

## HEUGLIN'S GAZELLE (Gazella tilonura).

Tel-Badu, Tigri.
This well-marked species represents a small sub-group in which the dark band on the flanks is very strongly defined, and black in colour ; the present species being distinguished from its allies by the abrupt inward hooking of the tips of the horns. The general colour is deep sandy, with the central face-band but little darker than the back, no black nose-spot, and the tail sandy at the base but black elsewhere. Height at shoulder, about 27 inches.

Distribution.-Bogosland, Abyssinia, Sennar, and Northern Bahr-el-Ghazal.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner, |
| :---: | :---: | :---: | :---: | :---: |
| $11 \frac{7}{8}$ | $4 \frac{1}{4}$ | 32 | Atbara River . | IV. B. Cotton. |
| $1 I^{\frac{3}{1}}$ | 5 | 2 | Sudan . | Major F. J. L. Howard. |
| $11 \frac{1}{2}$ | $4{ }^{\frac{1}{2}}$ | 2 | Atbara River | W. B. Cotton. |
| 115 | 4 | 7 | Sudan | H. Leney. |
| II | 4 | $3 \frac{1}{2}$ | Do. | Lord Villiers. |
| $10 \frac{7}{8}$ | $4^{\frac{1}{2}}$ | $2 \frac{1}{2}$ | Do. | H. Boughton Leigh. |
| $10 \frac{3}{4}$ | 33 | $4 \frac{1}{2}$ | ? | E. Lort-Phillips. |
| 103 | 4 | $2 \frac{1}{8}$ | Bogosland | British Museum. |
| 1012 | $4 \frac{3}{8}$ | 3 | Near Kassala | Prince Colloredo Mannsfeld. |
| $10 \frac{1}{4}$ | $4 \frac{1}{2}$ | $3^{\frac{1}{2}}$ | Sudan | C. E. Russell. |
| 10 ${ }^{1}$ | $4 \frac{1}{8}$ | $4{ }^{\frac{1}{4}}$ | Basaland | Hon. Walter Rothschild. |
| 101 | $4 \frac{1}{8}$ | $2 \frac{7}{8}$ | ? | Col. Ralph Vivian. |
| 10 | $4 \frac{3}{8}$ | $2 \frac{1}{2}$ | Setit Valley | Earl of Sefton. |
| 97 | $2 \frac{1}{2}$ | $3 \frac{7}{8}$ | Do. | . Do. |



Skull and Horns of Red-fronted Gazelle.

## The KORIN or RED-FRONTED GAZELLE (Gazella rufifrons).

| Seni, Gambian. | El Hamra, Dinka. |
| :--- | :--- |
| Bavewa, Hausa. | Noār, Sudani. |

This medium-sized and rather stoutly built species agrees with Heuglin's gazelle in the narrow dark brown flank-band, but differs by the absence of a distinct inward hooking of the tips of the horns. The general colour of the upper parts is deep sandy rufous, brightening into rich rufous on the forehead and face, where there is no nose-spot. The tail, with the exception of the sandy upper surface of the basal portion, is black. Horns relatively small, regularly divergent, curving at first slightly backwards and then forwards, heavily ridged till the terminal two or three inches.

Distribution.-Senegal, Gambia, Northern Nigeria, Kordofan, and White Nile, to Northern Uganda. The typical race is from Gambia and Nigeria; the eastern race being distinguished as G.r.lavipes, with which the so-called G. salmi is identical.

# A．－TYPICAL RACE（G．rufifrons typica）． 

| Length on front curve． | Circum－ ference． |
| :---: | :---: |
| $13 \frac{1}{4}$ | 45 |
| $12 \frac{1}{4}$ | 5 |
| 12 | $4^{\frac{1}{4}}$ |
| $11{ }^{\frac{3}{4}}$ | $4 \frac{1}{4}$ |
| $111 \frac{1}{2}$ | $4 \frac{3}{4}$ |
| $11 \frac{1}{2}$ | $4 \frac{5}{8}$ |
| II $\frac{1}{2}$ | 44 |
| I 1 年 | $4{ }^{\frac{1}{2}}$ |
| $11 \frac{1}{4}$ | $4 \frac{1}{4}$ |
| $1 I^{\frac{1}{6}}$ | $4 \frac{3}{4}$ |
| II | $4 \frac{1}{2}$ |
| II | 4星 |
| II | 4妾 |
| 999 | $2 \frac{1}{2}$ |

## Tip to Tip．

Locality．
Owner．
5\％Northern Nigeria
Capt．C．V．Boyle．
Do．．Capt．L．C．Brodie．
Do．．Capt．A．C．Aubin．
Do．．Capt．G．Bonham－Carter．
Do．．H．C．Bridges．
Do．．C．Francis．
Do．．Capt．G．C．Kelly．
Do．．Capt．C．C．West．
Do．．F．B，Gall．
Do．．Major R．McDouall．
Do．．C．S．Burnett．
Do．．Major J．G．Browne．
Do．．Capt．Lord Henry Seymour．
Do．．Capt．L．C．Brodie．

## B．－EASTERN RACE（G．rufifrons lævipes）．

| Length on <br> front curve． | Circum． <br> ference． | Tip to Tip． |  | Locality． |  |
| :---: | :---: | :---: | :--- | :--- | :--- |
| I $3 \frac{7}{8}$ |  |  |  |  |  |



Head of Mongala Gazelle. From the type specimen.

## MONGALA GAZELLE (Gazella albonotata).

Closely allied to G. thomsoni, of which it may be merely a race.
Distribution.-According to the late Capt. H. S. Logan, from Gondokoro, in Uganda, to Bor, in the Mongala district of the Sudan, on the Abyssinian side of the Bahr-el-Gebel.

| Length on front. | Circumference. | Tip to Tip. | Localit |  |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 123 | $4 \pm$ | $6 \frac{1}{4}$ | Mongala. | - | - | Capt. P. E. Vaughan. |
| $12{ }^{5}$ | 43 | 4 | Do. | - | - | P. Niedieck. |
| $12 \frac{1}{8}$ | $4 \frac{3}{8}$ | $6 \frac{1}{4}$ | Do. | - | - | Major A. W. Jennings Bramly. |
| 12 | 5 | 3 | Do. | . | . | Duke of Alba. |
| 12 | $4 \frac{3}{4}$ | 5 | Do. | - | - | Capt. E. E. B. Mackintosh. |
| 117 | 5 | 5 | Do. |  | . | Capt. R. F. Balfour. |
| 113 | $4 \frac{1}{4}$ | 5 | Do. | . | - | Capt. B. W. Y. Danford. |
| $1 \mathrm{I}^{\frac{1}{4}}$ | $4 \frac{1}{4}$ | $3{ }^{\frac{3}{1}}$ | Do. | . | . | Major P. M. Dove. |
| 11 | $4 \frac{1}{1}$ | 4 | Do. | . | - | Capt. P. A. Wilson. |
| $10 \frac{7}{8}$ | $4 \frac{1}{2}$ | 3 | Pibor River | . | . | Col. J. J. Asser. |
| 107 | $4 \frac{1}{2}$ | $3^{\frac{3}{8}}$ | Mongala . | . | - | J. V. Colby. |
| 10 | 45 | $5{ }^{\frac{7}{8}}$ | Do. | - | - | Hon. Walter Rothschild. (Type specimen.) |
| ¢ 43 | $1 \frac{1}{8}$ | I $\frac{1}{2}$ | Do. | . |  | C. Logan. |



Heads of Thomson's Gazelle.

## THOMSON'S GAZELLE (Gazella thomsoni).

Szualla, Swahili. Engoli, Masai.
The distinct black nose-spot, the pure white eye-streak, and the great depth of the black flank-band serve to distinguish this species from $G$. rufifrons; with which it agrees in the general form of the horns. The prevailing colour of the upper parts is deep sandy rufous, with all the markings well developed and sharply defined; the central facestreak being a deeper rufous mingled with black, and having a black spot, and the light flank-band present, although only slightly paler than the back. There is also a narrow black band bordering the white on the sides of the rump. The horns are long, and rather like those of the Indian gazelle on an enlarged scale. Height at shoulder of males, from about 25 to 27 inches; of females, about $23 \frac{1}{2}$ inches. Weight of bucks, from 52 to 62 lbs ; of does, about 32 lbs . The species has been divided by a German naturalist into a number of races, but at least many of these can scarcely be regarded as valid.

Distribution.-The interior districts of British and German East Africa, from Lake Rudolf southwards to Irangi.

Length on
front curve.
$16 \frac{1}{2}$
$16 \frac{1}{4}$
16
16
15 ${ }^{\frac{7}{8}}$
153
I5 $\frac{3}{4}$
153
I $5 \frac{3}{4}$
153
15 ${ }^{3}$
${ }^{1} 58$
155
15 $\frac{1}{2}$
$15 \frac{1}{2}$
$15 \frac{1}{2}$
I5 ${ }^{\frac{1}{2}}$
I $5 \frac{1}{2}$
15 $\frac{1}{2}$
I53
15 多
158
I $5 \frac{1}{4}$
$15 \frac{1}{4}$
I $5 \frac{1}{4}$
15
I $5 \frac{1}{4}$
I $5 \frac{1}{4}$
I $5 \frac{1}{4}$
I $5 \frac{1}{8}$
I5 $\frac{1}{8}$
I5 $5^{\frac{1}{8}}$
I $5 \frac{1}{8}$
I $5 \frac{1}{8}$
I5
I 5
I 5
15
15
I5
I 5
15
15

Circumference.

Locality

## East Africa

Do.
Do.
Do.
Do.
Do.
Do.
Do.
Do.
Do.
Du.
Do.
Do.
Dc.

Do.
Do.
Do.
Do.
Do.
Do.
Do.
Do.
Do.
Do.
. . British Museum (Sir F.J. Jackson).

- Major A. E. Smith.
- Guy Fenwick.
- C. B. C. Storey.
. Gerard Buxton.
- F. C. Cobb.
. Sir J. Hume Campbell, Bart.
- Lord Basil Blackwood.
- Capt. C. Brook.
- I. N. Dracopoli.
- Major W. E. Stobart.
- H. B. Tate.
- Major C. U. Price.
- B. Dominick.
- J. F. Franks.
- Capt. W. H. Wilkin.
- F. Santos Saurez.
. Capt. R. A. McClymont.
- W. J. Barry.
. Lord Wodehouse.


## OWNER'S MEASUREMENTS:

| $16 \frac{5}{8}$ | $5 \frac{1}{2}$ | $5 \frac{1}{4}$ | German East Africa | S. E. White. |  |
| :--- | :--- | :--- | :---: | :--- | :--- |
| 16 | $4 \frac{1}{2}$ | 2 | East Africa | . | C. S. Mann. |
| $96 \frac{1}{2}$ | 2 | $2 \frac{1}{2}$ | Do. | . | . |
| C. Steuart Betton. |  |  |  |  |  |



Skull and Horns of Grant's Gazelle.

## GRANT'S GAZELLE (Gazella [Nanger] granti).

Suara, Swahili. Ngoli, Nodorobo.
This handsome species is the first of a group of gazelles characterised by their large size and by the fawn colour of the back being encroached upon to a greater or less degree by the white of the rump. In this species the horns are very long and typically lyrate; there is a dark streak on the front border of each side of the rump-patch; the middle face-streak is chestnut, with a black nose-spot ; and the tail, with the exception of the black crest, is either wholly white, or sandy above and white beneath. On the neck and back the hair has a peculiar wavy appearance, recalling that of watered silk. Height at shoulder, from about 32 to 34 inches; weight of male, from about 150 to 165 lbs., when cleaned, about 115 lbs.

Distribution.-East Africa ; throughout Masailand, Kilimanjaro, north of Baringo, Mount Elgon, and the Suk country; generally on open grass-lands. In G. granti typica, of the interior of East Africa, the flank-bands are faint in the adult, and the fawn area does not extend far on to the white of the rump-patch. In the Usukuma race, G. g. robertsi, the horns show a peculiar outward twist, so that their points are far apart. In the Tana G. g. petersi the stature is smaller, the horns are nearly straight, and the fawn
of the back extends along the middle of the upper surface of the tail. In the Loroghi $G$. g. notata the flank-bands are very distinct with a dark one above and below the light one, and the horns are nearly straight. The Lado G. g. brighti is a small race, without dark flank-bands, and a narrow black border to the rumppatch. The Abaya G.g. laccuum, which is also rather small, has a dark flank-band in the young, and horns of the petersi type.

## A.-Many of the following belong to the TYPICAL RACE.



Length on front curve.

Circum- Tip to ference. Tip.
$6 \frac{1}{2}$ 6 $\frac{1}{2}$ 7 $6 \frac{1}{2}$
74
7
$6 \frac{1}{2}$

Locality.
Owner.
27

# Kilimanjaro 

Major F. A. Dickinson.
Do.

- C. S. Mann.
7

15 $\frac{3}{4}$
19 ${ }^{\frac{1}{4}}$
Do.
. Nairobi Club.

Skull and Horns of G. granti robertsi.
B.-USUKUIMA RACE (G. granti robertsi).

## ference.

...
$6 \frac{1}{4}$
$28 \frac{1}{2}$
29

Locality.
Owner.

| 29 | $6 \frac{3}{4}$ | $23 \frac{1}{2}$ | $?$ | W. N. McMillan. |
| :---: | :---: | :---: | :---: | :---: |
| 28 | $\ldots$ | $28 \frac{1}{2}$ | Kedong Valley | . |
| 28 | $6 \frac{1}{4}$ | 29 | $?$ |  |
| 29 | Capt. R. S. Hart. |  |  |  |


| Length on front curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| * $27 \frac{1}{2}$ | $6 \frac{1}{2}$ | 22 | Lemek Valley | - Capt. the Hon. O. H. Stanley. |
| 263 | $6 \frac{1}{2}$ | $20 \frac{1}{4}$ | East Africa | - Mrs. A. K. Muir. |
| $26 \frac{3}{4}$ | 61 | 20 | Do. | - C. Bower Ismay. |
| 263 | 6 | $22 \frac{1}{2}$ | Do. | - H. Johnson. |
| 261 | $5{ }^{\frac{3}{4}}$ | $23 \frac{5}{8}$ | D. | A. Fowler. |
| 261 | $6 \frac{1}{2}$ | $25 \frac{1}{4}$ | Do. | - H. Sampson. |
| 261 | $6 \frac{1}{8}$ | $25 \frac{3}{9}$ | Do. | H. Fowler. |
| $26 \frac{1}{4}$ | 63 | 193 | Do. | H. R. M ${ }^{\text {Clure }}$ |
| $26 \frac{1}{4}$ | 6 | $17 \frac{3}{4}$ | Do. | - G. P. L. Cosens. |
| 26 | 6 | $26 \frac{1}{2}$ | Do. | - R. B. Muir. |
| $26 \frac{1}{4}$ | $6 \frac{1}{4}$ | 24 | Do. | - J. F. Franks. |
| $25 \frac{1}{2}$ | 6 | $18 \frac{1}{2}$ | Do. | - Capt. H. C. S. Ashton. |
| $25 \frac{3}{5}$ | $5^{\frac{7}{8}}$ | $25 \frac{3}{1}$ | Do. | - Capt. H. C. Hart. |
| $24 \frac{3}{}$ | 6 | $18 \frac{1}{4}$ | Do. | F. C. Stern. |
| $24 \frac{1}{2}$ | $\ldots$ | 28 | German East Africa | . Eritish Museum (F. Russell Roberts and G. Blaine). |

## OWNER'S MEASUREMENTS.

$28 \frac{1}{8} \quad 5 \frac{1}{2}$
$38 \frac{1}{2} \quad$ Sotik
R. J. Cuninghame.

* Determination provincial.


## C.-TANA RACE (G. granti petersi).

Distribution.-Coast districts of East Africa.

| Length on front curve. | Circum ference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $23 \frac{3}{}$ | $6 \frac{1}{2}$ | 11 | E. Africa . | Capt. R. Meinertzhagen. |
| $22 \frac{1}{2}$ | 63 | 8 | Voi | Sir Edmund G. Loder, Bart. |
| $22 \frac{1}{8}$ | 63 | $5^{\frac{7}{4}}$ | Mherereni | British Museum (Sir F. J Jackson). |
| 22 | 5年 | $7{ }^{\frac{1}{1}}$ | Tana Valley | G. Blaine. |
| 213 | $6 \frac{1}{2}$ | 11 | ? | Major L. Boyd-Moss. |
| $21 \frac{1}{2}$ | $6 \frac{7}{5}$ | $8{ }^{3}$ | ? | T. F. V. Buxton. |
| 21年 | $6 \frac{1}{2}$ | $6 \frac{1}{2}$ | ? | C. S. Mann. |
| 21 | $6!$ | 9 | Tana Valley | C. H. Young. |
| $20 \frac{1}{3}$ | 5 | $9{ }^{\frac{1}{2}}$ | Do. | Capt. C. Hankey. |
| $20 \frac{1}{2}$ | 53 | 55 | D $\%$. | Major H. De Prée. |



Head of Sommerring's Gazelle.

## The AOUL or SEEMMERRING'S GAZELLE (Gazella [Nanger] sœmmerringi).

$$
\begin{array}{ll}
\text { Aoul, Somali. } & \text { Meidafihel, A byssinian. } \\
\text { Maédedo, Danakil. } & \text { Ariel, Sudani. }
\end{array}
$$

In this species the white of the rump-patch intrudes more into the fawn-area than in granti; there is generally no black streak dividing the sides of the rump-patch from the fawn of the body, the facemarkings are black, and the horns, which are shorter and more massive than in granti, hook inwards at the tips. The tail, except for its black crest, is white. Height at shoulder, about $35 \frac{1}{2}$ inches. Weight, clean, about 90 lbs .

Distribution.-The Abyssinian coast of the Red Sea, Berber, East Sennar, Danakil, Bora-Gallaland, and Somaliland; in the latter country occurring all over the Haud and Ogaden. The North Somali $G$. s. berberana is larger and darker than the typical form, with differently curved horns.

Length on
front curve. front curve.

> A.-SOMALI RACE (G. sœmmerringi berberana).

| 23 | $4^{\frac{7}{8}}$ | $13 \frac{1}{2}$ | Somaliland | . | G. H. Kirkpatrick. |
| :--- | :---: | :---: | :---: | :---: | :--- |
| 2 I | $5^{\frac{1}{4}}$ | IO | Do. | . | . |


| Length on front curve． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 21 | 61 | $4{ }^{3}$ | Somaliland | Col．V．M．Stockley． |
| $20 \frac{3}{4}$ | 63 | $\ldots$ | Do． | W．N．McMillan． |
| $20 \frac{3}{4}$ | 5是 | 35 | Do． | G．H．Cheetham． |
| 201 | 6 | 45 | Do． | Norman B．Smith． |
| $20 \frac{1}{4}$ | $5{ }^{\frac{1}{2}}$ | $7 \frac{1}{2}$ | Do． | Capt．A．E．Burnett． |
| 2017 | $5^{\frac{3}{4}}$ | 3 | Do． | Capt．J．W．C．Kirk． |
| $20 \frac{1}{4}$ | $5{ }^{\frac{1}{4}}$ | 63 | Do． | Capt．A．E．H．Breslin． |
| $20 \frac{1}{4}$ | $5^{\frac{1}{2}}$ | $8 \frac{1}{2}$ | Do． | －Major F．Rowley． |
| 20 | 51 | $5{ }^{5}$ | Do． | Hon．Walter Rothschild． |
| 20 | 53 ${ }^{\frac{3}{4}}$ | 4 | Do． | Lieut．－Col．J．W．H．Flanagan． |
| 20 | 6 | $7{ }^{1}$ | Do． | A．Louw． |
| 20 | $5^{\frac{1}{4}}$ | $5^{\frac{1}{2}}$ | Danakil | Viscount Edmond de Poncins． |
| ¢－20 | $\ldots$ | 53 | Somaliland | A．E．Pease． |
| 20 | $5^{\frac{1}{2}}$ | 51 | Do． | －Capt．H．du B．O＇Neill． |
| 20 | $5{ }^{\frac{7}{8}}$ | $\ldots$ | Do． | Maj．－Gen．Sir A．N．Rochfort． |
| 20 | 5 星 | $10 \frac{7}{8}$ | Do． | G．Blaine． |
| $19 \frac{3}{4}$ | 51 | 63 | Do． | Sir Abe Bailey． |
| $19 \frac{1}{2}$ | $5 \frac{1}{2}$ | $5{ }^{5}$ | Do． | T．W．\＃．Clarke． |
| $19 \frac{1}{2}$ | $5 \frac{9}{10}$ | 2 | Do． | Sir Edmund G．Loder，Bart． |
| $19 \frac{1}{2}$ | $5^{\frac{1}{2}}$ | $4{ }^{\frac{3}{4}}$ | Do． | Major J．J．Richardson． |
| $19 \frac{1}{2}$ | $5 \frac{1}{2}$ | $4 \frac{5}{8}$ | Do． | Count J．Potocki． |
| $19 \frac{1}{2}$ | $5^{\frac{1}{4}}$ | $15 \frac{1}{4}$ | Do． | R．McD．Hawker． |
| 19 年 | $5{ }^{\frac{1}{*}}$ | 4 ${ }^{\frac{1}{2}}$ | Do． | Major B．L．Carew． |
| $19 \frac{1}{4}$ | $5{ }^{3}$ | $7{ }^{\text {星 }}$ | Do． | Capt．H．C．Dobbs． |
| 19 年 | $5{ }^{\text {䍃 }}$ | $7 \frac{3}{1}$ | Do． | －I＇．K．Glazebrook． |
| －Owner＇s measurements． |  |  |  |  |

## B．－TYPICAL RACE（G．sœmmerringi typica）．

Length on Circum．
front curve．ference．

| 17 | 5 | 5 | Sudan ． |
| :--- | :---: | :---: | :---: |
| $16 \frac{3}{4}$ | $5 \frac{1}{4}$ | 10 | Do．． |
| $16 \frac{1}{2}$ | $5 \frac{3}{4}$ | $3 \frac{1}{2}$ | Do．． |

Count J．Potocki．
J．H．Butler．
Prince Colloredo Mannsfeld．

| Length on front curve. | Circumference. | Tip to Tip. |  | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 163 | 5 | $5 \frac{1}{2}$ | Sudan . | - |  | C. D. Eyre. |
| $16 \frac{1}{4}$ | 6 | $8 \frac{1}{2}$ | Do. . | - |  | W. H. Lindsay. |
| 16 | 5 ${ }^{1}$ | 5 | Do. . | - |  | Commdr. A. H. Home, R.N. |
| 16 | 5 | 4年 | Do. . | - | - . | Capt. N. A. Orr-Ewing. |
| 16 | 5 | 34 | Do. . | . | . . | G. L. Harrison. |
| 16 | 4年 | $5 \frac{1}{4}$ | Do. . | $\cdot$ |  | Col. A. Colville. |
| 16 | $5^{\frac{1}{2}}$ | 3 | Do. . | - |  | H. G. Watson. |
| $15 \frac{3}{4}$ | $5^{\frac{1}{2}}$ | $4^{\frac{1}{4}}$ | Do. . | - |  | W. H. Diggle. |
| I $5 \frac{3}{4}$ | 51 | $5 \frac{3}{}$ | Do. . | - |  | Major H. H. S. Morant. |
| $15 \frac{5}{5}$ | $5 \frac{1}{2}$ | 5 | Do. . | - | - • | C. Bower Ismay. |
| $15 \frac{1}{2}$ | $5 \frac{1}{4}$ | 33 | Do. . | - | - . | Capt. P. C. Lord. |
| ${ }^{1} 5^{\frac{1}{2}}$ | $5 \frac{3}{8}$ | 5 | Do. . | - |  | Col. Ralph Vivian. |
| $15 \frac{1}{2}$ | 5 | 5 | Do. | - | - - | Major Lord J. S. Cavendish. |
| $15 \frac{1}{2}$ | $5 \frac{1}{4}$ | $6 \frac{3}{4}$ | Do. | . | - - | Earl of Sefton. |
| 9154 | $2 \frac{7}{8}$ | $7 \frac{3}{5}$ | Do. | - | - - | The late Lieut.-Col. Hon. W. Coke. |
| I $5 \frac{1}{4}$ | 5 | 4 ${ }^{\frac{1}{2}}$ | Do. | . | - - | Miss C. Buxton. |
| 15 | 5 | $4 \frac{3}{4}$ | Do. . | - |  | H. S. Smiley. |
| 15 | 5 | 6 | Suakin . | . | . . | Hon. Walter Rothschild. |
| 15 | 5 ${ }^{\frac{1}{2}}$ | $6 \frac{3}{4}$ | Sudan | . |  | F. W. Greswolde-Williams. |
| 15 | 53 | 25 | Do. | . | . | Hugh C. E. Ross. |

## C.-BORANI RACE (G. sœmmerringi butteri).

Length on
front curve. Circumference.

$$
4 \frac{3}{4}
$$

Tip to Tip.
Locality.
Owner.
A. E. Butter.


Skull and Horns of Addra Gazelle.

The DAMA, MHORR, or ADDRA GAZELLE (Gazella [Nanger] dama).
Addra, Dongolese. Riël, Dinka. Ariel, Sudani.
The largest species of the genus Gazella, standing 36 or 37 inches at the shoulder, and characterised by the white of the rump including the tail (which may be tipped with fawn), coupled with the absence of a black border to the rump-patch and of a dark flank-band, and the forward hook of the tips of the horns. In the mhorr or Moroccan race (G. d. mhorr) of Southern Morocco there are dark face-markings, and the rufous of the body extends down the legs. In the Senegambian G.d.permista the rufous occupies a smaller area on the body, and there is only a narrow bridge connecting the rufous of the back with that of the hind-legs, while in the fore-legs the upper part is wholly white, and there is only a rufous streak in front below the knee. The typical G. d. typica, probably from Lake Chad, connects the mhorr with the addra or Kordofan race (G.d. ruficollis), in which the rufous is limited to the neck and a saddle-shaped area on the back.

Distribution.-The desert regions of northern, western, and northeastern Africa, from Nigeria and Senegambia through Morocco to Kordofan.

## A.-TYPICAL RACE (G. dama typica).

| Length on front curve. | Circum- <br> ference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ |  | Locality. | Owner, |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $14 \frac{7}{8}$ | $5^{3}$ | $8 \frac{1}{2}$ | Lake Char |  | C. S. Burnett. |
| 14 | 64 | 5 | Do. |  | Capt. L. C. Brodie. |
| $13{ }^{\frac{7}{8}}$ | 61 | 9 | Do. |  | Capt. G. Bonham-Carter. |
| $13{ }^{\frac{3}{4}}$ | 512 | 63 | Do. |  | Capt. A. B. Baillie-Hamilton. |
| $13{ }^{3}$ | $5{ }^{3}$ | $7{ }^{\frac{1}{2}}$ | Do. |  | Major J. B. Cockburn. |
| $13{ }^{3}$ | $5{ }^{3}$ | $3{ }^{1}$ | Do. |  | Major D. F. MacCarthy Morrogh. |
| 135 | $5{ }^{\frac{7}{8}}$ | $8{ }^{5}$ | Do. |  | J. Goold-Adams. |
| $13 \frac{1}{2}$ | 5 年 | $6 \frac{1}{2}$ | Do. |  | F. Beccles Gall. |
| $13 \frac{3}{8}$ | 53 | 3 | Do. |  | Capt. Lord Henry Seymour. |
| $12 \frac{1}{4}$ | $5{ }^{3}$ | 6 | N. Nigeria |  | Capt. G. C. Kelly. |
| -9 12 年 | $\ldots$ | $3^{\frac{1}{2}}$ | Lake Chad |  | C. S. Mann. |
| 121 $\frac{1}{8}$ | $5 \frac{3}{4}$ | 63 | Do. | . | Sir F. J. Lugard. |

## B.-SENEGAMBIAN RACE (G. dama permista).


$8 \frac{1}{2}$
$3^{\frac{1}{2}} \quad 5 \frac{3}{8}$

Locality.
?

Owner.

Hon. Walter Rothschild.

## C.-MHORR or MOROCCAN RACE (G. dama mhorr).



Locality.
$\begin{array}{lll}11 \frac{3}{4} & 6 & 3\end{array}$
3 ${ }^{3}$
Wednoon, Mogador

Owner.
British Museum (W. Willshire).
D.-ADDRA or KORDOFAN RACE (G. dama ruficollis).

Length on front curve.

Circum- Tip to
ference.
Tip.

Locality:

| $15 \frac{3}{4}$ | 6 | $11 \frac{1}{2}$ | Kordofan . | . | . | Capt. B. H. S. Romilly. |  |
| ---: | :---: | :---: | :---: | :---: | :---: | :---: | :--- |
| $15 \frac{1}{2}$ | $5 \frac{1}{4}$ | $8^{\frac{1}{4}}$ | Do. | . | . | . | Col. A. Colville. |
| $15 \frac{1}{4}$ | $5^{\frac{1}{8}}$ | ${ }^{1} 5^{\frac{1}{2}}$ | Do. | . | . | . | Capt. C. E. Hills. |
| $-15 \frac{1}{4}$ | $5^{\frac{3}{4}}$ | 6 | Do. | . | . | . | H. A. MacMichael. |


| Length on | Circum- |
| :---: | :---: |
| front curve. | Tip to |
| ference. | Tip. |


| -I5 | ... | ... | Kordofan | . | - | . | - | A. L. Butler. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $-15$ | $5 \frac{5}{8}$ | $6 \frac{1}{4}$ | Do. | - | - | . | - | J. C. Phillips. |
| $14{ }^{\frac{7}{8}}$ | 5 | $3 \frac{7}{8}$ | Do. | - | - | - | - | W. Mure. |
| $14 \frac{3}{4}$ | 6 | 7 | Do. | . | . | . | - | Major H. G. F. Stallard. |
| $14{ }^{\frac{3}{4}}$ | $5^{\frac{3}{4}}$ | 103 | Do. | - | - | . | . | G. L. Harrison. |
| $14{ }^{3}$ | $4^{\frac{3}{4}}$ | $9 \frac{18}{4}$ | Do. | - | - | . | - | Lord Villiers. |
| 143 | $5 \frac{1}{4}$ | 65 | Do. | . | - | - | - | Norman B. Smith. |
| $14{ }^{3}$ | $5 \frac{1}{4}$ | $6 \frac{1}{4}$ | Do. | - | - | - | . | Walter Jones. |
| 148 | 54 | $11 \frac{7}{8}$ | Do. | - | - | - | - | Sir Robert Harvey, Bart. |
| $14 \frac{1}{2}$ | $5 \frac{1}{2}$ | 74 | Do. | . | - | - | - | Lieut. -Col. C. J. Hawker. |
| $14 \frac{3}{3}$ | 52 | 53 | Do. | . | - | - | . | Capt. R. A. McClymont. |
| $14 \frac{3}{5}$ | $5 \frac{3}{}$ | 81 | Do. | . | - | . | - | Capt. G. M. Lumsden. |
| 143 ${ }^{\frac{3}{8}}$ | 5 | $9^{\frac{3}{4}}$ | Dongola | - | - | - | . | Capt. W. H. Wilkin. |
| $14 \frac{1}{4}$ | 51 ${ }^{\frac{1}{8}}$ | 73 | Kordofan | . | - | - | - | Capt. A. K. Hargreaves. |
| 14 | 5 | $9 \frac{1}{4}$ | Dongola | $\cdot$ | - | - |  | Capt. the Hon. G. H. DouglasPennant. |
| 14 | $5^{\frac{3}{4}}$ | $7 \frac{1}{2}$ | Kordofan | . | - | - | . | Capt. B. W. Y. Danford. |
| $13 \frac{3}{4}$ | 53 | $4{ }^{3}$ | Do. | - | - | - | . | Lieut.-Gen. Sir B. T. Mahon. |
| 13 星 | 6 | $5 \frac{1}{4}$ | Do. | - | - | - | . | G. Chetwynd. |
| 13 年 | $5^{\frac{1}{2}}$ | $4 \frac{3}{8}$ | Do. | - | - | . | . | Capt. G. S. Cameron. |
| $13 \frac{1}{2}$ | 58 | 103 | Do. | - | - | - | - | Capt. F. L. Livingstone-Learmonth. |
| $13 \frac{1}{2}$ | $5 \frac{1}{4}$ | $11 \frac{1}{4}$ | Do. | - | - | - | . | Earl of Kingston. |
| 123 | 6 | $5 \frac{3}{4}$ | Do. | - | - | - | - | Major C. S. Cumberland. |
| 123 | 54 | 4 | Do. | - | - | - | - | Hon. Walter Rothschild. |
| ¢ 123 | $3{ }^{\frac{3}{4}}$ | $6 \frac{1}{4}$ | Do. | - | - | - | - | Lieut. Gen. Sir B. T. Mahon. |
| $12 \frac{1}{2}$ | $5 \frac{3}{8}$ | 6\% | Do. | - | - | - | . | E. N. Buxton. |
| 121 | 4 | 5\% | Sennar | - | - | - | . | British Museum. |

[^12]

Horns of Springbuck. From a specimen in the American National Collection.

The SPRINGBUCK (Antidorcas euchore or A. marsupialis).

$$
\begin{array}{ll}
\text { Springbok, Cape Dutch. } & \text { Itsaypi, Maklaka. } \\
\text { Tsipi, Bechuana. } & \text { Menya, Angola. }
\end{array}
$$

Although nearly allied to the preceding group of large gazelles, the springbuck presents a peculiarity entitling it to be regarded as the representative of a genus by itself. This peculiarity is the presence of a fold, or narrow pouch, running down the middle of the hinder part of the back, and lined with long pure white hairs. In periods of excitement this pouch is capable of being turned partially inside-out, when the long white hairs are erected, and give a totally different appearance to this region of the animal. With the exception of a chestnut eye-streak, and in one form of a patch of the same colour at the base of the horns, the springbuck has the whole face white ; and the white on the rump, which includes the tail and joins that of the middle of the back, also occupies a large area. Height at shoulder, 30 inches. Weight, from 70 to 80 lbs .

Distribution.-The plains of Southern Africa, extending in the central districts of the continent to about latitude $20^{\circ} \mathrm{S}$., where its limits are defined by the forests to the south of the Mabebi River ; in the west ranging as far north as Mossamedes and Benguela in Southern Angola, and in the east at least up to the Limpopo. Although now
never found in the countless thousands which formerly swarmed over the plains of the Transvaal and Bechuanaland, springbuck are still abundant in many districts. Protected to a certain degree by law, they are to be met with in parts of Cape Colony and the Orange River Colony ; while on the plains bordering the Botlitli and the neighbouring salt-pans, as well as in Great Namaqualand, Damaraland, and the Ovampo Flats, they occur in large numbers. Spring-buck-stalking on the open veldt affords excellent rifle-practice; zest being added to the sport from the fact that the venison is most excellent for the table.

| Length on front curve | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| ${ }^{1} 19$ | 5 | 204 | Kalahari | The late W. F. Welb. |
| $16 \frac{3}{4}$ | 6 | 6 | ? | J. Rosen. |
| 16 | 6 | 7 | ? | W. A. Simpson Hinchliffe. |
| 153 | ... | $\ldots$ | ? | J. G. Millais. |
| $15 \frac{1}{2}$ | 61 | $7{ }^{\frac{1}{4}}$ | ? | Hon. T. Thynne. |
| ${ }^{1} 5^{\frac{1}{2}}$ | 61 | 5 | ? | Sir Abe Bailey. |
| $15^{\frac{1}{2}}$ | $6 \frac{1}{8}$ | $3{ }^{\frac{1}{2}}$ | Cape Colony . | C. D. Rudd. |
| $15 \frac{1}{2}$ | 6 | 23 | S. of Great Namaqualand | Th. Rehbock. |
| $15 \frac{1}{4}$ | $5^{\frac{1}{2}}$ | 7 | Orange River Colony | Sir H. J. Goold-Adams. |
| $15^{\frac{1}{4}}$ | $6 \frac{1}{2}$ | 3 是 | ? | Sir Edmund G. Loder, Bart. |
| $15 \frac{1}{8}$ | $5^{\frac{1}{2}}$ | 7 | ? | Major W. Anstruther Gray. |
| $15 \frac{1}{8}$ | $6 \frac{1}{4}$ | $5^{\frac{7}{8}}$ | Ovampo Flats | The late Capt. F. Cookson. |
| 15 | 53 | 7 | ? | The late George Grey. |
| 15 | $5 \frac{1}{2}$ | $8 \frac{1}{4}$ | ? | Major E. J. Lugard. |
| $14 \frac{1}{2}$ | $5{ }^{3}$ | 4 ${ }^{\frac{1}{2}}$ | ? | C. L. Blundell. |
| 143 | 61 | 5 | ? | C. Ansell. |
| $14 \frac{1}{4}$ | 6 | 23 | ? | C. Challis. |
| 14 | 6 | 24 | Ngamiland | F. T. Garbutt. |
| 14 | 5 | $4 \frac{1}{4}$ | ? | British Museum. |
| 14 | $6 \frac{1}{8}$ | $6 \frac{1}{3}$ | ? | Sir Owen Philipps. |
| 14 | 6 | 3 | ? | Hon. J. C. Lyttelton. |
| 14 | $5^{\frac{1}{2}}$ | 5 | ? | F. E. Potter. |
| 14 | 6 | $2 \frac{1}{2}$ | ? | N. H. Barton. |
| $13 \frac{3}{8}$ | 6 | 53 | Griqualand | F. C. Selous. |

1 A malformed specimen.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 133 | 6 | 53 | ? | Earl of Kingston. |
| 135 | 54 | $5{ }^{5}$ | Benguela | G. W. Penrice. |
| 135 | $5^{\frac{1}{2}}$ | $4{ }^{\frac{7}{4}}$ | Angola | C. WV. Sharp. |
| $13 \frac{1}{2}$ | $5{ }^{1}$ | $3{ }^{\frac{1}{4}}$ | Orange River Colony | Capt. V. C. de Crespigny. |
| $13 \frac{1}{2}$ | $5^{\frac{1}{2}}$ | 5 | Angola | A. H. Harrison. |
| $13 \frac{1}{2}$ | 512 | 5 | Ngamiland | H. A. Bryden. |
| $13^{\frac{1}{2}}$ | $5{ }^{3}$ | 4-1 | Near Kimberley | G. L. Harrison. |
| ¢ $13 \frac{1}{2}$ | 4 | $6 \frac{3}{4}$ | ? | Sir Abe Bailey. |

## OWNER'S MEASUREMENTS.

| $19 \frac{1}{8}$ | 6 | $7 \frac{1}{4}$ |
| :--- | :--- | ---: |
|  | $\ldots$ | $12 \frac{1}{2}$ |
| 17 | $\ldots$ | $\ldots$ |
| $16 \frac{1}{2}$ | $\ldots$ | $\ldots$ |
| 16 | $\ldots$ | $6 \frac{1}{2}$ |
| $15 \frac{1}{2}$ | 5 | $2 \frac{1}{8}$ |
| $15 \frac{1}{2}$ | 6 | $\ldots$ |



Head of Gerenuk.

## The GERENUK or WALLER'S GAZELLE (Lithocranius walleri).

Gerenuk, Somali. Gudan Godu, Danakil. Gŭğŭfto, Galla.
The gerenuk is easily recognised by the great elongation of the neck and the slender legs, which are lengthened in proportion. Horns are wanting in the females, and those of the males curve forwards at the tips, where the ridges stop, in a peculiarly characteristic manner. The general colour of the upper parts is deep rufous fawn, but down the middle of the back runs a broad brown band, nearly eight inches in width. The skull is characterised by its dense and solid structure, as well as by its straightness, the shortness of the facial portion, and the very small size of the cheek-teeth. Height at shoulder, from about 36 to 4 I inches; weight, if 5 lbs.

This antelope, first described by the late Sir Victor Brooke, is in the habit of raising itself on its hind-legs when browsing, and
is thus enabled to reach boughs at a very considerable distance above the ground．

Mr．Oscar Neumann pointed out in 1899 that the Somali and Abyssinian gerenuk（L．walleri sclateri）is somewhat different from the East African or typical gerenul．The northern race is larger，with finer horns，a longer neck，a less rufous colour，and brown instead of black knee－tufts，while the white markings of the tail are also different．

| Length on | Circum． ference． | Tip to Tip． |  | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 17 | 5 | $3{ }^{3}$ | Somaliland | ， | H．R．H．the Duc d＇Orléans． |
| $16 \frac{1}{2}$ | 512 | $1{ }^{\text {¢ }}$ | Do． | ． | Mr．Justice Hopley． |
| 16 | $5{ }^{3}$ | 6 | Do． | ． | Sir Edmund G．Loder，Bart． |
| 16 | $5{ }^{\text {a }}$ | 23 | East Africa | ， | W．H．Levy． |
| $15 \frac{1}{1}$ | $5{ }^{\frac{1}{2}}$ | 3 | Somaliland | d | J．Kenneth Foster． |
| $-15 \frac{1}{2}$ | $5{ }^{\frac{7}{8}}$ | $4^{\frac{7}{8}}$ | Do． | ． | American National Collection． |
| $15 \frac{3}{8}$ | $5{ }^{5}$ | 4 | Do． | ． | －Col．H．G．C．Swayne． |
| $15 \frac{3}{8}$ | $5{ }^{3}$ | $4 \frac{1}{8}$ | Do． | ． | C．Liddell． |
| $15 \frac{3}{5}$ | $5{ }^{3}$ | $4{ }^{\text {a }}$ | Do． | ． | Lord Wolverton． |
| 151 | 51 | $4{ }^{\text {星 }}$ | Do． | ． | Sir Abe Bailey． |
| $15 \frac{1}{4}$ | $5 \frac{1}{2}$ | $2{ }^{3}$ | East Africa |  | R．B．Loder． |
| 151 | $5{ }^{\frac{7}{8}}$ | $5{ }^{3}$ | Do． | ． | Capt．F．Blacker． |
| $15 \frac{1}{8}$ | $5 \frac{1}{2}$ | $2 \frac{1}{2}$ | Do． | ． | R．L．Scott． |
| 15 | 51 | 1 \％${ }^{\frac{7}{3}}$ | Do． | ． | Capt．R．Clemm． |
| 15 | $5 \frac{1}{2}$ | $5 \frac{3}{8}$ | Do． | ， | P．F．Ifadow． |
| 15 | $5{ }^{\frac{1}{2}}$ | $4{ }^{\frac{1}{2}}$ | Do． | ． | J．E．R．Oldfield． |
| 15 | 53 | 63 | Somaliland | ． | F．G．Gunnis． |
| 15 | 5 | $4 \frac{3}{}$ | Do． | ． | Lieut．－Col．J．McCall Maxwell． |
| 15 | $5{ }^{3}$ | $4^{\frac{1}{2}}$ | Do． | ． | Capt．H．Maclean． |
| $14 \frac{7}{7}$ | $5 \frac{1}{2}$ | 6 | East Africa | ， | P．Fleming． |
| $14 \frac{3}{4}$ | 5 | ．．． | Abyssinia | ． | N．C．Cockburn． |
| $14{ }^{\text {号 }}$ | $5^{\frac{1}{2}}$ | 51 | East Africa | ， | G．de P．Colvile． |
| $14 \frac{3}{4}$ | 59 | $5{ }^{\text {a }}$ | Somaliland | d | Lieut．－Col．H．G．Mainwaring． |
| $14{ }^{\text {星 }}$ | 58 | 42， | East Africa | ， | C．C．Wilson． |
| 14 | 51 | 21 | Do． | ． | Lieut．－Col．J．H．Patterson． |
| $14 \frac{3}{4}$ | 5 | 3 | Do． | ． | Col．C．F．Blane． |
| $14 \frac{3}{1}$ | 6 | $4{ }^{\frac{3}{4}}$ | Do． | ． | C．Frick． |
| 145 | $5 \frac{1}{4}$ | 5 | Do． | ． | C．Bower Ismay． |
| $14 \frac{5}{8}$ | $5{ }^{\frac{3}{3}}$ | $3{ }^{3}$ | Somaliland | d | A．de L．Long． |
| $14 \frac{1}{2}$ | $5{ }^{\text {a }}$ | $6 \frac{1}{3}$ | East Africa | a | H．S．L．Scott． |
| $14 \frac{1}{2}$ | $5{ }^{\frac{1}{2}}$ | $4{ }^{3}$ | Do． |  | Capt．the Hon．G．H．Douglas． Pennant． |
| $14^{\frac{1}{2}}$ | $5{ }^{\frac{1}{2}}$ | $2{ }^{3}$ | Do． | ． | Hon．W．Guinness． |
| $14 \frac{1}{2}$ | 5 | 43 | Do． |  | A．F．Williams． |



Head of Sable Antelope.

## The SABLE ANTELOPE (Hippotragus niger).

Impengo, Masubia.
Impalampala, Swazi and Zulu.
Ukwa, Makuba.
Potoquani, Southern Bechuana.
Pala-hala, Swahili.
Pala-pala, Makalaka.
Solupi, Masara.

Qualata inchu, Bamangwato and Makololo.
Utjieli, Amandebili.
Kzvalata n'tso, Barotsi.
Qualata Tshumu, Ngami.
Mperembi, Chilala and Chibisa.
Mpalari, M'Rua.
Kantanta, Chila.
Among the leading features of the group of antelopes which includes the present species, the roan antelope, the gemsbuck, addax, etc., are the scimitar-shaped, conical, or spiral horns, which are placed just over the eyes and are present in both sexes, the hairy muzzle, the absence of face-glands, and the long, tufted tail. The upper molar teeth have square grinding-surfaces and tall crowns, like those of oxen. Several of the species have face-markings like those of the gazelles, to which the group is probably related. There are four teats.

From the other members of the group the beautiful sable antelope and its near ally the roan antelope are well distinguished by the scimitar-shaped horns, which arise at an obtuse angle with the plane of the face, as well as by the maned neck, the tufts of long white hair
below the eyes, and the large ears. By far the handsomer of the two is the present species, whose sable coat and great length of horn render the buck the most striking of its tribe. Other distinctive features are the continuance of the white eye-stripe to the muzzle, the length of the mane, and the relatively moderate size of the ears. The sable antelope when wounded is a dangerous antagonist, to be approached with extreme caution; it runs with considerable speed, and possesses much staying power. Height at shoulder, about $4 \frac{1}{2}$ feet. A single horn in the Florence Museum, measured by Mr. F. C. Selous, is 6 I inches on the front curve; and other specimens approximating to, or even exceeding this length are in existence.

Distribution.-From about the centre of the Transvaal northwards to Nyasaland and the adjacent districts of South-East and East Africa, and westwards to Angola. Still abundant in parts of Eastern Mashonaland, and thence towards the coast, as well as on the Batoka plateau to the north of the Zambesi. Scarcer in Central East Africa and Mozambique.
A.-TYPICAL RACE.


| Length on front curve． | Circum－ ference． | Tip to Tip． | Locality | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 48 星 | 10 | 20 | N．W．Rhodesia ． | －Major P．A．Cox． |
| 48 | 9 | $14 \frac{3}{1}$ | Do． | －C．Phillips． |
| 48 | $1 \mathrm{O}_{4}^{1}$ | I $5 \frac{3}{4}$ | Matabililand | ．Major J．P．Grenfell． |
| 47皇 | 10 星 | 21 | Do． | J．Bell． |
| $47 \frac{3}{4}$ | IO | $23^{\frac{1}{3}}$ | Do． | －R．T．Coryndon． |
| $47 \frac{3}{4}$ | $9 \frac{8}{4}$ | $13^{\frac{1}{4}}$ | Do． | －J．L．Philips． |
| 475 | 10 | 13 | Do． | －Guy Nickalls． |
| 47空 | $9^{\frac{3}{4}}$ | 11 | Do． | ．Major E．de L．Hayes． |
| $47^{\frac{1}{2}}$ | 10 | 9 | Do． | －S．R．Price． |
| 47손 | $9 \frac{7}{8}$ | $23 \frac{1}{2}$ | Do． | ．Col．C．Harding． |
| 463 | 10 | $21 \frac{1}{2}$ | British Central Africa | J．B．Davey． |
| 463 | $9{ }^{\frac{1}{4}}$ | 13 | N．E．Rhodesia ． | H．Cookson． |
| 469 | $9{ }^{\frac{1}{4}}$ | 19，${ }^{2}$ | N．IV．Rhodesia． | －Dr．E．H．Tripp． |
| $46 \frac{1}{2}$ | $9 \frac{3}{1}$ | $12 \frac{1}{4}$ | Do． | F．Barker．－ |
| $46 \frac{1}{2}$ | 10 | 15 | Ngamiland | F．T．Garbutt． |
| $46 \frac{1}{2}$ | $9{ }^{\frac{1}{2}}$ | 18 | N．E．Rhodesia ． | E．M．Crosfield． |
| $46 \frac{1}{2}$ | $9 \frac{1}{2}$ | 14 | N．W．Rhodesia． | ．Hon．Sir Arthur Lawley． |
| $46 \frac{1}{4}$ | 10 | 1118 | Do． | G．L．Harrison． |
| $46 \frac{1}{4}$ | $10 \frac{1}{4}$ | $19{ }^{\frac{1}{2}}$ | N．E．Rhodesia ． | Col．C．F．Blane． |
| $46 \frac{1}{4}$ | $9 \frac{1}{4}$ | $21 \frac{1}{4}$ | N．W．Rhodesia ． | ，J．M．Kearney． |
| $46 \pm$ | $9 \frac{3}{4}$ | $5 \frac{1}{4}$ | S．Rhodesia | －Val Gielgud． |
| 46 | 10 | $11 \frac{1}{4}$ | N．W．Rhodesia． | －T．G．Davey． |
| 46 | 95 | 105 | Do． | ．Capt．the Hon．G．H．Douglas－ Pennant． |
| 46 | $10 \frac{1}{4}$ | 21 | Do． | －H．M．P．Hewett． |
| 46 | 104 | $15^{\frac{1}{2}}$ | Do． | －T．Clemens Usher． |
| 46 | $9{ }_{4}^{3}$ | $16 \frac{1}{2}$ | British Central Africa | ．Capt．R．S．Chichester． |
| $45^{3}$ | $10 \frac{3}{4}$ | $12 \frac{1}{2}$ | Do． | ．Sir Edmund G．Loder，Bart． |
| 45量 | $10 \frac{3}{4}$ | $16 \frac{1}{2}$ | Rhodesia ． | ．A．Yale Massey． |
| 45 ${ }^{\frac{3}{\text { a }}}$ | $9{ }^{\frac{3}{1}}$ | I $1 \frac{1}{2}$ | Do． | －C．W．Adams． |
| 451 ${ }^{\frac{1}{2}}$ | $9 \frac{1}{4}$ | I $5 \frac{1}{2}$ | Mashonaland | ．Major G．A．L．Carew． |
| 45 $\frac{1}{2}$ | 1012 | $\cdots$ | N．W．Rhodesia． | －H．B．Marshall． |
| 453 | $10 \frac{1}{2}$ | $13 \frac{1}{1}$ | Do． | －A．C．Brandon． |
| 452 | 10 | 13 | Do． | ．Dr．Cole． |
| 45 ${ }^{\frac{1}{2}}$ | $9 \frac{1}{2}$ | 159 | Do． | －B．Ryan． |
| ¢ 398 | 61 | $6 \frac{5}{8}$ | Mashonaland | －F．C．Selous． |

## OWNER＇S MEASUREMENTS．



E．J．Boake．
Essington Brown．
W．Colson．
C．S．Mann．
．Lieut．－Col．R．B．Fell．

# B.-EAST AFRICAN RACE (H. niger roosevelti). 



| Circum- | Tip to |
| :--- | :--- |
| ference. | Tip. |



The East African race was described, as a distinct species, in 1910 by Mr. Heller on the evidence of a female killed in the Shimba Hills, British East Africa, and said to be paler in colour than the typical race.


Skull and Horns of Sable Antelope, Quanza River District, Angola. Length, 60 inches. In the collection of Mr. J. C. Phillips.

(1) Head of Roan Antelope, and (2) Skull and Horns of the record specimen shot by Major the Hon. C. B. O. Mitford.

## The ROAN ANTELOPE (Hippotragus equinus).

Amōn, Sudani.
Abu uruf, Dinka and Arabic.
$I$-taka, Amandebili.
I-pala-pala chena, Makalaka.
Gwenki, Hausa.
Impengo eetuba, Masubia.
Kwar, Masara.
Klabakila, Basuto.
Ipezea, Chilala and Chibisa.

Mtagaisi, Swazi and Zulu. U-ka-muul-zvi, Makuba.
Qualata, Northern Bechuana.
Kwalata and Etselta, Ngami.
Qualata Tseu, Barotsi.
Tai-hait-sa, Southern Bechuana. Wunderbi, Abyssinian.
Abuí aruf, Sudani.
Chilumbulumbu, Chila.

Its much larger size (height at shoulder, about 4 feet 9 inches), the shorter horns and mane, the larger ears and eye-tufts, and, above all, the grizzled roan or rufous coat, render the present species easily distinguishable from its sable cousin. A marked character of the face of the roan antelope is the cutting-off of the white eye-stripe from the muzzle by a transverse dark bar connecting the dark nose-streak with the brown of the cheeks; while the dark nose-streak itself likewise stops short of the muzzle, which is thus wholly white. Weight, about 625 lbs . Distribution.-From north of the Vaal and Orange Rivers through East and East Central Africa to the Sudan and Abyssinia, and westward
to Angola，Nigeria，and Senegambia．The name H．equinus langheldi has been applied to the East African race，one Sudani race is known as $H$ ．e．bakeri，the West African as $H$ ．e．gambianus， and others have been named．Gordon Cumming shot roan antelope just north of the Orange River in Griqualand West，where the species has long been exterminated．Nowhere abundant，it is now most plentiful in Mashonaland and neighbouring districts ；in the Transvaal it is only sparsely distributed．South of the Orange River this group of antelopes was formerly represented by the much smaller blaauwbok or blue antelope（ $H$ ．leucophaus），exter－ minated about the commencement of last century．

A．－TYPICAL RACE（H．equinus typicus）．

| Length on front curve． | Circum－ ference． | Tip to Tip． | Locality | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $40 \frac{1}{4}$ | $9{ }^{\frac{1}{2}}$ | $7 \frac{8}{4}$ | Rhodesia | Major the Ifon．C．B．O．Mitford． |
| $34 \frac{1}{2}$ | 9 | 91 | S．Rhodesia | A．T．Reid． |
| $34 \frac{1}{4}$ | 9 | 7 | Okavango Valley | Sir H．J．Goold－Adams． |
| 323 | 85 | 9 ${ }^{\frac{1}{2}}$ | Rhodesia | Sir Abe Bailey． |
| 323 | 94 | $11 \frac{1}{2}$ | Do． | R．E．Gunther． |
| 32⿺𠃊 | 9 | 9 | Do． | W．A．Simpson Hinchliffe． |
| 32 | － $9 \frac{1}{2}$ | 12 | Hanyani Valley ． | F．C．Selous． |
| 315 | $9 \frac{1}{2}$ | $5^{\frac{1}{2}}$ | South Africa | Sir Edmund G．Loder，Bart． |
| $31 \frac{1}{2}$ | $9{ }^{\frac{1}{2}}$ | $11 . \frac{7}{8}$ | Mashonaland | F．C．Selous． |
| $31 \frac{1}{2}$ | $10 \frac{1}{4}$ | 8 星 | Angola ． | Surgeon C．G．Sprague，R．N． |
| $31 \frac{1}{2}$ | 9 | 101 | N．W．Rhodesia | Col．Lord Douglas Compton． |
| ¢ $31 \frac{1}{2}$ | 7 | $13{ }^{\frac{1}{2}}$ | Do． | Capt．E．C．Hamilton． |
| 31年 | 9 9 | $14{ }^{1}$ | N．E．Rhodesia | G．Sandeman． |
| $31 \frac{1}{4}$ | 9 | 13 | N．W．Rhodesia | J．Bell． |
| 31 | 8量 | 13 | Mashonaland | I．A．Jameson． |
| ＋ $30 \frac{1}{2}$ | 7 | $7{ }^{\text {3 }}$ | Do． | F．C．Selous． |
| $30 \frac{1}{2}$ | 9 | $13^{\frac{1}{4}}$ | South Africa | G．Richards． |
| 3012 | 9 | $13 \frac{1}{2}$ | Angola | Major Boyd A．Cuninghame． |
| $30 \frac{1}{2}$ | 10 | $5^{\frac{3}{4}}$ | Matabililand | Capt．Lord H．Seymour． |
| $30 \frac{1}{8}$ | 91 | 13 | British C．Africa | Dr．J．E．S．Old． |
| 30 | $9{ }^{\frac{3}{4}}$ | 5 | Rhodesia | Capt．G．M．Spencer－Smith． |
| 30 | $9{ }^{\frac{1}{2}}$ | $6 \frac{3}{4}$ | British C．Africa | Capt．G．M．P．Hawthorn． |
| 30 | 10 | $11{ }^{\frac{1}{2}}$ | N．W．Rhodesia ． | Capt．L．C．Brodie． |
| 30 | 88 | I $3 \frac{1}{8}$ | ？ | Sir Owen Philipps． |


| Length on <br> front curve． | Circum－ <br> ference． |
| :---: | :---: |
| $29 \frac{7}{8}$ | $10 \frac{1}{8}$ |
| $29 \frac{7}{8}$ | $9 \frac{5}{8}$ |
| $29 \frac{3}{4}$ | $9 \frac{7}{5}$ |
| $29 \frac{33}{4}$ | $9 \frac{1}{4}$ |
| $29 \frac{5}{8}$ | $8 \frac{7}{8}$ |
| $929 \frac{1}{2}$ | 7 |


| $39^{\frac{1}{4}}$ | $\cdots$ |
| :--- | ---: |
| 35 | $9 \frac{1}{2}$ |
| $3 \mathrm{I}^{\frac{1}{2}}$ | $10^{\frac{1}{2}}$ |
| $30 \frac{1}{2}$ | $9 \frac{3}{5}$ |

Tip to Tip．Locality．
I45 Matabililand
II $\frac{1}{4}$ Mashonaland Do．

6 N．W．Rhodesia ．
9 Do．
$6 \frac{1}{4}$ British C．Africa

Owner．
W．Van Ness．
Hon．Walter Rothschild．
Sir John Willoughby，Bart．
Duke of Westminster．
Capt．W．F．Reichwald．
R．H．Storey．

## OUNER＇S MEASUREMENTS．

| $\ldots$ | Tokwi Valley，South Rhodesia |  |  |
| :---: | :---: | :---: | :---: |
| $8 \frac{1}{2}$ | South Africa |  |  |
| 115 | Angola | ． | ． |
| 9 |  | ？ |  |

South African Museum （R．C．Camp）．
A．Ohlsson．
E．P．Cooper．
A．F．Williams．

# B．－SUDANI RACE（H．equinus bakeri）． 



| $37 \frac{1}{4}$ | 10 |
| :--- | :---: |
| $34 \frac{1}{2}$ | 10 |
| 34 | $9 \frac{3}{4}$ |
| 34 | $9 \frac{1}{4}$ |
| $33 \frac{1}{4}$ | 10 |
| 33 | $8 \frac{3}{4}$ |
| 33 | $9 \frac{1}{2}$ |
| $32 \frac{3}{4}$ | 9 |
| $32 \frac{1}{2}$ | 9 |
| $32 \frac{1}{2}$ | $9 \frac{1}{4}$ |
| $32 \frac{1}{2}$ | $9 \frac{3}{4}$ |
| $32 \frac{1}{2}$ | 9 |
| $32 \frac{1}{4}$ | 10 |
| $32 \frac{1}{4}$ | $9 \frac{1}{4}$ |
| $-32 \frac{1}{4}$ | $9 \frac{7}{8}$ |
| 32 | $9 \frac{5}{4}$ |
| 32 | $9 \frac{1}{4}$ |
| 32 | $9 \frac{1}{6}$ |
| $3 \frac{3}{4}$ | $9 \frac{3}{4}$ |

Tip to Tip．Locality．
$7 \frac{1}{4}$ Sudan
9 Do．
$3 \frac{1}{\text { 寺 Do．}}$
$5 \frac{3}{8}$ Do．
$17 \frac{1}{4}$ Do．
Io Do．
65 Do．
$14 \frac{3}{4}$ Do．
$12 \frac{1}{4}$
13新
15
．．．Do．
8 量 Do．
II
13\％Do．
$5 \frac{3}{4}$ Do．
13
13年
115 Do．

Owner．
P．Niedieck．
Lieut．－Gen．Sir B．T．Mahon．
The late Major J．L．J．Conry．
Major G．de H．Smith．
Marquis Pizzardi．
S．H．Whitbread．
Capt．A．K．Hargreaves．
－Sir Savile Crossley，Bart．
Capt．E．Berry．
Capt．C．R．G．Mayne．
Capt．G．Stewart．
R．McD．Hawker．
G．H．Cheetham．
Lord Villiers．
British Museum（Sir IV．Garstin）．
C．Adeane．
E．D．H．Tollemache．
Norman B．Smith．
Hon．T．G．B．Morgan－Grenville．

## C.-WESTERN RACE (H. equinus gambianus).

(Including II. e. scharicus, of the Lower Shari Valley.)

| Length on front curve. | Circumference. |
| :---: | :---: |
| 33 | $9{ }^{\frac{1}{2}}$ |
| 324 | 9 |
| $30 \frac{1}{2}$ | 9 |
| $29 \frac{1}{2}$ | 9 |
| 29 | $9{ }^{3}$ |
| $-283$ | 85 |
| $\bigcirc{ }^{\text {P }} 8$ 3 | $6 \frac{7}{5}$ |
| $28 \frac{3}{8}$ | $9{ }^{\frac{1}{2}}$ |
| 28 年 | $9 \frac{1}{2}$ |
| 28 | $8 \frac{1}{1}$ |
| 28 | $8 \frac{1}{2}$ |
| $27 \frac{3}{4}$ | $9{ }^{\frac{1}{2}}$ |
| $27 \frac{3}{4}$ | 9 |
| $27 \frac{3}{1}$ | $9{ }^{1}$ |

## D.-EASTERN RACES (H. e. langheldi).

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $29 \frac{3}{4}$ | 9 | 95 | East Africa | K. V. Painter. |
| 2912 | 9 | $5^{\frac{1}{2}}$ | Do. | Gerard Buxton. |
| 29 ${ }^{\frac{3}{8}}$ | 9 ${ }^{\frac{3}{4}}$ | 9 | Do. | - Stephenson R. Clarke. |
| 29 | $9^{\frac{1}{2}}$ | 713 | Do. | M. Bell. |
| 285 | $8{ }^{\frac{7}{8}}$ | 83 | Do. | Walter Jones. |
| $27 \frac{1}{2}$ | $9 \frac{1}{2}$ | $7{ }^{\text {星 }}$ | Do. | Percy C. Madeira. |
| $27 \frac{1}{4}$ | $9 \frac{1}{2}$ | 8 | Do. | - W. L. Spencer Churchill. |
| 27 | $9 \frac{1}{2}$ | $4{ }^{\frac{1}{4}}$ | Do. | A. Vonwiller. |
| $26 \frac{1}{4}$ | 9 | $6{ }^{1}$ | Do. | . Capt. G. F. Phillips. |
| $26 \frac{1}{4}$ | $8{ }_{4}^{1}$ | 3 | Do. | Lieut.-Col. F. Wormald. |
| 26 | $8 \frac{3}{4}$ | $7{ }^{\frac{1}{4}}$ | Do. | - Sir Kenneth Crossley. |
| 26 | $8 \frac{1}{2}$ | $7{ }^{\frac{3}{4}}$ | Do. | Capt. Mackenzie Murray. |
| 259 | 9 | 5 | Do. | W. A. Baird. |
| 259 | 81 | $10 \frac{3}{1}$ | Do. | H. B. Cox. |
| 251 | 9 | $6 \frac{1}{2}$ | Do. | N. Flower. |
| 251 | 913 | 10 | Do. | J. G. Millais. |
| $25^{\frac{1}{2}}$ | $8{ }^{\text {a }}$ | 9 | Do. | W. H. Lindsay. |
| $25 \frac{1}{2}$ | 8 | $9{ }^{\text {a }}$ | Do. | - Capt. R. A. McClymont. |
| 253 | $9{ }^{\frac{1}{2}}$ | 12 | Do. | E. M. Crosfield. |
| 254 | $8{ }_{4}$ | 10 | Do. | Capt. H. C. S. Ashton. |
| $\bigcirc 25$ | 6 | 2 | Do. | C. Bower Ismay. |



Skull and Horns of Gemsbuck. From Mr. F. H. Barber's specimen in American National Collection.

## The GEMSBUCK (Oryx gazella).

Gemsbok, Cape Dutch. Kukama, Bechuana. Ko, Burman.
The long, straight, spear-like horns, of which even the lion fights shy, render the gemsbuck and its more immediate allies an easily recognised sub-group. And even when, as in the white oryx, the horns are scimitar-shaped, they differ from those of the sable antelope by starting in the plane of the face. It is also a noteworthy fact that in the present species the horns of the females are longer and finer, and therefore more prized, than those of the bulls. An adult gemsbuck stands about 4 feet at the shoulder. In addition to the length of
its horns, the species is sufficiently characterised by the presence of a tuft of dark hair on the throat, and the cutting-off of the white eye-stripe from the muzzle by the union of the dark central nose-streak with the black of the cheeks.

Distribution.-The desert regions of South-Western Africa, from the northern Karus of Cape Colony through the Kalahari and Damaraland to Southern Angola, in Mossamedes, and perhaps Benguela. North of the Chobi and eastwards of Khama's country the species appears to be unknown. About 1846 Gordon Cumming found gemsbuck abundant on the northern Karus of Cape Colony; and even now a few linger on the plains to the south of the lower reaches of the Orange River. In the northern Kalahari, where they exist for months without water, they are still abundant. The splendid horns of the gemsbuck are always regarded as prime trophies of the hunter's skill; the finding, riding-down, and shooting of one of these wary and enduring desert-bred antelopes being a feat of which any man, however well mounted, may be deservedly proud.

| length on front. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 48 | S表 | 233 | Bechuanaland | Sir Abe Bailey. |
| $47 \frac{1}{2}$ | $6{ }_{4}^{3}$ | $17 \frac{1}{2}$ | South Africa | The late J. S. Jameson. |
| 46 亳 | 7 | $22 \frac{1}{2}$ | Do. | Sir Owen Philipps. |
| 46 | 7 | $25 \frac{1}{2}$ | Do. | - W. A. Simpson Hinchliffe. |
| $45 \frac{5}{5}$ | $6 \frac{1}{2}$ | $19 \frac{3}{6}$ | ? | Sir Edmund G. Loder, Bart. |
| 9 4 4 ? | $6 \frac{1}{4}$ | $33 \frac{3}{4}$ | Ngamiland | Sir H. J. Goold-Adams. |
| $45^{\frac{1}{4}}$ | $6 \frac{3}{4}$ | $20 \frac{3}{3}$ | Do. | G. Mr. Bond. |
| 45 | $8 \frac{1}{8}$ | $18 \frac{1}{2}$ | Do. | Hon. Walter Rothschild. |
| 45 | 7 | 26 | Do. | - R. H. Venables Kyrke. |
| 44 | $7{ }^{\frac{1}{4}}$ | 20 | S. Wr. Africa | C. G. Carew Elers. |
| $43 \frac{3}{8}$ | 63 | $18 \frac{1}{2}$ | Nata Valley | F. C. Selous. |
| 437 | 65 | $20 \frac{7}{8}$ | ? | Sir Victor Brooke's Collection. |
| $43{ }^{3}$ | $6 \frac{1}{2}$ | $18^{\frac{1}{2}}$ | ? | British Museum. |
| $43 \frac{1}{5}$ | $6 \frac{3}{1}$ | 16 | Kalahari | A. F. Williams. |
| $43 \frac{1}{8}$ | $6 \frac{1}{1}$ | $16 \frac{1}{8}$ | ? | M. Drew. |
| 43 | $6 \frac{1}{2}$ | 22 | ? | W. Y. Campbell. |
| $42 \frac{1}{2}$ | 7 | $20 \frac{1}{2}$ | Bechuanaland | A. Neilson. |

Length Circum- Tip to on front. ference. Tip.

Locality:
Owner.

| $42 \frac{3}{5}$ | $6 \frac{1}{4}$ | $19 \frac{1}{2}$ | Bechuanaland | . |
| :--- | :--- | :--- | :---: | :--- |
| $42 \frac{1}{4}$ | $6 \frac{1}{2}$ | $24 \frac{3}{4}$ | Do. | Capt. F. H. Lehmann. |
| 42 | $8 \frac{1}{2}$ | $24 \frac{1}{2}$ | Do. | Col. St. C. Pemberton. |
| 42 | $6 \frac{1}{s}$ | $20 \frac{3}{4}$ | ? | Capt. the Hon. G. H. Douglas- <br> Pennant. |
| $41 \frac{1}{2}$ | 7 | $21 \frac{1}{4}$ | A. Ryley. |  |
| $41 \frac{1}{2}$ | $7 \frac{1}{2}$ | $18 \frac{1}{2}$ | ? | Dr. S. Martin. |
| 41 | $11 \frac{1}{2}$ | $23 \frac{1}{2}$ | Bechuanaland. | R. T. Coryndon. |

## OWNER'S MEASUREMENTS.




LIead of Beisa.

The BEISA (Oryx beisa).
Biid, Somali. Sala, Danakil.
The beisa may be regarded as the north-eastern representative of the gemsbuck, from which it is distinguished at a glance not only by the absence of a fringe of hair on the throat, but also by the separation of the black nose-stripe from the eye-stripes. There is also no black on the haunches or thighs, and the horns are considerably shorter and less divergent. Height at shoulder reaching 4 feet or rather more. Weight, about 450 lbs .

Distribution.-North-east Africa, from Suakin through Abyssinia to Berbera in Somaliland, and south to the Tana River. The Galla beisa, on account of its darker colouring, is separated as O.b. gallarum ; the Kilimanjaro race, O. b. callotis, is characterised by its tufted ears; and intermediate between this and the typical race is $O . b$. annectans of the Laikipia plateau.

## A．－TYPICAL RACE（0．beisa typica）．

| Length on front curve． | Circum． ference． | Tip to Tip． |
| :---: | :---: | :---: |
| ¢ 39 | $5^{\frac{1}{2}}$ | S |
| $33^{3}$ | $5^{\frac{1}{2}}$ | $11 \frac{1}{2}$ |
| 38 | 7 | 10 |
| 38 | 5 | 13 |
| 378 | 63 | S |
| 375 | 55 | $9 \frac{3}{4}$ |
| ${ }^{1} 375$ | $11 \frac{1}{8}$ | 14 |
| ¢ $37 \frac{1}{4}$ | 6 | 10 |
| $37 \frac{1}{4}$ | 7 | $11 \frac{1}{4}$ |
| $36 \frac{3}{4}$ | $7 \frac{1}{4}$ | 12.1 |
| $36 \frac{1}{2}$ | 6 | 10 |
| 363 | $6 \frac{1}{4}$ | －73 |
| $36 \frac{1}{4}$ | $6 \frac{1}{2}$ | $8 \frac{1}{2}$ |
| $36 \frac{1}{4}$ | $6 \frac{3}{4}$ | $9^{\frac{1}{4}}$ |
| 36 | $6 \frac{1}{2}$ | $10 \frac{1}{2}$ |
| 36 | 6 | 8 |
| 36 | $7 \frac{1}{2}$ | S |
| 36 | $6 \frac{3}{4}$ | 10 |
| $35 \%$ | 54 | 97 |
| 35星 | 63 | 98 |
| ¢ $35{ }^{\text {年 }}$ | $6 \frac{1}{2}$ | 912 |
| ¢ $35 \frac{3}{4}$ | $5 \frac{3}{1}$ | 9 ${ }^{\frac{1}{2}}$ |
| 35番 | $5 \frac{1}{4}$ | $8_{\text {景 }}$ |
| 355 | 7 | 10 |
| ¢ $35 \frac{1}{2}$ | 6 | 11 |
| ¢ $35 \frac{1}{\frac{1}{2}}$ | $5^{\frac{1}{4}}$ | 7 |
| $35^{\frac{1}{2}}$ | 6 | $9 \frac{1}{4}$ |
| $35 \frac{1}{2}$ | $6 \frac{1}{2}$ | $8 \frac{3}{4}$ |
| ¢ $35 \frac{1}{1}$ | 6 | $10 \frac{1}{2}$ |
| 354 | $6 \frac{1}{2}$ | 9 ${ }^{\frac{1}{2}}$ |
| 35．7 | $6 \frac{1}{2}$ | $10 \frac{1}{4}$ |
| 35 | 6 | $7{ }^{\text {孝 }}$ |
| 35 | 6 | 9 |
| 35 | 5 | 9.3 |
| 35 | $5 \frac{3}{4}$ | 6 $\frac{1}{2}$ |
| 35 | 59 | $7{ }^{\frac{5}{5}}$ |
| ¢ 95 | $5 \frac{1}{2}$ | 9 9 |
| 35 | 6 星 | 7 |

Locality：
Hargeisa，Somaliland
East Africa．．

Do．
Abyssinia
East Africa
Do．
Do．
Do．
Somaliland
Do．
East Africa
Somaliland
Gallaland
East Africa
Somaliland
Do．
East Africa
Do．
Do．
Somaliland ．
East Africa．
Do．
Somaliland
East Africa
Do．
Do．
Do．
Somaliland．
East Africa ．
Do．
Do．
Do．
Somaliland．
S．Abyssinia Do．

Somaliland
East Africa ．
Do．

Owner
E．P．Hare．
Capt．WV．H．Wilkin．
Capt．F．H．Span．
N．C．Cockburn．
Capt．W．M．Burrell．
C．Fahnestock．
P．Fleming．
W．N．McMillan．
G．D．E．Chapman．
A．E．Butter．
Rhys Williams．
G．J．A．Troyte．
M．V．Hay．
Col．J．Caswell．
Capt．J．T．Brinkley．
Count J．Potocki．
The late G．G．Longden．
J．L．Baird．
G．F．Archer．
Lord Delamere．
British Museum．
Capt．G．H．Riddell．
Sir Edmund G．Loder，Bart．
J．E．R．Oldfield．
W．F．Whitehouse．
Maj．－Gen．Sir A．N．Rochfort．
C．S．Collier．
Prince Nicolas Ghika．
Capt．Lord Gerard．
G．Fenwick－Owen．
E．V．Hemmant．
W．N．McMillan．
Gen．Sir Arthur Paget．
T．Morse．
Capt．F．L．Livingstone－Learmonth．
A．S．Trevor．
Col．C．F．Blane．
Capt．G．V．Clarlie．

## OWNER＇S MEASUREMENTS．




Head of Fringe－eared Beisa．

## B．－KILIMANJARO or FRINGE－EARED RACE（ 0 ．beisa callotis）．

Distinguished from the typical beisa by the fringe of long hairs surmounting the ears，by the extension of the eye－stripe to the lower jaw，along which it generally runs to join the throat－stripe，by the absence of any black on the front of the legs below the knees，and by the rich fawn of the ground－colour of the upper part of the face． Height at shoulder， 48 inches．

| Length on | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $33^{\frac{1}{2}}$ | 7 | 13 | Makindu | R．B．P．Cator． |
| $33 \frac{1}{1}$ | $7 \frac{1}{1}$ | $1{ }^{1} \frac{1}{2}$ | Near Lake Nalaron | Capt．Mackenzie Murray． |
| 33 | 7 | $9 \frac{1}{2}$ | Kilimanjaro | The late G．G．Longden． |
| 323 | 65 | 115 | East Africa | A．Fowler． |
| 323 | $7{ }^{\frac{1}{2}}$ | ， 12 | Do． | A．Murray Smith． |
| $32 \frac{1}{2}$ | 7 | $15^{\text {量 }}$ | Do． | G．N．Crisford． |
| 32 年 | $7{ }^{\frac{1}{4}}$ | 13 | Do． | Lieut．S．K．Bailey，R．N． |
| 31 ${ }^{\text {采 }}$ | 6 ${ }^{\frac{1}{2}}$ | $8{ }^{3}$ | Do． | H．Fowler． |
| $31 \frac{1}{2}$ | 75 | $9{ }^{\text {3 }}$ | Do． | W．If．Levy． |
| $3{ }^{1}$ | 6 | ıо | Do． | W．M．Greiss． |
| 31 | $7 \frac{1}{4}$ | 10 | Do． | A．IV．Mayo Robson． |
| 931 | $5{ }^{\text {星 }}$ | $12 \frac{1}{2}$ | Do． | J．Leslie． |
| 305 | 61 | $9 \frac{1}{2}$ | Do． | G．de P．Colsile． |
| $30 \frac{1}{2}$ | $5{ }^{\frac{3}{4}}$ | $10{ }^{\frac{1}{2}}$ | Do． | Sir F．J．Jackson． |


| Lenǵth on | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 301 | ... | 6 | Sabaki District | Capt. T. W. Greenfield. |
| $29 \frac{1}{2}$ | 6 | $12{ }^{3}$ | East Africa | Sutton Timmis. |
| 29를 | $6 \frac{7}{5}$ | 10 | Do. | H. G. Watson. |
| $29 \frac{1}{2}$ | $5{ }^{5}$ | $7 \frac{3}{8}$ | Do. | Sir Robert Harrey, Bart. |
| $29 \frac{3}{5}$ | $7 \frac{1}{2}$ | $9 \frac{1}{2}$ | Do. | Capt. R. H. R. Brocklebank. |
| $29 \frac{1}{4}$ | $6 \frac{1}{4}$ | $11 \frac{1}{2}$ | Do. | Count B. Tyskkiewicz. |
| $29 \frac{1}{7}$ | $6 \frac{7}{8}$ | $10 \frac{1}{2}$ | Do. | - Sir J. Hume Campbell, Bart. |
| $29 \frac{1}{4}$ | $6 \frac{3}{1}$ | $12 \frac{1}{2}$ | Do. | . F. C. Stern. |
| 29 | 7 | $10 \frac{3}{4}$ | Do. | David Davies. |
| 29 | $7{ }^{\frac{1}{2}}$ | $10 \frac{1}{4}$ | Do. | . Count A. Tyszkiewicz. |
| 29 | 6 | II | Do. | E. H. Litchfeld. |
| 29 | 51 | $11 \frac{1}{2}$ | D. | . Sir Edmund G. Loder, Bart. |
| 29 | 65 | $13 \frac{3}{5}$ | Do. | Lord Wodehouse. |
| 29 | $5{ }^{\frac{3}{4}}$ | II | Do. | - H. Sampson. |
| 283 | $5{ }^{5}$ | 6 | Do. | H. C. V. Hunter. |
| 9288 | $4{ }^{\frac{3}{4}}$ | $12 \frac{1}{4}$ | Do. | . Henry Charrington. |
| $28 \frac{1}{2}$ | 7 | $10 \frac{1}{2}$ | Do. | . A. Hamilton Gault. |

OWNER'S MEASUREMENTS.

| $93 \frac{3}{4}$ | $5 \frac{3}{4}$ | $14 \frac{1}{2}$ | Kilimanjaro | . | Major F. A. Dickinson. |
| ---: | :--- | ---: | :---: | :---: | :---: | :---: |
| $32 \frac{1}{4}$ | 6 | $12 \frac{1}{4}$ | Do. | . | Do. |

Head of Arabian Oryx. Shot by Mr. D. Carruthers.

## The ARABIAN ORYX (Oryx leucoryx).

This oryx is a smaller animal than the beisa, measuring about 2 feet 8 inches at the shoulder, and is of a whitish colour, with a dark spot on the face, and a large dark patch on each cheek, which meets its fellow beneath the throat; the knees and the front of the lower portion of the legs being blackish brown, and the tail-tuft black. The horns are slightly curved.

Distribution.-The interior of Arabia, especially the Nejd district and the confines of the great desert east of Oman.

| Length on front. | Circumference. | Tip to Tip. |  | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $23 \frac{3}{4}$ | 5 | $9 \frac{1}{4}$ | Arabia | - . | Sir Edmund G. Loder, Bart. |
| 22 | 4 | 10 | Do. | - . | British Museum (P. B. Vander Byl). |
| 915 | $3{ }^{3}$ | $4 \frac{1}{2}$ | Head of | Persian Gulf . | Do. (B. T. Ffinch). |

## OWNER'S MEASUREMENTS.

| $27 \frac{1}{4}$ | $4 \frac{1}{4}$ | $12 \frac{1}{2}$ | Tebuk | . | D. Carruthers. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $26 \frac{1}{1} \frac{3}{6}$ | $4 \frac{3}{4}$ | $10 \frac{1}{2}$ | Arabia | . | . Paris Museum. |



Head of White Oryx.

## The WHITE ORYX (Oryx algazel).

Abū harb, Sudani.
A very distinct species of the genus, agreeing approximately in size with the beisa, but with long recurving scimitar-shaped horns and a generally whitish colouring, showing a more or less distinct chestnut tinge. The chestnut is developed on the neck, shoulders, under-parts, upper portions of the limbs, and the face ; the last corresponding very closely with the dark markings of the beisa in their arrangement.
Distribution.-North-western Central Africa, from Nigeria to Sennar, Kordofan, and parts of Nubia and the Eastern Sudan generally.

| Length <br> on front. | Circum- <br> ference. | Lip to Tip. |  |  | Locality. |
| :---: | :---: | :---: | :---: | :---: | :--- | Owner.


| Length on front． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $42 \frac{3}{3}$ | 61 | 9 | Kordofan | Ifon．Walter Rothschild． |
| $42 \frac{1}{4}$ | $5{ }^{\frac{1}{3}}$ | $10 \frac{1}{2}$ | ？ | Sir Owen Philipps． |
| 42 | $7 \frac{1}{8}$ | $\ldots$ | Northern Territories，Gold Coast | Capt．H．Rearl． |
| ${ }^{1} 42$ | 5 | ．．． | Nigeria ． | Capt．W．D．Wright． |
| ${ }^{3} 417$ | $6 \frac{1}{3}$ | $\ldots$ | Lake Chad | E．B．Macnaughten． |
| $41 \frac{13}{13}$ | 5 | $16 \frac{1}{2}$ | Kordofan | Walter Jones． |
| 41量 | 6 量 | $8{ }^{\text {P }}$ | Dongola | Capt．W．H．Wilkin． |
| $4{ }^{5}$ | 6 | $10 \frac{1}{3}$ | Kordofan | E．N．Buxton． |
| 418 | $6 \frac{1}{2}$ | 9 | Do． | Capt．A．K．Hargreaves． |
| 418 | 63 | $\ldots$ | N．Nigeria | Capt．S．C．Taylor． |
| $40 \frac{1}{2}$ | $5 \frac{3}{4}$ | 64 | Kordofan | Capt．J．C．Graham． |
| $40 \frac{1}{2}$ | 65 | 81 | Do． | Sir Robert Harvey，Bart． |
| ¢ $40 \frac{1}{2}$ | $5^{\frac{1}{4}}$ | 151 | Do． | Do． |
| $39{ }^{\frac{3}{4}}$ | 512 | $14 \frac{1}{4}$ | Do． | The late Prince Henry of Liechten－ stein． |
| 393 | 6 | $4 \frac{1}{12}$ | Do． | British Museum（Major H．N．Dunn）． |
| ¢ $39 \pm$ | $5{ }^{\frac{1}{4}}$ | 6 | Do． | Capt．G．S．Cameron． |
| $39 \frac{1}{4}$ | ， $6 \frac{1}{2}$ | $3^{\frac{1}{2}}$ | Do． | C．E．Ljall． |
| 39 | $5{ }^{\frac{5}{5}}$ | $1{ }^{\text {委 }}$ | Do． | Lieut．－Gen．Sir B．T．Mahon． |
| ${ }^{1} 39$ | 51 | $\ldots$ | N．of Sokoto | Major－Gen．P．S．Wilkinson． |
| 39 | 513 | $10 \frac{1}{4}$ | Dongola | Capt．the Ifon．G．H．Douglas－ Pennant． |

## OWNER＇S MEASUREMENTS．

43 ．．． 15 Kordofan ．．．Major A．J．B．Percival．


Horns of Addax.
In the collection of Sir Edmund G. Loder, Bart.

## The ADDAX (Addax nasomaculatus).

$K$ ūbbăjü, Arabic.
This antelope is another member of the oryx group, but is referred to a genus apart, of which it is the sole representative. Its most distinctive features are the spirally twisted and closely ringed horns (which recall those of the lesser kudu). The general colour in summer is sandy above and whitish below, with a brown patch on the forehead. In winter, at any rate in the case of the typical Tunisian race, the coat is grey and a heavy mass of long brown hair developed on the neck, shoulders, and forehead, although a streak across the face below the eyes, the lips, and a spot on the outer surface of each ear are white. Hoofs very wide and shallow, almost like those of the reindeer. Height at shoulder, about 3 feet 6 inches.

# Distribution．－North Africa，as far south as lat． $7^{\circ}$ I $5^{\prime} \mathrm{N}$ ．in the Egyptian Sudan． 

| Length． |  | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathrm{On}_{n}$ front curve． | Straight line． |  |  |  |  |
| $39 \frac{5}{16}$ | $34^{\frac{1}{2}}$ | $5 \frac{7}{8}$ | 183 | ？ | Sir Edmund G．Loder，Bart．（See illustration．） |
| ¢ $39 \frac{1}{8}$ | 325 | $4 \frac{3}{4}$ | 24 | Sudan | H．Hodgson． |
| 39 | 31 | 6知 | 207 | Dongola ． | ．Capt．the Hon．G．H．Douglas－ Pennant． |
| 39 | 33 | 6 | $20 \frac{1}{2}$ | ？ | Carl Hagenbeck． |
| $38 \frac{1}{2}$ | $30 \frac{1}{2}$ | $6 \frac{1}{2}$ | $12 \frac{1}{2}$ | South Tunisia | ．British Museum（J．I．S． Whitaker）． |
| $37 \frac{3}{4}$ | 31 $\frac{3}{4}$ | 5 ${ }^{\frac{3}{4}}$ | $23 \frac{1}{2}$ | Sahara | ．W．Barry． |
| $37 \frac{1}{4}$ | 31 | $6 \frac{1}{4}$ | $\left.28 \frac{1}{2}\right)$ | Sudan | H．Hodgson． |
| $36 \frac{5}{8}$ | 293 | $6 \frac{1}{2}$ | 13 ） |  |  |
| $36 \frac{1}{2}$ | $31 \frac{1}{2}$ | 6 | 193 | South Tunisia | ．American National Collection． |
| 36 | $30 \frac{1}{4}$ | $6 \frac{1}{4}$ | 183 | Dongola ． | G．Blaine． |
| 36 | $28 \frac{3}{4}$ | $6 \frac{3}{4}$ | 12 | S．IV．Dongola ． | －Major A．J．B．Percival． |
| 353 | 28 | 63 | $13 \frac{5}{8}$ | North Africa | －Hon．Walter Rothschild． |
| ¢ $34 \frac{3}{4}$ | 28 | $4 \frac{3}{4}$ | $7 \frac{1}{2}$ | Do． | Do． |
| $34 \frac{1}{4}$ | 29 | $6 \frac{1}{4}$ | $20 \frac{1}{2}$ | W．of Dongola | －Earl of Kingston． |
| 34 | $29 \frac{1}{2}$ | $5 \frac{3}{4}$ | $14{ }^{\frac{3}{1}}$ | Do． | ．Mr．Justice Hopley． |
| 34 | 29 | 63 | $10 \frac{1}{4}$ | Do． | －Sir Abe Bailey． |
| $33^{\frac{1}{2}}$ | 26 | $5^{\frac{1}{2}}$ | $12 \frac{1}{4}$ | Do． | ．Ilon．R．A．Ward． |
| $32{ }_{4}^{5}$ | $27 \frac{1}{4}$ | 63 | 14 | Do． | －Sir Robert IIarvey，Bart． |
| 325 | $27 \frac{1}{2}$ | $6 \frac{3}{1}$ | 18 | S．W．of Dongola | ．Capt．P．E．Vaughan． |
| 323 | 2718 | $6 \frac{1}{2}$ | 17 | Algeria | A．F．Williams． |
| $31 \frac{1}{2}$ | 26 | 5 ${ }^{\text {星 }}$ | $12 \frac{1}{4}$ | Do． | －Major R．Rankin． |

OWNER＇S MEASUREMENTS．
$35 \frac{1}{2} \quad 30$ 弪 $\quad 6 \frac{1}{2} \quad 20 \quad$ ？ $\begin{array}{lllll} & \end{array}$


Skull and Horns of Four－horned Antelope．

## FOUR－HORNED ANTELOPE or CHOUSINGHA （Tetraceros quadricornis）．

This antelope，which was formerly classed with the African duikers，is now regarded as a relative of the nilgai．Typically there are two pairs of horns，and the face－glands form deep slits ；the females being hornless．The upper molar teeth have low，squared crowns． Height at shoulder，about 25 inches，and weight，about 40 lbs ．General colour dull rufous brown，becoming whitish beneath， with the muzzle，the outer surface of the ears， and a line down the front of each leg blackish brown，and some white on the outer side of the pasterns．The front horns are not infrequently mere knobs，and may even be wanting，as in most Madras and Kathiawar specimens．

Distribution．－Peninsular India south of the Himalaya．

| Length of horns on front． <br> Rear．Fore． |  | Circumference．Tip to Tip． |  |  |  | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Rear． | Fore． | Rear． | Fore． |  |  |
| $4^{\frac{1}{2}}$ | 23 | $2 \frac{1}{2}$ | $2 \frac{1}{4}$ | 3 | $\ldots$ | ？ | G．Masters． |
| $4 \frac{1}{2}$ | $2{ }^{\frac{1}{4}}$ | $2{ }^{\text {\％}}$ | $2 \frac{1}{4}$ | 3 | $\ldots$ | ？ | Major J．C．B．Statham． |
| $4 \frac{3}{3}$ | $2 \frac{1}{2}$ | $2 \frac{1}{4}$ | $2{ }^{2}$ | 15 | $2{ }^{7}$ | ？ | Sir Edmund G．Loder，Bart． |
| 4 | $2 \frac{1}{2}$ | $1 \frac{7}{6}$ | $1 \frac{7}{6}$ | 3 | $1 \frac{1}{8}$ | Indore | $\underset{\text { Evans）．Museum（Col．J．}}{\text { British }}$（val |
| 4 | 2 | 3 | $1 \frac{7}{5}$ | 1章 | $2 \frac{1}{2}$ | Karkote Jungle， near Mhow | Col．G．D．F．Sulivan． |
| 4 | $2{ }^{2} \frac{1}{5}$ | 2 | $1 \frac{7}{4}$ | $1 \frac{1}{2}$ | $\ldots$ | ？ | C．Cunningham． |
| 4 | 13 | $2 \frac{1}{2}$ | 1量 | $2 \frac{1}{4}$ | ．．． | Central Provinces | IIon．Walter Rothschild． |
| $3{ }^{\text {䍃 }}$ | I | $2 \frac{1}{4}$ | 2 | 15 | ．．． | Do． | Major A．D．Greenhill－ Gardyne． |
| $3{ }^{\text {竞 }}$ | 2 | $2 \ddagger$ | $2 \frac{1}{1}$ | 15 | ．．． | Do． | W．Moylan． |

## OWNER＇S MEASUREMENTS．

| 5 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | Jhalawar | ． | ．I．IH．Maharaj Rana |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Bahadur of Jhaiawar． |  |  |  |  |  |  |  |  |



Head of Nilgai.

## The NILGAI or BLUE BULL (Boselaphus tragocamelus).

This ungainly and small-horned antelope is an Asiatic representative of a group whose other members, apart from the chousingha, are African. Most are large, and, with the exception of the elands and bongo, lack horns in the females. In the males the horns are angulated in front and generally spirally twisted, but in no case ridged. Face glands are wanting in the African genera, the muzzle is naked, and the tail is either hairy throughout or long and tufted. The upper cheek-teeth have broad crowns. The females have four teats.

From the other members of the group the nilgai is readily distinguished by its short, upright horns, which, although angulated in front, show no distinct spiral twist. With a long and pointed head, this antelope has the fore-legs considerably longer than the hind pair; and it is chiefly to this peculiarity that its ungainly appearance is due. Both sexes have a mane on the neck, but the bulls alone possess a tuft of long hair on the middle of the throat. The general colour of the adult bull is dark grey, tinged with blue or brown ; but the mane and tufts of long hair are black, and streaks and patches on the face, ears, and throat, the chin, the under-parts, the lower surface of the tail, a streak down the buttocks, and a ring above and below each fetlock, are white. Height at shoulder, from 4 feet 4 inches to

4 feet $S$ inches．The late Mr．A．O．Hume shot a specimen in the Aligurh district in 1855 in which the horns measured $11 \frac{3}{4}$ along the front curve，with a circumference of $9 \frac{1}{2}$ ．They were unfortunately destroyed in the Mutiny．
Distribution．－The peninsula of India，from the foot of the Himalaya to the south of Mysore ；common in parts of the Eastern Punjab， the United Provinces，Guzerat，and the Central Provinces．

| Length on front． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $9 \frac{15}{15}$ | $9{ }^{\frac{8}{4}}$ | $5^{\frac{1}{2}}$ | ？ | Sir Edmund G．Loder，Bart． |
| $9{ }^{\frac{1}{2}}$ | $6 \frac{1}{2}$ | 6 | ？ | Major G．F．Mockler． |
| $9 \frac{1}{2}$ | $7 \frac{1}{2}$ | $6 \frac{1}{4}$ | ？ | J．Whitaker． |
| $9{ }^{3}$ | 83 | 55 | Nepal Terai | Capt．J．L．Sleeman． |
| $9{ }^{1}$ | $6 \frac{3}{7}$ | $4{ }^{\frac{7}{3}}$ | ？ | British Museum． |
| $9 \frac{1}{4}$ | $7{ }^{\text {采 }}$ | $7{ }^{\text {\％}}$ | ？ | Capt．G．W．Hemans． |
| 9 | 65 | $3^{\frac{1}{2}}$ | ？ | British Museum（IIume Col－ lection）． |
| 9 | $8 \frac{1}{2}$ | $6 \frac{5}{5}$ | United Provinces | A．V．Wilcox． |
| $8 \frac{7}{3}$ | $6 \frac{1}{2}$ | $5^{\frac{1}{4}}$ | Central Provinces | C．D．Twopeny． |
| $8 \frac{3}{7}$ | 61 | 53 | Bhurtpur | －Lieut．－Col．J．M．Fawcett． |
| $8{ }^{3}$ | 8 | 6 | Central Provinces | Duke of Peneranda． |
| $8^{3}$ | $\ldots$ | 59 | Do． | Capt．L．P．Haviland． |
| $8{ }^{2}$ | $\ldots$ | 7 | Do． | Capt．F．A．B．Johnstone． |
| 8立 | ．．． | $8 \frac{1}{2}$ | ？ | J．Gouldsmith． |
| 85 | $8 \frac{1}{1}$ | 67 | Bhopal | C．H．Payne． |
| $8 \frac{1}{2}$ | $7{ }^{\frac{1}{2}}$ | $4{ }^{\text {a }}$ | Central Provinces | －Capt．E．H．R．Hibbert． |
| 812 | 8 | 54 | Do． | Major C．D．White． |
| $8 \frac{1}{2}$ | $7{ }^{\frac{3}{4}}$ | 5 | ？ | H．T．Cawley． |

OWNER＇S MEASUREMENTS．

| $10^{\frac{1}{4}}$ | $7{ }^{\text {号 }}$ | $5^{\frac{1}{4}}$ | Baratpur | Capt．R．－W．Hutton． |
| :---: | :---: | :---: | :---: | :---: |
| 10 | $8 \frac{1}{2}$ | $6 \frac{1}{2}$ | United Provinces | Capt．W．R．P．Henry． |
| 10 | $9 \frac{1}{2}$ | 5 | Agra | J．W．Pickthall． |
| 915 | $7{ }^{3}$ | 63 | Central Provinces | M．Rawlence． |
| $9{ }^{\frac{1}{2}}$ | $8 \frac{1}{2}$ | $\ldots$ | Bhurtpur | Major E．R．Gordon． |
| 9 | 7 | 7 | Muttra | Capt．S．H．Charrington． |
| 9 | 6 | 512 | Bignor | R．E．Mess，Roorkee． |
| $8{ }^{\text {a }}$ | $\ldots$ | $\ldots$ | Jumna Valley | Indian Museum． |
| 88 | 7 | $\ldots$ | United Provinces | C．Rose． |
| 85 | $\ldots$ | 5 | Oudh | Mess，3rd Gurka Rifles． |



Skull and Horns of Bushbuck in the Collection of the Hon. Walter Rothschild.

## The BUSHBUCK (Tragelaphus scriptus).

Abu Nabah, Sudani.
Assali, Danakil.
Bata, M'Kua.
Chizvalazeala, Chilala and Chibisa.
Boschbok, Cape Dutch.
Ibawara, Lower Zambesi.
Imbabala, Swazi and Matonga.
Inkonka (male), Imbabala (female), Zulus.
M'babala, Barotsi.

M'babala and Serolo buchuthu, Ngami.
Mbazurra, Swahili.
Mazo and Büliümgito, Hausa.
Ngabi, Waganda.
Scrolobutuku, Bamangwato.
Ungurnugu, Makuba.
Dol, Somali.
Decula, Abyssinian.
Shichibange, Chila.

The bushbucks, or harnessed antelopes, form an extensive group of species nearly allied to the kudus, but usually displaying great sexual differences in the colour of the coat, and generally having a simpler spiral to the horns. The docs are nearly always striped with white on a chestnut ground, but the bucks may be darker and more uniformly coloured. As in the kudus, the females are hornless. The true bushbuck is the smallest and at the same time the most widely spread member of the group, having many local races. The height at the shoulder ranges from $2 \frac{1}{2}$ to 3 feet, and the weight from 100 lbs . to I 70 lbs . Bucks have a crest of long hair, which may be white and erectile along the middle of the back; while in many, and especially
the southern races, there is a collar round the neck on which the hair is quite short. In the Abyssinian T. scriptus decula, which ranges into the forests bordering the Webbe in Somaliland, and is known as dol, the build is low and stout, and the general colour cinnamon, the light stripes being nearly obsolete. The Nile T. s. bor is allied. In the West African T. s. typicus, from West, Central, and South-Central Africa, the ground-colour is bright rufous, and the spots and stripes are very conspicuous. In the Limpopo $T$. s. roualeyni the bucks are dark brown, with only faint indications of white markings, but in the Cape T. s. sylvaticus the colour is dark brown without transverse white stripes, and the spots are reduced to a few indistinct ones on the haunches and behind the shoulder. The bucks of the Arusi T. s. meneliki are nearly black, with much white on the legs and a dark dorsal crest ; and those of the smaller Shoan T. s. powelli are also dark, but with white tips to the dorsal crest and dark legs. Many other races have been named, several based on specimens in the collection of Major Powell-Cotton.

As an abnormality, females may carry horns. In bushbuck, kudu, and nyala the outer edge of the tips of the hoofs is rounded, thus producing very characteristic slots.

Many of the following belong to the Cape T. s. sylvaticus, but the one from the Limpopo represents $T$. s. roualeyni, while the specimens from Nyasaland and neighbouring districts belong to other races.



The following belong to the West African T. s. typicus:-

| Length on front curve. | Circumference. | Tip to | Localit |  |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| i $3 \frac{1}{1}$ | 5 | $4^{\frac{1}{2}}$ | N. Nigeria | . | . | . Capt. W. M. Fowler. |
| 13 | $5 \frac{1}{4}$ | 6 | Do. |  | . | - Capt. L. C. Brodie. |
| $12{ }^{1}$ | $5{ }^{1}$ | $2{ }^{\frac{7}{8}}$ | Nigeria |  | . | - Capt. H. T. G. Moore. |
| $12 \frac{1}{4}$ | 5 | 5 | Do. | . | . | . Major J. A. Burdon. |
| $12 \frac{1}{1}$ | 5 | 5 | Do. | . | . | - Capt. G. C. Kelly. |
| $12 \frac{1}{8}$ | $5{ }^{\frac{1}{4}}$ | $\ldots$ | Do. |  | - | . Capt. W. C. Street. |
| 12 | $4{ }^{\frac{1}{2}}$ | $4^{\frac{1}{2}}$ | Do. | . | . | . Capt. W. H. Wilkin. |
| 12 | 5 | $6 \frac{3}{8}$ | Do. | . | . | . Major-Gen. P. S. Wilkinson. |
| 12 | $5{ }^{\frac{1}{4}}$ | $1 \frac{7}{6}$ | Senegambia | . | . | G. Fenwick-Owen. |
| $11 \frac{3}{5}$ | $6 \frac{1}{4}$ | $4 \frac{3}{5}$ | S. Nigeria | . | . | Capt. R. M. Heron. |
| ${ }_{1}{ }^{\text {呆 }}$ | 5 | $4{ }^{3}$ | Nigeria |  | . | Capt. N. F. Baynes. |
| 11 | 5 | $4 \frac{3}{}$ | Sierra Leone | . | . | . R. H. Gill. |
| $10 \frac{1}{2}$ | 5 | $4{ }^{\frac{1}{2}}$ | Nigeria | . | . | Capt. A. K. O'Brien. |
| ${ }^{10 \frac{1}{2}}$ | $4^{\frac{1}{2}}$ | $2 \frac{1}{4}$ | Gambia | . | . | British Museum ( $\mathbf{1}$ 3th Earl of Derby). |
| 1015 | $4{ }^{\frac{1}{4}}$ | $4{ }^{\frac{1}{8}}$ | Gold Coast |  | . | T. E. Fell. |
| $9{ }^{\frac{7}{8}}$ | 4를 | 23 | Do. | . |  | Capt. A. H. Hobbs. |

The following belong to the Masai T. s. masaicus:-

| Length on front curve. | Circum. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $20 \frac{1}{2}$ | 7 | $8 \frac{1}{2}$ | East Africa | Capt. J. A. Morrison. |
| $18 \frac{1}{2}$ | 61 | $5^{\frac{1}{2}}$ | Do. | - R. P. Carroll. |
| $18 \frac{1}{2}$ | $5^{\frac{1}{3}}$ | $8 \frac{1}{2}$ | Do. | - Sir Abe Bailey. |
| 18 | 61 | $7{ }^{\frac{1}{2}}$ | Do. | Gerard Buxton. |
| 18 | $7{ }^{\text {星 }}$ | $7 \frac{1}{4}$ | Uganda | J. Leslie. |
| 18 | 7 | 61 | East Africa | Capt. J. IV. If. D. Tyndall. |
| ${ }^{17 \frac{7}{5}}$ | $6 \frac{1}{7}$ | $5 \frac{7}{8}$ | Do. | Sir John Kirk. |


| Length on front curve. | Circum. <br> ference. | Tip to Tip. | Locality. |  |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $17 \frac{1}{1}$ | $6 \frac{1}{2}$ | 69 | East Africa | . | . | - R. I. Church. |
| $17 \frac{1}{4}$ | 63 | 6 | Do. | . | . | . R. B. Loder. |
| 17 | $7 \frac{1}{8}$ | 712 | Do. | . | . | . J. Hall. |
| 17 | 7 | 8 | Uganda | - | . | . H. Twyford. |
| 17 | 6 | 9 | Do. | . | . | . Marquis of Tweeddale. |
| 17 | 6 | 10 | Do. | . | $\cdot$ | . Capt. C. Brook. |
| $16 \frac{3}{4}$ | 6 | 7 | Do. | . | - | . T. D. M. Cardeza. |
| $16 \frac{3}{4}$ | 61 | $7 \frac{3}{4}$ | Do. | . | . | . J. K. Hill. |
| $16 \frac{3}{7}$ | 7 | 4 | East Africa | . | . | . I. N. Dracopoli. |
| 165 | $5{ }^{\frac{7}{8}}$ | $6 \frac{1}{4}$ | Manda Island | . | . | British Museum. |
| $16 \frac{1}{2}$ | 7 | 7 | East Africa | . | - | Sheffield Neave. |
| $16 \frac{1}{2}$ | 64 | 8 | Do. | . | . | - Major H. B. Dalgety. |
| $16 \frac{1}{2}$ | 7 | 71 | Do. | . | . | . E. H. Litchfield. |
| $16 \frac{1}{2}$ | 6. | $7{ }^{\text {星 }}$ | Do. | . | . | . F. W. Belt. |
| $16 \frac{1}{2}$ | 6 | $4 \frac{1}{4}$ | Do. | - | $\cdot$ | . Count B. Tyszhiewicz. |
| $16 \frac{3}{5}$ | 61 | 9 | Do. | . | . | . Mon. H. Brougham. |
| $16 \frac{1}{4}$ | $6 \frac{1}{2}$ | 7 | Do. | - | . | . F. C. Selous. |

OWNER'S MEASUREMENTS.

| $20 \frac{3}{1}$ | 7 | 6 | East Africa | . | . | C. S. Mann. |  |
| :---: | :---: | :--- | :--- | :--- | :--- | :--- | :--- |
| $18 \frac{9}{4}$ | $7 \frac{3}{3}$ | $6 \frac{3}{1}$ | Unyoro | . | . | . F. A. Knowles. |  |
| $17 \frac{7}{8}$ | $5 \frac{3}{4}$ | 3 | East Africa | . | . | . Capt. C. H. Elliot. |  |
| $16 \frac{1}{4}$ | $6 \frac{1}{4}$ | $5 \frac{1}{2}$ | Do. | . | . | . | S. E. White. |

The following belong to the Upper Nile T. s. bor:-



Head of Bushbuck.

Of the following specimens some belong to the Abyssinian $T$. decula, but the one from the Hawash River represents T. s. multicolor, while the Somali examples may be either $T . s$. delamerei, or $T$. $s$. fasciatus.


## OWNER'S MEASUREMENTS.

| 17 | $\ldots$ | $\ldots$ | Somaliland | . | . |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $16 \frac{1}{2}$ | $6 \frac{1}{4}$ | 5 | Do. | . II. G. C. Swayne. |  |
| $13 \frac{3}{4}$ | $5 \frac{1}{2}$ | $5 \frac{1}{4}$ | Harar, Abyssinia | . | A. II. Straker. |
| $12 \frac{7}{9}$ | $5 \frac{1}{4}$ | $3^{\frac{1}{4}}$ | Hawash Valley, Abyssinia | Viscount Edmond de Poncins. |  |



Horns of Nyala. From a specimen presented by the late Mr. Rowland Ward to the British Museum.

## The NYALA (Tragelaphus angasi).

Nyala, Zulu.
Bo, Nyasa.
This representative of the bushbuck group is a large, delicately built species, standing about 3 feet 6 inches at the shoulder. Weight, about 250 to 300 lbs. In the males the hair is long and soft, forming a fringe on the throat and the under-parts of the body, and a white crest along the back, the general colour being dark slaty grey, with a few indistinct white transverse stripes. In females the hair is short throughout, and the general colour bright reddish chestnut, with numerous distinct white stripes. The lower parts of the legs are tan, and the hoofs are short.

Distribution.-South-east Africa, including Zululand, Delagoa Bay, and Nyasaland; on the West Coast it has been reported from Angola, although this form may indicate a distinct local race.

## Length.

| On front curve. | Straight. | Circumference. | Tip to Tip. | Locality | Owner, |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $3 \mathrm{I} \frac{1}{2}$ | 26 | $8 \frac{1}{2}$ | $12 \frac{3}{4}$ | Zululand | British Museum <br> (Late Kowland TVard). |
| 318 | $2+\frac{5}{8}$ | $8 \frac{1}{4}$ | $9^{\frac{1}{2}}$ | Do. | Hon. Walter Rothschild. |
| $31 \frac{1}{8}$ | 24를 | 81 | $3{ }^{\frac{1}{2}}$ | Shiré Valley, B.C.A. | Fergus Maclagan. |
| $30 \frac{1}{3}$ | $24 \frac{7}{5}$ | $8 \frac{1}{4}$ | 17 | ? | Sir Owen Philipps. |
| 293 ${ }^{\text {a }}$ | 23 | S | 13 | S.E. Africa | Col. Lord Douglas Compton. |
| 293 | 25 | $7{ }^{7}$ | $14 \frac{1}{4}$ | Zululand | Surgeon-Gen. Sir D. Bruce. |
| $29 \frac{1}{4}$ | $\ldots$ | $\ldots$ | $\ldots$ | Delagoa Bay | American National Collection. |
| $29 \frac{1}{4}$ | 24, ${ }^{\frac{3}{2}}$ | 9 | 13 | ? | C. B. Addison. |
| 283 | 221 | $8 \frac{1}{4}$ | $8 \frac{1}{2}$ | S. E. Africa | H. L. Pattinson. |
| $28 \frac{1}{2}$ | $23 \frac{3}{1}$ | S | 123 | Zululand | Hon. Walter Rothschild. |
| $28 \frac{1}{2}$ | 22 | 812 | $7 \frac{1}{2}$ | Do. | C. S. Jameson. |
| 281 | 23 ${ }^{\frac{1}{2}}$ | $7 \frac{3}{4}$ | $11 \frac{1}{2}$ | Do. | H. C. da Costa. |
| 281 | $21 \frac{1}{4}$ | $7 \frac{1}{1}$ | 9 ${ }^{\frac{3}{4}}$ | Delagoa Bay | R. T. Coryndon. |
| 281 | $24 \frac{1}{4}$ | $7 \frac{3}{4}$ | 13 | Do. | Capt. R. Meinertzhagen. |
| $28 \frac{1}{4}$ | 24 | $7 \frac{1}{2}$ | 9 | Do. | Col. E. St. C. Pemberton. |
| $28 \frac{1}{3}$ | 235 | $8 \frac{1}{4}$ | 9 | Do. | H. W. Elliott. |
| 28 | 24 ' | 8 | 15 | Katanga, B.C.A. | John Y ${ }^{\text {rule. }}$ |
| 28 | 23 | $7 \frac{1}{1}$ | $13{ }^{\frac{1}{4}}$ | Near Chiromo, B.C.A. | Surgeon J. Dowson, R.N. |
| 28 | $22 \frac{3}{4}$ | 71 | $17 \frac{1}{2}$ | Delagoa Bay | F. A. R. Zurcher. |
| 27妾 | 22 $\frac{1}{2}$ | 8 | $10 \frac{3}{4}$ | Do. | G. L. Harrison. |
| 273 | $23 \frac{3}{4}$ | 8 | $15 \frac{1}{4}$ | Do. | R. T. Coryndon. |
| 273 ${ }^{4}$ | 22 $\frac{1}{2}$ | $7 \frac{1}{8}$ | 10 | Do. | Marquis Pizzardi. |
| $27 \frac{1}{2}$ | 2212 | S | $9^{\frac{1}{2}}$ | Do. | Major-Gen. Sir J. Dartnell. |
| 2712 | $22 \frac{1}{4}$ | $7{ }^{\frac{5}{8}}$ | $8 \frac{1}{2}$ | Do. | C. D. Rudd. |
| 2712 | 20 | 8 | $5{ }^{1}$ | Do. | R. Elliott-Cooper. |
| $27 \frac{1}{2}$ | $23 \frac{1}{2}$ | $7 \frac{1}{2}$ | 153 | Do. | Sir H. J. Guold-Adams. |
| 27 | $21 \frac{3}{5}$ | $7 \frac{1}{2}$ | 9 ${ }^{\frac{1}{2}}$ | P.E. Africa | H. C. Brocklehurst. |

## OWNER'S MEASUREMENTS.

C. S. Mann.


Skull and Horns of the Mountain Nyala.
From the specimen presented by Mr. Ivor Buxton to the British Museum.

## The MOUNTAIN NYALA (Tragelaphus buxtoni).

Allied in the form of the horns and the colouring of the male to the nyala, but nearly as large as the typical kudu, and the two sexes nearly similar in colour. The male has a dark-brown coat of moderate length, with the usual face-markings; the under surface of the lower jaw, two gorgets on the throat and chest, a few spots on the flanks, and in some cases two stripes-one larger than the otherwhite. There is no fringe on the under-parts, but a crest of longish white and black hairs along the back. Legs with the front surface much like the back in colour, but elsewhere white. Horns with yellow tips; varying somewhat in form, and intermediate in this respect between those of the nyala and the kudu.

## Distribution.-The Sahatu (Shabatu) Mountains of North-western

 Gallaland, to the east-north-east of Lake Zuay (Zwei).| Length. |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| On outside curve. | Straight line. | Circumference. | Tip to Tip. | Locality. | Owner. |
| 44 | $27 \frac{1}{2}$ | IO | 213 | E. of Lake Zuay . | R. Hayne. |
| 39 | $30 \frac{1}{2}$ | $9^{\frac{3}{4}}$ | 22 | Sahatu Mountains. | M. C. Albright. |
| 37 | $26 \frac{1}{2}$ | $9 \frac{1}{4}$ | 21 | Do. | British Museum (Ivor Buxton). |
| $36 \frac{3}{4}$ | 25 | 10 | $14 \frac{1}{2}$ | Arusi Country | Hon. Walter Rothschild. |
| 333 | 264 | 9 ${ }^{\frac{1}{2}}$ | $12 \frac{3}{1}$ | Do. | Lord Wodehouse. |
| $33 \frac{1}{1}$ | 26 | $8 \frac{7}{3}$ | $\ldots$ | Sahatu Mountains | Ivor Buxton. |
| $31 \frac{7}{8}$ | 23章 | 9 ${ }^{\frac{1}{8}}$ | 6 | ? | D. R. Brodie. |
| 293 | $21 \frac{1}{2}$ | 9 | $10 \frac{1}{2}$ | Arusi Country | C. S. Mann. |
| 29 | 23 | $8 \frac{1}{4}$ | $10 \frac{3}{4}$ | ? | Rowland Ward Collection. |



Horns of Situtunga. From Mr. John Yule's specimen.

The SITUTUNGA (Tragelaphus [Limnotragus] spekei).

Situtanga, Barotsi.
Zowi, Chilala and Chibisa.
Nakong, Batauwani of Lake Ngami.
Njobi, Waganda.
$N^{\prime}$ zoi, Lakanga.

Kazi, Cameruns.
Mlluri, Duala.
Nkaya and Nkoko, Congo.
Situtunga, Puvula, Unsuzu, Chobi and Central Zambesi.
Shichinsebe, Chila.

The typical situtunga differs from the other members of the group by the elongation of the hoofs, which are thus adapted for supporting the weight of the body on the spongy soil of the marshes in which these antelopes dwell. The lateral hoofs are much more developed than in the other species. In the typical eastern race from the Victoria Nyanza district the adult males are uniformly greyish brown without stripes, while the females are rufous with faint stripes. On the other hand, in the Zambesi T. s. selousi, the adults of both races are uniformly greyish brown. In the western T.s. gratus, the colouring
of the upper-parts approximates to that of the nyala, the ground-colour of the male being brownish grey, and that of the female bright rufous, marked in both with white stripes on the back and spots on the face and flanks, with two white gorgets on the throat. There is no fringe on the throat. In T. s. albonotatus, of which the habitat is unknown, the white face-markings are larger. Height at shoulder, from about 45 to 48 inches. The horns of the males are longer and more twisted than in other members of the genus, and wear yellow at the tips.
Distribution.-The situtunga is typically an inhabitant of the dense reed-swamps bordering the rivers of Central, South-Central, and East Africa. These antelopes are semi-aquatic in habits, frequently sinking themselves up to the eyes in the water. Consequently they are some of the most difficult of all antelopes to kill ; but by firing the reed-beds in the dry season, the natives are able to spear the situtunga as they cross open water. At night these antelopes leave the reed-brakes for the islands in the rivers, but before dawn return to their impenetrable covert. A few are found on a bushclad rocky island far out in the Victoria Nyanza; in which neighbourhood the species was first discovered by Captain Speke.

## A.--TYPICAL and CHOBI RACES (T. spekei typicus).



Length．

| On front curve． | Straight line． | Circum－ ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 35 | 27 | 7 | 8 | N．E．Rhodesia | －J．E．Hughes． |
| 35 | $2 S$ | $7 \frac{1}{2}$ | $15 \frac{1}{\underline{2}}$ | South end of Lake Tanganyika | John Yule．（See illustration．） |
| 34 | 2 S | 8 | $17 \frac{18}{4}$ | N．E．Rhodesia | ．J．C．Phillips． |
| 34 | 273 | $7 \frac{1}{4}$ | $15 \frac{1}{ \pm}$ | Do． | ．Earl of Kingston． |
| 33 妾 | $27 \frac{3}{4}$ | $7 \frac{1}{2}$ | $14{ }^{\text {崖 }}$ | Do． | R．D．Waterhouse． |
| 334 | 261 | 8 | $16 \frac{5}{8}$ | Okavango Valley | ．Sir H．J．Goold－Adams． |
| $32 \frac{3}{4}$ | $27 \frac{3}{8}$ | $7 \frac{3}{5}$ | 265 | Chinde | Hon．Walter Rothschild． |
| 325 | 27 | $7 \frac{1}{2}$ | 163 | Chobi Valley | F．C．Selous． |
| 321 | $25^{\frac{1}{2}}$ | $7 \frac{1}{2}$ | 73 | N．W．Rhodesia | －A．J．Brandon． |
| 323 | 25 ${ }^{\frac{3}{4}}$ | 8 | $19 \frac{1}{2}$ | Do． | A．F．Williams． |
| 32 | 25 | $8^{\frac{1}{4}}$ | $16 \frac{1}{4}$ | ？ | G．M．Bond． |
| 315 | $26 \frac{1}{2}$ | $S_{4}^{1}$ | $17 \frac{3}{4}$ | N．E．Rhodesia | J．H．Whitehouse． |
| $31 \frac{1}{2}$ | $24 \frac{3}{8}$ | 7 | 161 | Chobi Valley | －British Museum（F．C．Selous） |
| $31 \frac{1}{2}$ | $23 \frac{5}{5}$ | 8 | 15 | Ngamiland | －Mervyn G．Williams． |
| $31 \frac{1}{2}$ | $25^{3}$ | $7 \frac{1}{2}$ | $13{ }^{1}$ | Bangweolo | F．Smitheman． |
| $31 \frac{1}{2}$ | 27 | $7{ }^{\text {5 }}$ | $21 \frac{1}{2}$ | N．W．Rhodesia | Dr．W．D．Waterhouse． |
| 317 | 261 | $7 \frac{1}{2}$ | $24^{\frac{1}{2}}$ | Ngamiland | －H．D．Hannay． |
| $3 \mathrm{I} \frac{1}{4}$ | $25 \frac{1}{4}$ | 8 | I $5 \frac{3}{\text { E }}$ | ？ | N．H．Barton． |
| 31亲 | $25 \frac{1}{4}$ | 73 | $17 \frac{1}{2}$ | Ngamiland | F．T．Garbutt． |
| 31 | $23 \frac{3}{4}$ | 8 | $9^{\frac{1}{2}}$ | ？ | G．Richards． |
| $30 \frac{3}{4}$ | $26 \frac{1}{2}$ | $7 \frac{1}{2}$ | 16 | N．E．Rhodesia | H．Cookson． |
| $30 \frac{1}{2}$ | 2.4 | $\delta_{4}^{1}$ | $14 \frac{8}{1}$ | Barotsiland ． | Sir Edmund G．Loder，Bart． |
| $30 \frac{1}{2}$ | $25^{\frac{1}{2}}$ | $7 \frac{1}{4}$ | $16 \frac{3}{4}$ | Do． | Major J．Carden． |
| $30 \frac{1}{2}$ | $24 \frac{1}{2}$ | $7 \frac{1}{4}$ | $12 \frac{1}{2}$ | B．C．Africa | Grahamstown Museum． |
| $30 \frac{1}{4}$ | $25 \frac{3}{4}$ | $7 \frac{1}{2}$ | $19 \frac{3}{4}$ | N．W．Rhodesia | G．L．Harrison． |
| $30 \frac{1}{4}$ | $25 \frac{1}{4}$ | S | $14 \frac{3}{1}$ | Do． | A．C．Brandon． |
| 30 | $24 \frac{1}{2}$ | S | $14^{\frac{1}{2}}$ | Ho． | ．Sir Owen Philipps． |
| 30 | 243 | $7{ }^{3}$ | 16 | Do． | －E．McClellan． |
| 30 | 24 | 8 | 16 | Bechuanaland | －Sir Ralph Williams． |
| 25\％ | 22 $\frac{3}{1}$ | $7 \frac{1}{3}$ | $13 \frac{1}{2}$ | Angola | ．Major Boyd A．Cuninghame． |
| 24.1 | 21 | $6 \%$ | $9^{\frac{1}{2}}$ | Do． | C．H．Pemberton． |
| 20.3 | 18.1 | $6 \frac{1}{4}$ | Io | Benguela | ．G．W．Penrice． |

## OWNER＇S MEASUREMENTS．

| $34 \frac{1}{4}$ | 2S ${ }_{4}$ | 78 | 21 | N．W．Rhodesia | C．S．Mann． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 33？ | 27雱 | 78 | 19 | ？ | Sir Abe Bailey． |
| ${ }^{1} 318$ | $25{ }^{69}$ | $7 \frac{7}{8}$ | $14 \%$ | Congo． | Paris Mluseum（S．de Brazza）． |



Horns of Western Situtunga from the Gambia.

## B.-WESTERN RACE (T. spekei gratus).

## Length.

| On front curve. | Straight line. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $34{ }^{3}$ | $2 S_{\frac{1}{2}}^{\frac{1}{2}}$ | S | 21 | Gambia | . II. C. Goddard. |
| $32 \frac{3}{4}$ | $27 \frac{1}{4}$ | 93 | $15 \frac{1}{8}$ | Gabun | . Sir Edmund G. Loder, Bart. |
| 325 | 251 | 7 | S | Gambia | Ifon. Walter Rothschild. |
| $30 \frac{1}{4}$ | $26 \frac{7}{5}$ | S | 14.5 | French Congo | Do. |
| 30 | $26 \frac{1}{4}$ | $7 \frac{3}{4}$ | 14.7 | ? | Sir Abe Bailey. |
| $29 \frac{1}{2}$ | $24 \frac{1}{2}$ | S ${ }_{5}$ | 14 | Gabun | American National Collection. |
| $2 S^{\frac{1}{2}}$ | 23 | S | S | Gambia | A. Ohlsson. (See illustration.) |
| $27 \frac{1}{2}$ | $22 \frac{3}{8}$ | $S_{1 \frac{1}{1}}$ | $6 \frac{1}{2}$ | N. Nigeria | J. C. Sciortino. |
| 27 | $23 \frac{1}{4}$ | 8 | $13 \frac{7}{8}$ | Gabun | F. M. Milligan. |
| 253 | $21 \frac{1}{4}$ | 63 | $12 \frac{1}{4}$ | Gambia | Guy 11. Sangster. |
| $24 \frac{3}{4}$ | 21 | 7 | 159 | S. Nigeria | C. E. Stuart. |
| $2+\frac{1}{1}$ | 213 | 75 | 10 | Do. | A. W. Hunt. |

## OWNER'S MEASUREMENTS.

$27 \frac{1}{2} \quad 8_{\frac{1}{2}}^{\frac{1}{2}} \quad 1+^{\frac{1}{4}}$ Nigeria . . . A. F. Williams.

## The KUDU (Strepsiceros capensis, or S. strepsiceros).

| Agarzin, Abyssinian. | Kudu, Hottentot. |
| :--- | :--- |
| Ibala-bala, Amandebili. | Ngomo, Chilala and Chibisa. |
| I-silarwa, Makalaka. | Noro, Mashona. |
| Dwor, Masara. | Tata, M'Kua. |
| Godir, Somali. | Tolo, Bechuana, Barotsi, and |
| Itolo, Basuto. | Ngami. |
| Itshongonons, Swazi. | Unza, Mazubia. |
| Musiloua, Batonga. | Unzva, Makuba. |
| Nylat, Sudani. | Shombololo, Chila. |

Although rather less brilliantly coloured than some of the bushbucks, the two kudus are among the handsomest of all antelopes, their spiral horns, striped coat, and noble carriage rendering them really magnificent creatures. Their chief difference from the bushbucks is to be found in the fuller spiral formed by the horns and the larger ears, both sexes being nearly similar in colour. The special characteristics of the greater or true kudu are the large size (height at shoulder reaching to 4 feet io inches or 5 feet), the presence of a thick fringe of long hair on the throat, and the open spiral of the horns of the bull. The colour is too well known to require description. The Somali kudu (S. c. chora) differs from the typical southern form in having only about five transverse stripes instead of the usual nine or ten.

Distribution.-The kudu, in suitable localities, ranges over the greater part of Africa south of the Sahara, extending from Abyssinia and Somaliland through East and Central Africa to the Cape, and westward across the continent to Angola, where the Congo apparently forms its northern limits. In spite of its bulk, it is an adept at concealment ; and this trait, coupled with its general wariness and acute sense of smell and hearing, has largely contributed to its survival in districts where it is much hunted. Except in the Uitenhage jungles, where it is preserved by British farmers, the kudu has been exterminated from Cape Colony. In Eastern Mashonaland it is still abundant, as it is in the highlands of Somaliland, in which country it is rarely met with on the plains. The Somali form inhabits less thickly wooded country than the southern race, and it is in accordance with this that it has fewer stripes.

Although unrivalled at traversing rocky hills, the kudu is by no means a good performer on the flat (where it seldom allows itself to be surprised), and can be ridden down without much difficulty by a fairly well-mounted hunter. Horned females occur rarely.


Head of Kuclu．

## A．－TYPICAI RACE（S．capensis typicus）．

Length．
On outside

curve． \begin{tabular}{c}
Straight <br>
line．

$\quad$

Circum－ <br>
ference．

$\quad$

Tip to <br>
Tip．
\end{tabular}

| 64 | 41 | I I | 23 | Mashonaland | F．C．Selous． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 63 | $4^{8 \frac{1}{2}}$ | $12 \frac{1}{2}$ | 49 | Macloutsie Valley | E．W．Tompson． |
| 62 星 | 423 | $\mathrm{I}_{1} \frac{1}{2}$ | $37 \frac{1}{4}$ | ？ | Sir Owen Philipps． |
| 61 | 40 | II ${ }_{2}^{1}$ | $14 \frac{1}{4}$ | N．W．Rhodesia | M．Tennant． |
| 605 | 453 | $11 \frac{1}{2}$ | 33 | Macloutsie Valley ． | F．C．Selous． |
| 59⿺𠃊 | $41^{3}$ | 12 | $30 \frac{1}{4}$ | Rhodesia | W．Griffin． |
| $59 \frac{1}{2}$ | 44 | $11{ }^{\frac{1}{2}}$ | 254 | ？ | S．T．Teague． |
| $59 \frac{1}{2}$ | 433 | I I | 38 | South Africa | IV．A．Simpson Hinchliffe． |

Length.


Length．
On outside
curve．

Circum－Tip to
ference．$\quad$ Tip．
$28 \frac{3}{1}$
22
$36 \frac{1}{2}$
93710

Locality．

| S．Rhodesia | ． |
| :--- | :--- |
| Do．C．Dunclas Firth． |  |
| N．W．Rhodesia | ． |
| South Africa ． | ．Sir J．Walton，Part． |
| S．St．C．Pemberton． |  |
| ．F．C．Selous． |  |

F．C．Selous．

## OWNER＇S MEASUREMENTS．

|  | $48 \frac{7}{8}$ | $\ldots$ | $\ldots$ | Ngamiland | American National Collec－ tion．（See illustration．） |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 63咅 | $46 \frac{7}{3}$ | I I $1{ }_{\text {星 }}$ | 45\％ | Upper Shiré V＇alley | Capt．C．H．Stigand． |
| 63雨 | $47 \frac{1}{2}$ | $\ldots$ | $4^{6 \frac{1}{2}}$ | N．IV．Rhodesia | F．J．Nottage． |
| 63 | 44 ${ }^{\frac{1}{2}}$ | $\ldots$ | 423 | Near Teté，Zambesia | Major P．WV．Forbes． |
| 63 | 39 | $10 \frac{1}{2}$ | 12 | ？ | Mr．Justice Hopley． |
| 62 | $\ldots$ | 12. | 27 | Delagoa Bay ． | C．S．Mann． |
| 61 ${ }^{\frac{1}{2}}$ | 45 $\frac{1}{2}$ | 103 | $3+$ | ？ | A．Griffiths． |
| 614 ${ }^{\text {星 }}$ | $42 \frac{1}{4}$ | $1 \mathrm{O}_{4}$ | 24 量 | ？ | J．C．Phillij）s． |
| 605 | 44 | $\ldots$ | 3 I | South Africa． | H．T．and A．II．Glynn． |
| $60 \frac{1}{3}$ | 47 | 10 ${ }^{\frac{1}{2}}$ | $44{ }_{4}^{3}$ | Do． | A．Ohlsson． |

B．－SOMALI（S．c．chora）and EAST AFRICAN（S．c．bea）RACES．

Length．

| On outside curve． | Straight line． | Circum． ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality |
| :---: | :---: | :---: | :---: | :---: |
| 61 | $42 \frac{1}{2}$ | I I | 34 | East Africa |
| $58 \frac{1}{4}$ | 41 年 | I I | 29 | Do． |
| 58 | 43 | 10 | 40 | Somaliland |
| $57 \frac{1}{\text { 全 }}$ | 42 | $11 \frac{1}{4}$ | 4 I | Lake Baringo |
| 57 | 39 | $9{ }^{5}$ | $36 \frac{1}{2}$ | Somaliland |
| 57 | $4^{0 \frac{1}{2}}$ | $9{ }^{\frac{3}{4}}$ | 28 | Do． |
| $56 \frac{1}{2}$ | 35 | $10 \frac{1}{8}$ | 30 | Do． |
| $56 \frac{1}{2}$ | $36 \frac{1}{2}$ | S $\frac{1}{2}$ | $21 \frac{1}{2}$ | Do． |
| 56 | $44 \frac{1}{4}$ | 103 | $44^{\frac{1}{4}}$ | East Africa |
| 55 | $40 \frac{1}{4}$ | 1 I | $35^{\frac{3}{4}}$ | Do． |
| $54 \frac{1}{2}$ | $39 \frac{1}{4}$ | 10 | $27 \frac{1}{1}$ | Sudan |
| $54 \frac{1}{1}$ | 43 | $10: 3$ | 393 | Somalitand |

Owner．
．The late G．G．Longden．
G．F．Archer．
．G．Chetwynd．
－The late H．Hyde Baker．
．H．I．H．the Duc d＇Orléans．
．Capt．J．H．Brockiehurst．
－Sir Edmund G．Loder，Bart．
Dr．R．E．Drake－Brockman．
1I．C．Phipps．
Major the Hon．C．H．C．Guest．
Major the llon．II．Fraser．
Capt．K．A．McClymont．

Length.
On outside

curve. | Straight |
| :---: |
| fine. |




Head of Lesser Kudu. Shot by Mr. Norman B. Smith.

The LESSER KUDU (Strepsiceros imberbis).

Andeiro or Godir, Somali. Gadams, Galla.

Sara, Danakil.
Kungru, Swahili.

Except for its brighter colour, the closer spiral and smaller divergence of the horns, the absence of a fringe of long hair on the throat, the more numerous stripes, white throat-bands, and narrower ears, this antelope might almost pass for a miniature of its larger relation. Height at shoulder, about 3 feet 5 inches. Weight, about 230 lbs .

Distribution.-North-east Africa, from Somaliland to British and German East Africa. This antelope generally goes in pairs or threes, and is partial to the covert of thick bush, from which it seldom emerges except for the purpose of feeding. Its coloration is typical of that of forest-dwelling antelopes, and is essentially of a protective nature.

## Length.

Circumference.

Tip to

$16 \frac{1}{2}$ $17 \frac{3}{4}$
$14 \frac{3}{4}$ I I
...
$4 \frac{1}{1}$
4

II
IO $\frac{1}{2}$
II $\frac{1}{2}$
14
8

17
$14 \frac{1}{2}$
$14 \frac{1}{2}$
115
I 2
...
... Abyssinia .
io Somaliland
Do.
Do.
East Africa
Do.
Do.
Tana Valley
East Africa
Do.
Do.
Do.
Do.
Do.
Do.
Do.
Do.

Locality.
Owner.
Somaliland . . Norman B. Smith.
G. Chetwynd.
I. Higgins.

Hon. Walter Rothschild.
Col. H. G. C. Swayne.
W. W. Ashley.

British Museum (R. McD. Hawker).
A. E. Butter.

- Vicomte de Thiene.
. The late A. H. Neumann.
Lieut.-Col. T. R. Harkness.
Sir Edmund G. Loder, Bart.
IV. F. Whitehouse.
- Lord Delamere.
. Sir John Kirk.
T. W. H. Clarke.

Col. C. C. Ellis.
R. Hayne.

Major G. F. T. Leather.

- W. H. Cobb.
- G. H. Cheetham.
- Capt. G. F. Phillips,
- Major W. E. Stobart.
. Capt. G. V. Clarke.
. Capt. C. Hankey.
- W. H. Lindsay.
C. Bower Ismay.
G. Blaine.
A. J. B. Wavell-Paxton.
- W. N. McMillan.

Capt. W. H. Wilkin.
Lord Wodehouse.
J. Giffard.

| 36 | $27 \frac{18}{4}$ | $7 \frac{1}{2}$ | 20 | $?$ | A. Bolle. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 33 | $\ldots$ | $6 \frac{1}{2}$ | 19 | $?$ | J. C. Phillips. |



Head of Bongo.
The BONGO (Boöcercus euryceros).
This magnificent antelope, which comes next in point of size to the eland and kudu, was long considered a member of the bushbuck group, with which it agrees in the general type of colouring. It differs, however, in that the tail is tufted (like that of an eland), and also by the presence of horns in both sexes. The general colour of the coat is bright chestnut-red, marked with a number of narrow vertical white stripes, a white crescent on the breast, a white chevron on the forehead, two white spots below each eye, and some white marks on the legs; the front of the face being brown, with a tawny patch round each eye. In old bulls the coat becomes mahogany-colour. There is no dewlap, throat-fringe, or frontal tuft, and the hair is short. The worn tips of the horns are yellow. Height, about 4 feet.
Distribution.-West Africa, from Liberia, through Fanti to the Ashkankolu Mountains, the Gabun, and Sierra Leone, and thence
through the forest district to Uganda. The East African represeritative of the species has been named B.e. isaaci.

## TYPICAL RACE.

| Length. |  |  |
| :---: | :---: | :---: |
| Onfront <br> curve. | Straight <br> line. | Circum. <br> ference. |
| $937 \frac{5}{8}$ | 30 | 8 |
| 35 | $29 \frac{7}{8}$ | IO |
| 35 | $29 \frac{1}{4}$ | 11 |
| 34 | 29 | $11 \frac{3}{4}$ |
| 33 | $\ldots$ | 12 |
| $32 \frac{7}{8}$ | 25 | $9 \frac{3}{4}$ |
| $32 \frac{1}{4}$ | 26 | $10 \frac{3}{4}$ |
| $32 \frac{1}{4}$ | $26 \frac{5}{8}$ | $10 \frac{1}{2}$ |
| 31 | $\ldots$ | 11 |
| $30 \frac{1}{2}$ | 26 | $10 \frac{3}{4}$ |
| $30 \frac{1}{4}$ | $24 \frac{1}{2}$ | $9 \frac{1}{2}$ |
| 30 | $24 \frac{1}{8}$ | $9 \frac{5}{8}$ |
| 30 | $25 \frac{3}{4}$ | $10 \frac{1}{2}$ |
| $29 \frac{1}{2}$ | $25 \frac{7}{3}$ | $99 \frac{3}{4}$ |
| $28 \frac{1}{2}$ | $25 \frac{1}{4}$ | 10 |
| $28 \frac{1}{2}$ | 24 | 9 |
| $927 \frac{1}{2}$ | $24 \frac{1}{8}$ | $7 \frac{1}{2}$ |

Tip to
Tip.
9
II
$8 \frac{3}{4}$
16
14
5
$15 \frac{5}{8}$
I2 $\frac{1}{4}$
11
$13 \frac{1}{2}$
$9 \frac{1}{4}$
$11 \frac{1}{4}$
$13 \frac{3}{4}$
$10 \frac{1}{8}$
$10 \frac{3}{8}$
$5 \frac{3}{4}$
$4 \frac{1}{2}$

Locality.
Owner.

| Ashanti . . . |  |  |
| :---: | :---: | :---: |
| Do. | - | IIon. Walter Rothschild. |
| Do. |  | D. H. M. Boyle. |
| Ivory Coast | . | British Museum (G. Chetwynd). |
| Ashanti | . | T. E. Fell. |
| Gold Coast | . | Capt. T. W. Breckenridge. |
| Do. | . | Ivor Lewis. |
| Togoland |  | C. Beddington. |
| Do. | . | British Museum. |
| Sierra Leone | . | Capt. E. J. Carter. |
| West Africa |  | Sir Abe Bailey. |
| Ashkankolu Mountains |  | British Museum. |
| Sierra Leone | . . | Capt. E. R. A. Hall. |
| Gabun |  | British Museum (P.Du Chaillu). |
| Cameruns | . | J. C. Philipps. |
| Togoland |  | Hon. Walter Rothschild. |
| Gold Coast . |  | Do. |



Head of Eland.

The ELAND (Taurotragus oryx).

Du, Masara.
I-pofo, Makalaka.
Eland, Cape Dutch.
Impofo, Amandebili.
Insefo, Masubia and Batonga.
Mofo, Mashona.
Moju, Galla.
Mpofu, Barotsi and Ngami.

Ntamu, Waganda.
Msongo, Chilala and Chibisa.
U-schefo, Macuba.
Pakala, Makua.
Pofo, Bechuana.
Mpofu, Swahili.
Bŭggă, Sudani.
Musefu, Chila.

Eland, which are the largest of all antelopes, resemble the bongo in the presence of horns in both sexes; these forming a close spiral like a screw, with an upward and outward direction. They likewise resemble the bongo in possessing a long, tufted, ox-like tail, but have a distinct dewlap. Horns of cows are more slender than those of bulls.

Bulls of the eland stand from 5 feet 9 inches to perhaps as much as 6 feet at the shoulder．They have a large tuft of hair on the forehead，and the horns are of moderate length and stoutness．The typical race（ $T$ ．oryx typicus），which formerly extended from the Cape nearly to the Zambesi，has a uniformly tawny skin，without transverse white stripes or a dark brown band above the knees，and appears to be the largest form．Farther north a dark brown knee－band is assumed by adult bulls；and towards the Zambesi，and thence north and east into the heart of the continent，the bulls have not only this dark knee－band，but the body in both sexes is marked by fine vertical white lines．The Zambesi race is named T．oryx living－ stonei．In Mashonaland eland show an incomplete white chevron on the face，with a large brown tuft on the forehead ；this race，as typified by heads figured in A Hunter＇s Wanderings，has been called T．o．selousi． In the British East African T．o．patiersonianus the sides of the fore－ head are chestnut in place of dark brown，a white chevron is present， the frontal tuft is shorter，and the pasterns are black behind instead of white．Westward the species ranges into Angola．

Throughout Southern Africa，largely owing to the skin－hunters， eland are now becoming exceedingly scarce ；and they have already more or less completely disappeared from Cape Colony，Natal，the Orange River Colony，Griqualand West，and the Transvaal．In the Northern Kalahari，where they exist for a great part of the year with－ out water，large herds still remain．Occasionally female eland develop horns in which the spiral is almost obsolete and the length exaggerated．

> A.-ZAMBESI RACE (T. oryx livingstonei).

| Length on front of horn． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 37 | 123 | $23 \frac{3}{4}$ | Barotsiland（N．W．R．） | T．G．Davey． |
| $34 \frac{3}{4}$ | $11 \frac{1}{2}$ | 27 | B．C．Africa | F．E．F．Jones． |
| 34 | $12{ }^{\frac{3}{4}}$ | 22 $\frac{1}{2}$ | N．W．Rhodesia． | Lieut．－Col．H．W．Wilberforce． |
| 33 年 | 123 | 19 | N．E．Rhodesia | H．Cookson． |
| 33 | $13 \frac{1}{2}$ | $14 \frac{1}{4}$ | N．W．Rhodesia． | Major C．L．Graham． |
| 323 | $12 \frac{1}{2}$ | $21 \frac{1}{4}$ | Do． | Dr．Ellacombe． |
| 32 $\frac{1}{2}$ | 13 秷 | $22 \frac{3}{4}$ | Do． | G．Mitchell． |
| $32 \frac{1}{4}$ | 113 | 159 | Do． | G．F．Watherston． |
| 32 | $13 \frac{1}{4}$ | 12.3 | Rhodesia | Major C．A．Sykes． |
| 318 | $12 \frac{1}{3}$ | 22.3 | Do． | Hon．Walter Rothschild． |
| 31委 | 1 I | $17 \frac{1}{2}$ | Do．．． | T．N．G．Jennings． |

front of horn

Circum． ference．

Tip to Tip．
$12 \frac{1}{2}$
$20 \frac{3}{4}$
$15^{\frac{1}{4}}$
22

| $31 \frac{1}{2}$ | 123 ${ }^{\frac{3}{4}}$ | 1212 |
| :---: | :---: | :---: |
| $31 \frac{1}{2}$ | 12 | 203 |
| $31 \frac{1}{2}$ | 13 | 15 ${ }^{\frac{1}{4}}$ |
| $3 \mathrm{I} \frac{1}{2}$ | 14 | 22 |
| 31年 | $13 \frac{1}{2}$ | 9 |
| $31 \frac{1}{4}$ | $13 \frac{1}{4}$ | 13 ${ }^{\frac{1}{2}}$ |
| $31 \frac{1}{4}$ | I $1 \frac{1}{2}$ | $24^{\frac{1}{2}}$ |
| 315 | $14 \frac{3}{4}$ | $14 \frac{1}{2}$ |
| 31 | 16 | 14 |
| 31 | 11 | $19^{\frac{1}{2}}$ |
| 31 | $12 \frac{1}{2}$ | 15章 |
| 31 | 12 | 18 |
| 3I | 13 | $15 \frac{3}{4}$ |
| 31 | $12 \frac{1}{2}$ | $11 \frac{3}{4}$ |
| $30 \frac{3}{4}$ | $12 \frac{1}{2}$ | $20 \frac{1}{4}$ |
| $30 \frac{1}{2}$ | I $1 \frac{1}{2}$ | $20 \frac{1}{2}$ |
| 3012 | $14^{\frac{1}{4}}$ | 10 |
| $30 \frac{1}{2}$ | 12 | $7^{\frac{1}{2}}$ |
| $30 \frac{1}{2}$ | 12.1 | 218 |
| $30 \frac{1}{2}$ | $13 \frac{1}{2}$ | $17 \frac{3}{4}$ |
| $30 \frac{1}{4}$ | 12 | 1612 |
| $30 \frac{1}{4}$ | I 1 老 | 18 |
| $30 \frac{1}{4}$ | 13 | 20 |
| $30 \frac{1}{4}$ | $12 \frac{3}{4}$ | $20 \frac{1}{4}$ |
| $30 \frac{1}{4}$ | $14 \frac{1}{4}$ | 10 |
| $30 \frac{1}{4}$ | 129 ${ }^{\text {星 }}$ | $15^{\frac{3}{4}}$ |
| 30 | 13 | $16 \frac{1}{4}$ |
| 30 | I $1 \frac{1}{2}$ | 22 |
| 30 | 1 $2 \frac{1}{2}$ | 21 |
| 30 | $14^{\frac{1}{2}}$ | $12 \frac{1}{2}$ |
| 30 | $13{ }^{\frac{1}{2}}$ | IS |
| 30 | $12 \frac{3}{4}$ | $8 \frac{1}{3}$ |
| 30 | $13{ }^{\frac{1}{2}}$ | $12 \frac{1}{1}$ |


| $31 \frac{1}{2}$ | 123 ${ }^{\frac{3}{4}}$ | 1212 |
| :---: | :---: | :---: |
| $31 \frac{1}{2}$ | 12 | 203 |
| $31 \frac{1}{2}$ | 13 | 15 ${ }^{\frac{1}{4}}$ |
| $3 \mathrm{I} \frac{1}{2}$ | 14 | 22 |
| 31年 | $13 \frac{1}{2}$ | 9 |
| $31 \frac{1}{4}$ | $13 \frac{1}{4}$ | 13 ${ }^{\frac{1}{2}}$ |
| $31 \frac{1}{4}$ | I $1 \frac{1}{2}$ | $24^{\frac{1}{2}}$ |
| 315 | $14 \frac{3}{4}$ | $14 \frac{1}{2}$ |
| 31 | 16 | 14 |
| 31 | 11 | $19^{\frac{1}{2}}$ |
| 31 | $12 \frac{1}{2}$ | 15章 |
| 31 | 12 | 18 |
| 3I | 13 | $15 \frac{3}{4}$ |
| 31 | $12 \frac{1}{2}$ | $11 \frac{3}{4}$ |
| $30 \frac{3}{4}$ | $12 \frac{1}{2}$ | $20 \frac{1}{4}$ |
| $30 \frac{1}{2}$ | I $1 \frac{1}{2}$ | $20 \frac{1}{2}$ |
| 3012 | $14^{\frac{1}{4}}$ | 10 |
| $30 \frac{1}{2}$ | 12 | $7^{\frac{1}{2}}$ |
| $30 \frac{1}{2}$ | 12.1 | 218 |
| $30 \frac{1}{2}$ | $13 \frac{1}{2}$ | $17 \frac{3}{4}$ |
| $30 \frac{1}{4}$ | 12 | 1612 |
| $30 \frac{1}{4}$ | I 1 老 | 18 |
| $30 \frac{1}{4}$ | 13 | 20 |
| $30 \frac{1}{4}$ | $12 \frac{3}{4}$ | $20 \frac{1}{4}$ |
| $30 \frac{1}{4}$ | $14 \frac{1}{4}$ | 10 |
| $30 \frac{1}{4}$ | 129 ${ }^{\text {星 }}$ | $15^{\frac{3}{4}}$ |
| 30 | 13 | $16 \frac{1}{4}$ |
| 30 | I $1 \frac{1}{2}$ | 22 |
| 30 | 1 $2 \frac{1}{2}$ | 21 |
| 30 | $14^{\frac{1}{2}}$ | $12 \frac{1}{2}$ |
| 30 | $13{ }^{\frac{1}{2}}$ | IS |
| 30 | $12 \frac{3}{4}$ | $8 \frac{1}{3}$ |
| 30 | $13{ }^{\frac{1}{2}}$ | $12 \frac{1}{1}$ |


| $31 \frac{1}{2}$ | 123 ${ }^{\frac{3}{4}}$ | 1212 |
| :---: | :---: | :---: |
| $31 \frac{1}{2}$ | 12 | 203 |
| $31 \frac{1}{2}$ | 13 | 15 ${ }^{\frac{1}{4}}$ |
| $3 \mathrm{I} \frac{1}{2}$ | 14 | 22 |
| 31年 | $13 \frac{1}{2}$ | 9 |
| $31 \frac{1}{4}$ | $13 \frac{1}{4}$ | 13 ${ }^{\frac{1}{2}}$ |
| $31 \frac{1}{4}$ | I $1 \frac{1}{2}$ | $24^{\frac{1}{2}}$ |
| 315 | $14 \frac{3}{4}$ | $14 \frac{1}{2}$ |
| 31 | 16 | 14 |
| 31 | 11 | $19^{\frac{1}{2}}$ |
| 31 | $12 \frac{1}{2}$ | 15章 |
| 31 | 12 | 18 |
| 3I | 13 | $15 \frac{3}{4}$ |
| 31 | $12 \frac{1}{2}$ | $11 \frac{3}{4}$ |
| $30 \frac{3}{4}$ | $12 \frac{1}{2}$ | $20 \frac{1}{4}$ |
| $30 \frac{1}{2}$ | I $1 \frac{1}{2}$ | $20 \frac{1}{2}$ |
| 3012 | $14^{\frac{1}{4}}$ | 10 |
| $30 \frac{1}{2}$ | 12 | $7^{\frac{1}{2}}$ |
| $30 \frac{1}{2}$ | 12.1 | 218 |
| $30 \frac{1}{2}$ | $13 \frac{1}{2}$ | $17 \frac{3}{4}$ |
| $30 \frac{1}{4}$ | 12 | 1612 |
| $30 \frac{1}{4}$ | I 1 老 | 18 |
| $30 \frac{1}{4}$ | 13 | 20 |
| $30 \frac{1}{4}$ | $12 \frac{3}{4}$ | $20 \frac{1}{4}$ |
| $30 \frac{1}{4}$ | $14 \frac{1}{4}$ | 10 |
| $30 \frac{1}{4}$ | 129 ${ }^{\text {星 }}$ | $15^{\frac{3}{4}}$ |
| 30 | 13 | $16 \frac{1}{4}$ |
| 30 | I $1 \frac{1}{2}$ | 22 |
| 30 | 1 $2 \frac{1}{2}$ | 21 |
| 30 | $14^{\frac{1}{2}}$ | $12 \frac{1}{2}$ |
| 30 | $13{ }^{\frac{1}{2}}$ | IS |
| 30 | $12 \frac{3}{4}$ | $8 \frac{1}{3}$ |
| 30 | $13{ }^{\frac{1}{2}}$ | $12 \frac{1}{1}$ |


| $31 \frac{1}{2}$ | 123 ${ }^{\frac{3}{4}}$ | 1212 |
| :---: | :---: | :---: |
| $31 \frac{1}{2}$ | 12 | 203 |
| $31 \frac{1}{2}$ | 13 | 15 ${ }^{\frac{1}{4}}$ |
| $3 \mathrm{I} \frac{1}{2}$ | 14 | 22 |
| 31年 | $13 \frac{1}{2}$ | 9 |
| $31 \frac{1}{4}$ | $13 \frac{1}{4}$ | 13 ${ }^{\frac{1}{2}}$ |
| $31 \frac{1}{4}$ | I $1 \frac{1}{2}$ | $24^{\frac{1}{2}}$ |
| 315 | $14 \frac{3}{4}$ | $14 \frac{1}{2}$ |
| 31 | 16 | 14 |
| 31 | 11 | $19^{\frac{1}{2}}$ |
| 31 | $12 \frac{1}{2}$ | 15章 |
| 31 | 12 | 18 |
| 3I | 13 | $15 \frac{3}{4}$ |
| 31 | $12 \frac{1}{2}$ | $11 \frac{3}{4}$ |
| $30 \frac{3}{4}$ | $12 \frac{1}{2}$ | $20 \frac{1}{4}$ |
| $30 \frac{1}{2}$ | I $1 \frac{1}{2}$ | $20 \frac{1}{2}$ |
| 3012 | $14^{\frac{1}{4}}$ | 10 |
| $30 \frac{1}{2}$ | 12 | $7^{\frac{1}{2}}$ |
| $30 \frac{1}{2}$ | 12.1 | 218 |
| $30 \frac{1}{2}$ | $13 \frac{1}{2}$ | $17 \frac{3}{4}$ |
| $30 \frac{1}{4}$ | 12 | 1612 |
| $30 \frac{1}{4}$ | I 1 老 | 18 |
| $30 \frac{1}{4}$ | 13 | 20 |
| $30 \frac{1}{4}$ | $12 \frac{3}{4}$ | $20 \frac{1}{4}$ |
| $30 \frac{1}{4}$ | $14 \frac{1}{4}$ | 10 |
| $30 \frac{1}{4}$ | 129 ${ }^{\text {星 }}$ | $15^{\frac{3}{4}}$ |
| 30 | 13 | $16 \frac{1}{4}$ |
| 30 | I $1 \frac{1}{2}$ | 22 |
| 30 | 1 $2 \frac{1}{2}$ | 21 |
| 30 | $14^{\frac{1}{2}}$ | $12 \frac{1}{2}$ |
| 30 | $13{ }^{\frac{1}{2}}$ | IS |
| 30 | $12 \frac{3}{4}$ | $8 \frac{1}{3}$ |
| 30 | $13{ }^{\frac{1}{2}}$ | $12 \frac{1}{1}$ | 31 31 31 3 I 3 I 3 I

$30 \frac{3}{4}$ $30 \frac{1}{2}$

| $31 \frac{1}{2}$ | 123 ${ }^{\frac{3}{4}}$ | 1212 |
| :---: | :---: | :---: |
| $31 \frac{1}{2}$ | 12 | 203 |
| $31 \frac{1}{2}$ | 13 | 15 ${ }^{\frac{1}{4}}$ |
| $3 \mathrm{I} \frac{1}{2}$ | 14 | 22 |
| 31年 | $13 \frac{1}{2}$ | 9 |
| $31 \frac{1}{4}$ | $13 \frac{1}{4}$ | 13 ${ }^{\frac{1}{2}}$ |
| $31 \frac{1}{4}$ | I $1 \frac{1}{2}$ | $24^{\frac{1}{2}}$ |
| 315 | $14 \frac{3}{4}$ | $14 \frac{1}{2}$ |
| 31 | 16 | 14 |
| 31 | 11 | $19^{\frac{1}{2}}$ |
| 31 | $12 \frac{1}{2}$ | 15章 |
| 31 | 12 | 18 |
| 3I | 13 | $15 \frac{3}{4}$ |
| 31 | $12 \frac{1}{2}$ | $11 \frac{3}{4}$ |
| $30 \frac{3}{4}$ | $12 \frac{1}{2}$ | $20 \frac{1}{4}$ |
| $30 \frac{1}{2}$ | I $1 \frac{1}{2}$ | $20 \frac{1}{2}$ |
| 3012 | $14^{\frac{1}{4}}$ | 10 |
| $30 \frac{1}{2}$ | 12 | $7^{\frac{1}{2}}$ |
| $30 \frac{1}{2}$ | 12.1 | 218 |
| $30 \frac{1}{2}$ | $13 \frac{1}{2}$ | $17 \frac{3}{4}$ |
| $30 \frac{1}{4}$ | 12 | 1612 |
| $30 \frac{1}{4}$ | I 1 老 | 18 |
| $30 \frac{1}{4}$ | 13 | 20 |
| $30 \frac{1}{4}$ | $12 \frac{3}{4}$ | $20 \frac{1}{4}$ |
| $30 \frac{1}{4}$ | $14 \frac{1}{4}$ | 10 |
| $30 \frac{1}{4}$ | 129 ${ }^{\text {星 }}$ | $15^{\frac{3}{4}}$ |
| 30 | 13 | $16 \frac{1}{4}$ |
| 30 | I $1 \frac{1}{2}$ | 22 |
| 30 | 1 $2 \frac{1}{2}$ | 21 |
| 30 | $14^{\frac{1}{2}}$ | $12 \frac{1}{2}$ |
| 30 | $13{ }^{\frac{1}{2}}$ | IS |
| 30 | $12 \frac{3}{4}$ | $8 \frac{1}{3}$ |
| 30 | $13{ }^{\frac{1}{2}}$ | $12 \frac{1}{1}$ |

$12 \frac{3}{1}$
$20 \frac{1}{4}$

| Rhodesia | British Museum（F．C．Selous） |
| :---: | :---: |
| N．W．Rhodesia ． | R．C．Wood． |
| Do． | Marquis Pizzardi． |
| Do． | Col．C．Harding． |
| Do． | Dr．Saner． |
| Do． | Norman B．Smith． |
| N．E．Rhodesia | J．E．Hughes． |
| S．E．Africa | H．Knieson． |
| Rhodesia | F．C．Selous． |
| S．Africa ． | W．A．Simpson Hinchliffe． |
| Rhodesia ． | H．H．Williams． |
| Do． | R．T．Coryndon． |
| Do． | Major J．P．Grenfell． |
| Do． | E．McClellan． |
| N．W．Rhodesia ． | J．H．Leche． |
| B．C．Africa | Capt．F．D．Markham． |
| Rhodesia ． | Capt．P．R．Bald． |
| Do． | G．Crompton． |
| Do． | L．Messel． |
| N．W．Rhodesia ． | W．H．Rawnsley． |
| S．Rhodesia | W．Harcourt Webb． |
| B．C．Africa | E．Sharpe． |
| Do．． | A．R．Andrew． |
| N．W．Rhodesia | R．Campbell Heathcote． |
| Do． | A．de L．Long． |
| Do． | J．E．R．Oldfield． |
| Do． | Capt．R．A．McClymont． |
| Do． | Sir Randolph Baker，Bart． |
| Do． | Capt．Mackenzie Murray． |
| S．Rhodesia | A．Doughty． |
| N．E．Rhodesia | P．M．Stewart． |
| Do． | Earl of Kingston． |
| Do． | A．Dickinson． |


| Length on front of horn． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 30 | $1 \mathrm{I} \frac{1}{2}$ | $13 \frac{1}{2}$ | B．C．Africa | C．B．C．Storey． |
| 30 | 14 | $17 \frac{1}{2}$ | Rhodesia | H．C．da Costa． |
| 30 | 13 | 213 | N．W．Rhodesia | G．L．Harrison． |

## $B .-E A S T$ AFRICAN RACE（T．oryx pattersonianus）．

Length on Circum－
front of horn．ference．

| $32 \frac{1}{4}$ | 13 | 16 |
| :--- | :--- | :--- |
| $31 \frac{5}{8}$ | $10 \frac{1}{4}$ | $25 \frac{1}{2}$ |
| 30 | 11 | $13 \frac{1}{2}$ |
| 30 | 12 | $17 \frac{1}{4}$ |
| 29 | $12 \frac{3}{4}$ | $16 \frac{1}{4}$ |
| 29 | 12 | 14 |

$28 \frac{3}{4} \quad 13 \frac{3}{4} \quad 12 \frac{1}{2}$
$2812 \quad 17 \frac{3}{1}$
28 II $19 \frac{1}{2}$

|  | 273 ${ }^{\frac{3}{4}}$ | II 1 | $1 \mathrm{O}_{2}^{1}$ |
| :---: | :---: | :---: | :---: |

$27 \frac{3}{4}$ I $21 \frac{1}{2}$
$27 \frac{1}{2} \quad 12 \frac{1}{2} \quad 13 \frac{1}{4}$
$27 \frac{1}{2} \quad 11 \frac{1}{2} \quad 9$
$27 \frac{1}{2} \quad 10 \quad 15 \frac{3}{4}$
$2712 \frac{1}{2}$ I $\frac{1}{2}$
27 II $\frac{1}{2}$ II $\frac{3}{4}$
$27 \frac{1}{8} \quad 11 \frac{1}{4} \quad 23$
$27 \quad 13 \frac{1}{2} \quad 12 \frac{1}{2}$
27 II交 $13 \frac{1}{\frac{1}{2}}$
$26 \frac{3}{4} \quad 12 \frac{1}{2} \quad 15$
26 星 $10 \frac{1}{2} \quad 15 \frac{3}{4}$
$26 \frac{1}{2} \quad 12 \quad 9 \frac{1}{4}$
$26 \frac{1}{2} \quad 10 \frac{1}{2} \quad 13$
$26 \frac{1}{2} \quad 11 \frac{3}{4} \quad 16$
$26 \frac{1}{2} \quad 12 \quad 6 \frac{1}{4}$
$26 \frac{1}{2} \quad 10 \frac{1}{2} \quad 16 \frac{1}{4}$
$26 \frac{1}{2}$ 11量 8

Locality．
German East Africa ．J．R．Rolls Richardson．
East Africa ．．Sir F．J．Jackson．
Do．
Do．
Do．
Do．
Do．
Do．
Do．
Do．
Do．
Do．
Do．
Tana Valley
East Africa
Do．
Do．
Do．
Do．
Do．
Do．
N．of Machakos
East Africa
Do．
Do．
Do．
Do．．．J．Hall．


Malformed Horns of Cow Eland in the Collection of Major W. Anstruther Gray.

The following are female specimens:-

| Length on front of horn. | Circumfereace. | Tip to Tip. | Localits. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $39 \frac{1}{2}$ | 7 | $26 \frac{3}{4}$ | ? | Major W. Anstruther Gray. |
| $35 \frac{3}{8}$ | $7 \frac{1}{2}$ | 15 | Angola | C. W. Sharp. |
| $33 \frac{1}{2}$ | 9 | 153 | N.W. Rhodesia. | J. H. Leche. |
| $32 \frac{1}{4}$ | 63 | ... | Chobi Valley | M. C. Greaves-Bagshawe. |
| 32 年 | 63 | $5{ }^{3}$ | South Africa | Sir Abe Bailey. |
| $32 \frac{1}{8}$ | $7 \frac{1}{8}$ | 8 8 | ? | Mr. Justice Hopley. |
| 32 | 8 | 20 | B.C. Africa | Capt. J. S. Brogden. |
| 301 | 7年 | 131 | Do. | R. C. Wood. |
| 293 | 8 | $11 \frac{1}{2}$ | Angola | Sir H. E. M. James. |
| $29 \frac{3}{4}$ | 81 | 19 | N.W. Rhodesia | A. Willis. |
| $29 \frac{1}{4}$ | 73 | 20 | East Africa | F. W. Greswolde-Williams |
| $29 \frac{1}{4}$ | $8 \frac{1}{2}$ | 21 | N. IV. Rhodesia. | R. Beaumont. |


| Length on front of horn. | Circumference. | Tip to Tip. | Locality | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $28 \frac{3}{4}$ | $7 \frac{1}{4}$ | $13 \frac{1}{2}$ | East Africa | Capt. T. H. Rivers Bulkeley. |
| 274 | $7 \frac{3}{4}$ | 181 | Do. | J. Leslie. |
| 271 | $7{ }^{\text {a }}$ | $14^{\frac{3}{4}}$ | Do. | Capt. C. Brook. |
| OWNER'S MEASUREMENTS. |  |  |  |  |
| 41 | $7 \frac{7}{8}$ | 13 | German East Africa | Major von Tiedemann. |
| 36 | $7 \frac{1}{2}$ | $21 \frac{1}{4}$ | ? | P. C. Keytel. |
| $35 \mathrm{~T}^{3} \mathrm{C}$ | $8{ }_{16}{ }^{9}$ | $20 \frac{1}{16}$ | Zomba Plain, B.C.A. | Charterhouse Museum (Dr. Percy Rendall). |

C.-MASHONA RACE (T. oryx selousi).

Length on Circumfront of horn. ference. $932 \quad 9^{\frac{1}{2}}$

Locality.
Owner.

Tip to Tip.
$20 \frac{1}{2}$
Mashonaland
F. C. Selous.


Head of Lord Derby's Eland, from Senegambia.

## LORD DERBY'S ELAND (Taurotragus derbianus).

In this species the horns are larger than in the typical eland, the ears are broader and truncated at the tips, and the dewlap commences at the chin, instead of on the throat. Sub-adult bulls have the forehead chestnut, but a chocolate frontal tuft is developed later; there is an imperfect white chevron below the eyes; the lower part of the face is dark brown ; a dark collar bordered below with white occupies the sides of the neck; the back of the neck carries a dark brown mane. The general colour of the hair is chestnut or rufous in the typical race, but paler in the Sudani race ; the number of white bodystripes being I 4 or I5 in the former and about Io in the latter. Dark knee-bands are present ; and the pasterns are black behind.

Distribution. - The open districts of the interior of Senegambia, Gambia, and Portuguese Guinea, and thence to the Bahr-el-Ghazal, Lado, and the Upper Congo.
A.-SENEGAMBIAN RACE (T. derbianus typicus).

| Length on front of horn | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 421 $\frac{1}{2}$ | $13^{\frac{1}{2}}$ | $44{ }^{\frac{3}{x}}$ | French Congo . | Hon. Walter Rothschild. |
| 42 | 14 | $22 \frac{1}{2}$ | Do. | American National Collection. |
| $36 \frac{1}{2}$ | $15 \frac{1}{2}$ | $18 \frac{1}{1}$ | Senegambia | Major J. C. B. Statham. |
| $36 \frac{1}{2}$ | 14 | $27 \frac{1}{2}$ | Gambia | Hon. Walter Rothschild. |
| 36 | $13 \frac{1}{2}$ | $23 \frac{1}{4}$ | Do. | G. Fenwick-Owen. |
| ¢ $344^{\frac{1}{2}}$ | $\ldots$ | $25^{\frac{1}{2}}$ | Portuguese Guinea | Major P. H. G. Powell-Cotton. |
| 34. | $14 \frac{1}{8}$ | $22 \frac{3}{4}$ | Gambia | Sir Edmund G. Loder, Bart. |
| 34 | $12 \frac{3}{4}$ | $\ldots$ | ? | J. Carr Saunders. |
| 33 年 | 14 | $25 \frac{3}{4}$ | French Guinea . | W. C. Rose. |
| 33 | $13 \frac{3}{4}$ | 26 | Gambia | C. Sharland. |
| $32 \frac{1}{2}$ | 12 $\frac{1}{2}$ | $29 \frac{7}{8}$ | Do. | British Museum (13th Earl of Derby). |
| $32 \frac{1}{2}$ | $9 \frac{1}{4}$ | $12 \frac{3}{4}$ | ? | Sir Edmund G. Loder, Bart. |
| $32 \frac{1}{4}$ | 13 | 234 | Gambia | H.R.H. the Duc d'Orléans. |
| $3{ }^{13}$ | 12 | 20 | Portuguese Guinea | Major P. H. G. Powell-Cotton. |
| 314 | $12 \frac{1}{2}$ | 151 | Gambia | H. C. Gooldard. |
| $30 \frac{7}{5}$ | $10 \frac{3}{4}$ | $26 \frac{3}{4}$ | ? | British Museum (F. W. Reade). |
| ¢ $29 . \frac{1}{2}$ | 104 | 13 | Portuguese Guinea | Vicomte de Thienne. |
| 925 | 9 | $10 \frac{3}{4}$ | Gambia | H. C. Godilard. |
| 9243 | 9 | 61 | Do. | . British Museum (F. W. Reade). |

## B.-SUDANI RACE (T. derbianus gigas).

| Length on | Circumference. | Tip to Tip. | Locality | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 41 | $13 \pm$ | 253 | Bahr-el-Ghazal . | Sir Robert Harvey, Bart. |
| $40 \frac{1}{4}$ | $13 \frac{1}{2}$ | $24 \frac{3}{1}$ | Do. | Capt. R. C. Greenwood. |
| $39 \frac{3}{4}$ | $14 \ddagger$ | 293 | Do. | Hon. Walter Rothschild. |
| 39 ? | $14 \frac{1}{2}$ | 27 | Do. | Capt. J. L. F. Tweedie. |
| 39를 | $12 \frac{1}{4}$ | $3 \mathrm{O} \frac{1}{2}$ | Do. | G. Blaine. |
| $39 \frac{1}{4}$ | 13 | ... | Near Lado, White Nile | Gen. Sir F. R. Wingate. |
| 39 | $14^{\frac{1}{2}}$ | 39. | Near Wau, Bahr-elGhazal. | British Museum. |



| Length on front of horn. | Circumference. | Tip to Tip. | Locality: | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 39 | 14 | 291 | Bahr el-Ghazal. | Capt. R. J. Collins. |
| $3{ }^{1} \frac{1}{2}$ | $13^{\frac{3}{4}}$ | $19 \frac{1}{2}$ | Do. | - Sir Abe Bailey. |
| $38 \frac{1}{2}$ | $15 \frac{1}{4}$ | 33 | Tembura . | - Capt. E. S. Stephenson. |
| 381 | 113 | $22 \frac{3}{4}$ | Bahr-el-Ghazal. | . Major C. A. Wilding. |
| 38 | $14 \frac{1}{2}$ | $25 \frac{1}{7}$ | Do. | Col. A. Colville. |
| $37 \frac{3}{4}$ | 14 | $31 \frac{1}{2}$ | Do. | A. F. Williams. |
| $37 \frac{1}{2}$ | $13^{\frac{3}{4}}$ | $2 S_{4}^{3}$ | Do. | Major A. J. B. Percival. |
| $37 \frac{1}{2}$ | $13^{\frac{3}{4}}$ | 35 | Do. | . Major R. B. Airey. |
| 374 | $14 \frac{1}{2}$ | $23 \frac{3}{4}$ | Yei Valley | . Major P. M. Dove. |
| $36 \frac{1}{2}$ | 14 | $29 \frac{1}{2}$ | Bahr-el-Ghazal. | Capt. G. F. Pridham. |
| $36 \frac{1}{2}$ | $13 \frac{1}{4}$ | $33^{\frac{1}{2}}$ | Do. | - Sir Edmund G. Loder, Bart. |
| 361 | 13 | $\ldots$ | Do. | Capt. J. G. A. Massy. |
| 351 ${ }^{\frac{1}{2}}$ | 14 | 34 | Do. | - Major R. B. Airey. |
| $34 \frac{1}{4}$ | $13{ }^{\frac{1}{4}}$ | $19 \frac{1}{4}$ | Do. | Baron F. Nicolics. |
| $\bigcirc 34$ | $9^{\frac{1}{2}}$ | 291 | Do. | . Capt. H. R. Headlam. |
| ¢ 333 妾 | 101 | $16 \frac{8}{\text { 崖 }}$ | Do. | . Hon. Walter Rothschild. |

Measurements of an old bull, shot near Wau, Bahr-el-Ghazal, by Capt. R. J. Collins (horns $39 \frac{3}{4}$ inches) :-

Height just behind centre of shoulder . . 5 feet 8 inches
Nose to base of tail
Girth 6 inches from fore-leg . . 7 " $1 \frac{1}{2}$ "
Length of tail . . . . 2 " 3 " Length of body . . . 6 „ 2 " Round centre of neck . . . . 4 , $2 \frac{1}{2}$ "
C.-CONGO RACE (T. derbianus congolanicus).
Length on Circumfront of horn. ference.
29 II $19 \frac{1}{2}$ Stanley Falls . . Sir Edmund G. Loder, Bart.
Tip to Tip.
Locality. Owner.


Frontlet and Horns of Count Arpad Teleki's Chamois.

The CHAMOIS (Rupicapra tragus, or R. rupicapra).
The chamois does not belong to the antelopes properly so-called, but represents a group connecting the former to a considerable extent with the true goats, one member of the group being indeed commonly designated the Rocky Mountain goat. Most of these ruminants are more or less goat-like in general appearance, having narrow goat-like molar teeth and short or moderately long tails. Their horns, which are black in colour, are, however, quite distinct from those of the goats, being for the most part cylindrical in section, and curving backwards. From the other members of the group the chamois is at once distinguished by the sharp hook formed by the backward curvature of the horns, which rise almost vertically from the head. The colouring is too well known to need description, although attention may be directed to the dark streak running from the eye to the side of the muzzle. Height at shoulder reaching 32 inches; weight of male, generally about 65 lbs . (although 125 lbs . has been recorded in one case), that of female from 45 to 50 lbs .

Distribution.-The mountains of Central and Southern Europe, from the Pyrenees to the Apennines and Caucasus, and those of Asia Minor. Chamois vary in colour according to season, but
it seems that some races are darker than others．Several local races are recognised，such as the true chamois，or gems，of the Alps；the smaller and lighter coloured izard（R．t．pyrenaica）of the Pyrenees，and the darker R．t．parva of the Cantabrian Mountains of Spain．The Apennine R．t．ornata has the light throat－patch larger，and the upper side also light ；the Carpathian race，not yet named，is very dark，old bucks being nearly black above．The Caucasian $R$ ．t．caucasica is distinguished by its relatively short and stout horns and certain features of the bones of the nasal region of the skull ；while the light－coloured Trebizond R．t．asiatica is likewise distinguished by horn and skull characters． A great feature from an Austrian sportsman＇s point of view is the length of the beard，which in old chamois may measure over eleven inches in length．

| Length on front curve． | Circum－ ference． | Tip to Tip． | Spread． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ¢ $12 \frac{5}{8}$ | $3 \ddagger$ | $5^{\frac{7}{8}}$ | $\cdots$ | Carinthia | J．D．Heaton Armstrong．（See illustration，p．339．） |
| 1 $2 \frac{1}{8}$ | $3{ }^{\frac{1}{2}}$ | 53 | $6 \frac{1}{8}$ | Branu，Carpathians | C．G．Danford． |
| 115 | 48 | 7 | $\ldots$ | ？ | Hon．Walter Rothschild． |
| II ${ }^{3}$ | $3 \frac{5}{8}$ | 75 | $\ldots$ | S．Austria | J．Hamilton Leigh． |
| $11 \frac{3}{5}$ | $3 \frac{5}{8}$ | $5 \frac{7}{16}$ | $\cdots$ | Do． | R．K．Cross． |
| $11 \frac{1}{4}$ | $3 \frac{1}{2}$ | $6 \frac{1}{2}$ | $\cdots$ | ？ | Col．Howard． |
| I $1 \frac{1}{8}$ | 4 | $3 \frac{3}{1}$ | $\ldots$ | Austria | T．R．Luchsinger． |
| II | $3 \frac{1}{2}$ | $4 \frac{3}{16}$ | $\ldots$ | Transylvania | F．C．Selous． |
| I I | $3{ }^{\text {昜 }}$ | $7 \frac{1}{2}$ | ． | Do． | St．George Littledale． |
| II | $3{ }^{3}$ | $7 \frac{1}{2}$ | $\ldots$ | Austria | J．R．Luchsinger． |
| $10 \frac{3}{4}$ | $3{ }^{\frac{1}{2}}$ | $4 \frac{3}{10}$ | $\ldots$ | Tyrol | Sir Edmund G．Loder，Bart． |
| $10 \frac{3}{4}$ | 3 | $4 \frac{1}{4}$ | $\ldots$ | Austria | M．D．V．Holt． |
| ¢ 10 知 | 3 | 54 | $\ldots$ | Do． | Hon．Walter Rothschild． |
| $10 \frac{5}{8}$ | 33 | $5^{\frac{1}{8}}$ | $\cdots$ | ？ | Rev．J．F．Glossop． |
| $10 \frac{1}{2}$ | $3 \frac{9}{16}$ | $\ldots$ | $\ldots$ | Do． | L．R．Rate． |
| ¢ 1010 | $3 \frac{3}{4}$ | $6 \frac{3}{4}$ | $\ldots$ | S．Austria | J．Hamilton Leigh． |
| 101 | $3 \frac{1}{2}$ | $5 \frac{1}{4}$ | ．．． | ？ | E．N．Buxton． |
| 101 ${ }^{1}$ | $3 \frac{1}{4}$ | $5 \frac{1}{4}$ | $\ldots$ | Austria ． | Sir Robert Harvey，Bart． |
| 10 | 32 | $3{ }^{\frac{1}{2}}$ | $\ldots$ | W．Caucasus | A．F．Broadley－Smith． |
| $9{ }^{7}$ | 31 | 3 | $\ldots$ | ？ | Norman Lamont． |
| $9{ }^{\frac{7}{8}}$ | $3{ }^{3}$ | $4{ }^{3}$ | $\ldots$ | ？ | Capt．W．Waring． |
| 9 9 | 35 | 2 | $\ldots$ | Carinthia | R．C．Graves Sawle． |
| $9{ }^{\text {星 }}$ | $2 \frac{3}{4}$ | $6 \frac{1}{2}$ | $\ldots$ | Pyrenees． | D．Davies． |


| Length on fron curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Spread. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $9{ }^{\frac{3}{4}}$ | $3^{\frac{3}{4}}$ | 3 | ... | W. Caucasus | St. George Littledale. |
| $9{ }^{\frac{1}{2}}$ | 3 | $3{ }^{\frac{7}{8}}$ | $\ldots$ | Gerlos | Hon. M. W. Elphinstone. |
| $9 \frac{1}{2}$ | $2 \frac{1}{2}$ | 5 | ... | Pyrenees | P. H. Thomas. |
| 9 | 3 | $5{ }^{1}$ | ... | Do. | Sir Victor Brooke's Collection. |
| 9 | $3^{\frac{1}{2}}$ | 25 | $\ldots$ | Caucasus | Rhys Williams. |
| 8 荽 | 3 | 3 | $\ldots$ | Do. | Prince E. Demidoff. |

## OWNER'S MEASUREMENTS.

| ${ }^{1} 122^{\frac{3}{4}}$ | 418 | $\ldots$ | $7 \frac{7}{8}$ | Hungary | Baron Donald Schönberg. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1218 | $\ldots$ | $\ldots$ | $\ldots$ | Do. | C. G. Danford. |
| ${ }^{2} 12 \frac{1}{4}$ | $4^{\frac{1}{3}}$ | $\ldots$ | $7^{\frac{1}{2}}$ | Retyezat, Carpathians | Count Arpad Teleki. (See illustration, p. 335.) |
| 12 | 4 | $\ldots$ | $\ldots$ | Hinter Riss | H.R.H. the Duke of Saxe-Coburg and Gotha. |
| 12 | $\ldots$ | $\ldots$ | $\ldots$ | Tyrol (?) | Count Arco. |
| 12 | $\ldots$ | $\ldots$ | $\ldots$ | Carpathians | Count Zdenko Kinsky. |
| $1{ }^{1} \frac{1}{2}$ | $3{ }^{3}$ | $3{ }^{3}$ | $4^{\frac{1}{2}}$ | Do. | Archduke Carl Franz Joseph. |
| $11 \frac{1}{2}$ | $\ldots$ | $\ldots$ | $\ldots$ | Retyezat | Count Erbach. |
| $11 \frac{1}{2}$ | $3{ }^{\frac{5}{8}}$ | $6 \frac{7}{5}$ | $\ldots$ | Albreis Morteratch, Engadine | A. E. Pease. |
| $\bigcirc \mathrm{II}^{13}$ | $\ldots$ | $4 \frac{1}{1} \frac{5}{6}$ | $\ldots$ | Retyezat . | Baron A. Nopcsa. |
| $11_{17}^{16}$ | $\ldots$ | $\ldots$ | $\ldots$ | Do. | G. von Kendeffy. |
| 11 | $3{ }^{3}$ | 512 | $\ldots$ | ? | Count John of Meran. |
| $10 \frac{15}{16}$ | 35 | 4 | $\ldots$ | Tyrol | Sir Edmund G. Loder, Bart. |
| 107 | $3{ }^{3}$ | $6 \frac{7}{8}$ | $\ldots$ | Bulgaria. | Dr. Albert von Stephani. |
| 103 | $3{ }^{3}$ | $7{ }^{\frac{1}{2}}$ | $\ldots$ | Herzegovina | Eberhard Hollinek. |
| $\bigcirc \mathrm{CO}_{\frac{3}{3}}$ | $\ldots$ | 53 | $\ldots$ | Retyezat | C. G. Danford. |
| $9 \mathrm{I} \mathrm{O}_{8}^{5}$ | $\ldots$ | $\ldots$ | 7 | S. Austria | R. K. Cross. |
| 105 | $3^{\frac{7}{8}}$ | $4 \frac{1}{2}$ | $\ldots$ | Styria | Dr. H. Sonnenthal. |
| $10 \frac{1}{2}$ | $3^{\frac{1}{2}}$ | $5{ }^{3}$ | $\ldots$ | Austria | H.R.H. the Duke of Braganza. |
| $1 \mathrm{O}_{\frac{1}{2}}$ | $2{ }^{3}$ | 5 | $\ldots$ | ? | Count John of Meran. |
| $10 \frac{1}{2}$ | $3 \frac{1}{2}$ | $4{ }^{\frac{3}{4}}$ | $\ldots$ | Austria | T. V. Holt. |
| $10 \frac{5}{16}$ | $3 \frac{3}{8}$ | 35 | $\ldots$ | S. Austria | J. Kenneth Foster. |
| 10 난 | 3 | 53 | $\cdots$ | Do. | Count Palffy. |
| $910 \frac{1}{4}$ | ... | $\ldots$ | $\ldots$ | Grindelwald | F. A. Labouchere. |
| ı | $3^{\frac{1}{2}}$ | $4^{\frac{1}{2}}$ | $5^{\frac{1}{2}}$ | S. Austria | W. Winans. |
| $8 \frac{1}{2}$ | 3 | $3{ }^{3}$ | ... | N. Spain | Abel Chapman. |
|  |  | killed. |  | ${ }^{2}{ }_{\text {I2 }} 3 \frac{3}{6}$ lbs. not clean, and | horns now measure $11_{1}^{f}$. |



The best Chamois Heads shot by His Majesty the Emperor of Austria.

The following are the best specimens in the collection of His Imperial Majesty the Emperor of Austria, who between I 849 and I902 shot I99I chamois:-

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Date. |
| :---: | :---: | :---: | :---: | :---: |
| ¢ $-11 \frac{1}{1}$ | $3{ }^{3}$ | 65 | Salzkammergut | July 26, 1889. |
| -11 | $3{ }^{3}$ | 53 | Do. | - December io, i859. |
| $-10 \frac{3}{4}$ | $3{ }^{3}$ | $4{ }^{\frac{7}{8}}$ | Do. | ," 28, 1868. |
| $-10 \frac{1}{2}$ | $3{ }^{\frac{7}{8}}$ | $4^{\frac{7}{8}}$ | Do. | July 3I, 1885. |
| $-10 \frac{3}{5}$ | $3{ }^{\frac{3}{8}}$ | 51 | Do. | November 10, 1870. |
| $-10 \frac{3}{8}$ | $3 \frac{7}{8}$ | $4{ }^{\frac{7}{5}}$ | Do. | July 3i, 1885. |
| 9 $-9 \frac{5}{5}$ | $2 \frac{3}{4}$ | $7{ }^{\frac{1}{2}}$ | Do. | . ,, 10, 1886. |



Frontlet and Horns of Chamois, shot by Mr. J. D. Heaton Armstrong.


Head of Himalayan Goral.

HIMALAYAN and BURMESE GORALS (Nemorhædus goral, etc.).
Goral, W. Himalaya. Pji, Par, Rai, Rom, Kashmiri. Sáhari, Sarr, Sutlej Tribes.

The gorals are near relatives of the serows, from which they may be distinguished by their generally smaller size, shorter horns, and absence of face-glands, as well as by certain differences in the conformation of the skull. The horns curve regularly backwards, are conical in form, and marked by small irregular ridges for the greater part of their length. The hair is somewhat rough and shaggy, and the tail considerably longer than in the chamois. Height at shoulder, from 26 to 28 inches; weight, from 58 to 63 lbs.

The following species occur in the Indo-Burmese countries :-
Nemorhedus hodgsoni.-Tail short. Colour brown, with a white patch on the throat and chin, a black dorsal stripe and tail, and a black stripe down the front of each leg and over knee. Horns comparatively straight, and not heavily ringed. Eastern Himalaya.

Nemorhadus goral.-Tail short. Colour yellowish grey fawn suffused with blackish, throat-patch white, little or no distinct dorsal stripe, a dark streak on muzzle ; base of tail and knees blackish, the rest of the legs being fawn. Horns more curved and more heavily ringed than in the last. Western and part of Eastern Himalaya.

Nemorhedus griseus．－Tail larger．Colour brownish grey fawn suffused with brown；throat－patch small and yellow；no stripe on muzzle or back；tail and back of legs dark brown，rest of legs rufous fawn．Horns very small．Sze－chuan to Upper Burma．

| Length on front curve． | Girth． | Tip to Tip． | Locality． |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 85 | $3{ }^{3}$ | $1 \frac{1}{2}$ | Kishtwar | ．． | P．F．Hadow． |
| 81 | $3{ }^{\frac{7}{8}}$ | $1{ }^{3}$ | Garhwal | －． | Capt．D．L．R．Lorimer． |
| 8 | $3^{\frac{3}{7}}$ | $3{ }^{\frac{1}{8}}$ | Chamba |  | Major C．Levita． |
| $7{ }^{\frac{7}{8}}$ | $3{ }^{\frac{3}{4}}$ | 3 | Do． | －． | Capt．R．A．C．Murray． |
| $7{ }^{\text {星 }}$ | 3 星 | $\ldots$ | Near Musuri | ．． | Col．C．T．McM．Kavanagh． |
| $7{ }^{\frac{5}{8}}$ | 4 ${ }^{\frac{1}{8}}$ | $2 \frac{1}{4}$ | ？ |  | D．Lawrie． |
| 78 | $3{ }^{3}$ | $3^{\frac{1}{2}}$ | ？ |  | British Museum（Hume Collec tion）． |
| $7{ }^{\frac{1}{2}}$ | 3 | $2{ }^{\text {采 }}$ | Near Musuri | －． | British Museum（Hune Collec tion）． |
| $7{ }^{\frac{1}{2}}$ | $3{ }^{3}$ | 3 | Do． | ．． | R．Stephens． |
| $7 \frac{1}{2}$ | $3{ }^{\frac{3}{4}}$ | $3^{\frac{1}{4}}$ | ？ |  | Capt．P．H．H．Bailey． |
| $7 \frac{7}{18}$ | $3 \frac{1}{2}$ | $2 \frac{3}{4}$ | Chamba |  | Major A．H．Ogilvy Spence． |
| $7 \frac{3}{8}$ | $3{ }^{\frac{7}{3}}$ | $3{ }^{\frac{1}{3}}$ | Kishtwar | ． | P．B．Vander Byl． |
| $7 \frac{3}{8}$ | 4 | $5 \frac{1}{8}$ | Garhwal |  | Major L．W．S．Oldham． |
| $7 \frac{3}{3}$ | $3{ }^{\frac{3}{1}}$ | $3{ }^{\frac{5}{8}}$ | Jhelam Valley， | ，Kashmir | Major P．H．G．Powell－Cotton． |
| $7{ }^{\frac{1}{4}}$ | 3 | 3 | Chamba |  | Major F．W．If．Walshe． |
| $7 \frac{1}{4}$ | 33 | $2 \frac{1}{8}$ | Do． | ．． | Capt．F．Pope． |
| $7 \frac{1}{8}$ | $3{ }^{\text {a }}$ | $2 \frac{1}{2}$ | Do． | ． | Sir Edmund G．Loder，Bart． |
| $7 \frac{1}{8}$ | 4 | $2{ }^{\text {爯 }}$ | ？ |  | Capt．M．E．D．Hepenstat． |

## OWNER＇S MEASUREMENTS．

| $9 \frac{1}{8}$ | $3{ }^{3}$ | $4{ }^{\frac{3}{18}}$ | Near Musuri | H．Simons． |
| :---: | :---: | :---: | :---: | :---: |
| $8{ }^{3}$ | $3{ }^{3}$ | 3 | Musuri | V．A．Mackinnon． |
| $8 \frac{1}{2}$ | ．．． | $\ldots$ | Bissahir | Lieut．－Col．A．E．Ward． |
| $8 \frac{1}{8}$ | $3 \frac{1}{23}$ | $\ldots$ | ？ | Col．J．Biddulph． |
| 98 | $2 \frac{1}{4}$ | 4 | Garhwal | J．O＇Brien． |
| 8 | $\ldots$ | $\ldots$ | Chamba | Major C．B．Vandeleur． |
| $7 \frac{7}{8}$ | $3{ }^{3}$ | $3 \frac{3}{10}$ | Do． | D．Cameron． |
| $7 \frac{7}{8}$ | 4 | $2 \frac{3}{3}$ | Near Musuri | Major J．T．C．Murray． |
| $7{ }^{\frac{1}{2}}$ | 4 | 3 | Mohand Pass | R．E．Mess，Roorkee． |

## VARIOUS CHINESE GORALS AND SEROWS.

| GmiLu of Chinese. |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Species. | Collected by | Length on front curve. | Girth. | Tip to Tip. | Locality. | Owner. |
| Capricornis milneedwardsi | Abbé A. David | $\begin{aligned} & -S_{1 \frac{1}{16}} \\ & -8_{\frac{5}{16}} \end{aligned}$ | $\begin{aligned} & 7 \frac{1}{2} \\ & 7 \frac{1}{8} \end{aligned}$ | $\begin{aligned} & 4 \\ & 2 \end{aligned}$ | Moupin, Szechuan | Paris Museum (Type). |
| $\ldots$ | $\ldots$ | -8 | $\ldots$ | $\cdots$ | Ichang | Comdr. F. B. Noble, R.N. |
| $\ldots$ | $\ldots$ | 75 | $3 \frac{7}{8}$ | $3^{\frac{1}{2}}$ | Shen-si | K. K. Horn. |
| Nemorhædus cinereus | Abbé A. David | $-7 \frac{1}{2}$ | $3 \frac{1}{8}$ | $3{ }^{\frac{5}{6}}$ | Sze-chuan | Paris Museum (Type). |
| $\cdots$ | $\cdots$ | 97 $7 \frac{1}{2}$ | 3 | $\ldots$ | Nank'ou . | W. F. Collins. |
| ,, caudatus | Abbé A. David | $-6 \frac{5}{16}$ | $3 \frac{9}{16}$ | $3 \frac{1}{8}$ | North of Pekin | Paris Museum (Type). |
|  |  | 61 | 4 | $3 \frac{1}{2}$ | ? | British Museum. |
| ,, griseus . | Do. | $-4 \frac{3}{4}$ | $3 \frac{1}{8}$ | $2 \frac{3}{8}$ | Sze-chuan | Paris Museum (Type). |
| - Owner's measurements. |  |  |  |  |  |  |

## JAPANESE SEROW (Capricornis crispus).

A rather small species of serow with a coat of long grey hair.
Distribution.-The southern islands of Japan ; an allied species (C. swinhoci) inhabiting the island of Formosa.



Head of Serow.

The SEROW (Capricornis sumatrensis).

Serow, serowa of Gurhwal and Himalaya.
Ramu-Halj, Sàlàbhir.

Aimu, Kumaon.
Jungal, Kangra.
Goa, Chamba.

Yamu, Kulu.
Serows are clumsily built ruminants generally larger than gorals, with face-glands and longer horns. The ears are long; the hair is coarse, rather thin, and elongated into a crest from the nape to the withers ; the under fur found in the gorals being usually absent. In the typical species the general colour of the upper-parts is normally black or dark grey, with a grizzled appearance, owing to the whitish bases of the hairs; the under-parts, shoulders, and thighs being rusty red. There is, however, great local variation; some races being wholly or mainly rufous and others black, while the lower portion of the legs may be white or rufous or a mixture of both. The form of the skull also differs. Height at shoulder, from about 34 to 38 inches. Weight, I 20 to I 90 lbs.

Distribution.-Typically from Sumatra, but ranging from Yun-nan and Sze-chuan to the Eastern Himalaya, and occurring throughout the elevated tracts of Assam, Burma, Siam, and the Malay Peninsula. In the Sumatran race the limbs are wholly rusty ; in the Darjiling N. s. jamrachi the lower portions of the legs are mingled rufous and white, while in the Nepalese C. s. bubalinus they are white. The Chamba C. s. rodoni is dark, with under-fur ; but in the Kashmiri C. s. humei the head is rufous brown, and in the Arakan C. s. rubidus bright rufous. The Malay C. s. swettenhami and C. s. robinsoni are almost wholly black, but the Sze-chuan and Burmese C. s. milne-edwardsi is black with rufous shanks. In rubidus the nasal bones are very short; in swettenhami they are longer and narrower, and the profile of the skull is more vaulted.
A.-EASTERN RACES.


| $11 \frac{1}{2}$ | $5 \frac{1}{1}$ | $3{ }^{\frac{1}{4}}$ | Mishmi Hills | R. Sinclair. |
| :---: | :---: | :---: | :---: | :---: |
| $10 \frac{15}{16}$ | 5 | 17 | Burma | O. F. Wheeler-Cuffe. |
| $10 \frac{1}{2}$ | 6 | 5 | Do. | A. L. Bacon. |
| 95 | 6 | $2 \frac{3}{4}$ | Chin Hills . | Capt. F. W. A. Wells. |
| $9{ }^{\frac{3}{5}}$ | $4 \frac{1}{2}$ | $4^{\frac{3}{4}}$ | Burma | British Museum (Hume Collection). |
| 9 | 5 | 2 | Sumatra | Do. |
| ¢9 9 | $4^{\frac{1}{2}}$ | $\ldots$ | Upper Burma | H. Shaw Dunn. |
| $8{ }_{8}^{7}$ | $5 \frac{1}{7}$ | $\ldots$ | ? | H. E. Stephens. |
| 83 | $5^{\frac{1}{2}}$ | $4{ }^{\frac{3}{4}}$ | Muleyit | British Museum (Hume Collection). |
| 8 章 | $5 \frac{1}{7}$ | $3^{\frac{1}{2}}$ | Upper Burna | H. O. Whittall. |
| 8量 | 5 | $3 \frac{1}{4}$ | Do. | Capt. L. Trevor Goff. |

OWNER'S MEASUREMENTS.

| $10^{\frac{1}{2}}$ | 512 | 5 | Ta-chi-lu, China | M. Mitchell. |
| :---: | :---: | :---: | :---: | :---: |
| 101 | $5 \frac{1}{4}$ | ... | Upper Burma | H. Shaw Dunn. |
| $9 \frac{1}{2}$ | 5 | 5 ${ }^{\frac{1}{2}}$ | Arakan Hills | British Museum (Hume Collection). |
| $9{ }^{\frac{1}{4}}$ | 5 | 4 ${ }^{\frac{1}{2}}$ | Burma | H. L. P. Walsh. |
| 9 | 5 $\frac{1}{3}$ | 512 | Do. | Bombay Natural History Society. |
| 9 | 5 | 5 | Do. | Lieut. -Col. G. II. Evans. |
| $8 \frac{3}{10}$ | $5 \frac{1}{2}$ | 47 | Manipur | Lieut.-Col. H. S. Wood. |
| $8{ }^{3}$ | $4{ }^{\frac{7}{3}}$ | $2 \frac{1}{8}$ | Perak | Perak Museum. |

## B.-WESTERN RACES.

Length on
front curve.


## OWNER'S MEASUREMENTS.




White-Maned Serow. Shot by Mr. G. Fenwick-Owen.

## WHITE-MANED SEROW (Capricornis argyrochœtes).

A large species of a mingled rufous grey colour, with more or less white in the mane and the thighs, and whole of the limbs rufous. Weight, about 250 lbs . (G. Fenwick-Owen).

Distribution.-Sze-chuan, Kan-su, and Shen-si.

| $9 \frac{9}{10}$ | $5 \frac{3}{x}$ | 4 |
| ---: | :--- | :--- |
| $-9 \frac{1}{2}$ | $7 \frac{1}{2}$ | 4 |
| $7 \frac{7}{8}$ | $4 \frac{7}{8}$ | $4 \frac{7}{8}$ |
| $97 \frac{1}{4}$ | $4 \frac{1}{3}$ | $2 \frac{5}{6}$ |

## Sze-chuan

 Do.W. Kan-su .

Kan-su, Tibet Border

Owner.

- Owner's measurements.


Kan-su Takin. Shot by Mr. G. Fenwick-Owen.

## The TAKIN (Budorcas taxicolor).

Probably also akin to the musk-ox, this ruminant is a relative of the serows. It is heavily built, with stout limbs, large lateral hoofs, a short tail, a convex profile, and a partially hairy muzzle. The horns, which are large, massive, and bent somewhat after the fashion of those of the gnu, curve at first outwards and somewhat downwards, and then bend abruptly upwards about the middle of their length. Height at shoulder, about $3 \frac{1}{2}$ feet. Horns are present in both sexes, as in the serows and gorals, those of females being smaller than those of males. The general colour varies from greyish brown with a light saddle, and passing into blackish on the head, limbs, and underparts, with a continuous dark dorsal streak, to deep rufous or black.

Distribution.-Typically the Mishmi Hills on the northern frontier of Assam, but represented by the small-horned B. t. whytei in Bhutan.

| Length on front curve． | Circum． ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $23 \frac{1}{1}$ | $12 \frac{1}{2}$ | $10 \frac{3}{4}$ | Mishmi Hills | Capt．II．C．Nicolay． |
| $22 \frac{1}{2}$ | II ${ }_{4}^{1}$ | 12 | Do． | Hon．Walter Rothschild． |
| $22 \frac{3}{5}$ | 105 | 143 | Do． | British Museum． |
| $22 \frac{3}{5}$ | 1 I | 12 | Do． | Duke of Bedford． |
| $22 \frac{1}{1}$ | $10 \frac{1}{2}$ | $1 \mathrm{O}_{4}{ }^{3}$ | ？ | Major C．P．Gunter． |
| 213 | $1{ }^{\frac{1}{4}}$ | $10 \frac{1}{2}$ | Abor Country | Sir Edmund G．Loder，Bart． |
| 21 | 12 | $13 \frac{1}{2}$ | Mishmi Hills | A．J．Walter． |
| $20 \frac{7}{8}$ | 113 | $11 \frac{7}{3}$ | Do． | British Museum（Hume Col－ lection）． |
| 203 | I 1 \％ | $12 \frac{1}{2}$ | Do． | British Museum（Hume Col－ lection）． |
| $20 \frac{1}{4}$ | $111 \frac{1}{\text { 年 }}$ | 10 | S．E．Tibet | Capt．F．M．Bailey． |
| $19^{\frac{3}{4}}$ | $12 \frac{1}{4}$ | $12 \frac{1}{2}$ | Tibet（？） | Hon．Walter Rothschild． |
| ¢ 15 | 9 | 8 ${ }_{2}$ | Do． | Lord Osborne Beauclerk． |

## OWNER＇S MEASUREMENTS．

| 25 | 13 | $11 \frac{1}{2}$ | Mishmi Fills | ． | ．F．J．Needham． |  |
| :--- | :--- | :--- | :---: | :--- | :--- | :--- |
| $24 \frac{1}{4}$ | $\ldots$ | $\ldots$ | Do． | ． | ．Col．J．Biddulph． |  |
| $24 \frac{1}{4}$ | $12 \frac{33}{4}$ | $12 \frac{3}{4}$ | Do． | ． | ．Indian Museum． |  |
| 22 | $12 \frac{3}{4}$ | $12 \frac{1}{4}$ | Do． | ． | ．Bombay Natural History Society． |  |
| $2 I^{\frac{1}{4}}$ | 11 | $7 \frac{1}{2}$ | Do． | ． | ． | R．E．Mess，Roorkee． |

SZE－CHUAN and KAN－SU TAKIN（Budorcas tibetana and B．bedfordi）．
Typically the colour of the fore－quarters in the Sze－chuan race is bright orange，passing into greyish behind and beneath，with the ears and lower part of the face black，and the dorsal stripe stopping at withers．In a second phase the orange area is replaced by dirty white and pale grey．Horns relatively long and slender．In Shen－si and part of Kan－su this race is replaced by $B$ ．bedfordi，which is wholly orange，or orange－brown．

Distribution．－The first race inhabits Sze－chuan，Yun－nan，Tibet， and part of Kan－su．

| Length on front curve． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 22 ${ }^{\text {？}}$ | $10 \frac{1}{2}$ | 913 | Tsinling Mountains， Shen－si． | －G．Fenwick－Owen． |
| $20 \frac{1}{2}$ | $1 I^{\frac{1}{2}}$ | $11{ }^{\frac{3}{4}}$ | Kan－su，China | Hon．Walter Rothschild． |
| 2012 | 12 $\ddagger$ | 113 | S．Shen－si | British Museum． |
| $20 \frac{1}{4}$ | 111 | S量 | Tsinling Mountains， Shen－si | H．F．Wallace． |
| －193 | $1 I^{\frac{1}{2}}$ | 133 | Sze－chuan ． | Paris Museum（Abbé A．David）． |
| $-18 \frac{1}{2}$ | 12 | 16 | Nr．Ta－chi－lu | －M．Mitchell． |
| ［7930 | 12 ${ }^{\frac{1}{2}}$ | I 1 年 | Shen－si | K．K．Horn． |



Head of Rocky Mountain Goat.

## The ROCKY MOUNTAIN GOAT (Oreamnus americanus).

(Also known as Haploceros montanus.)
This is one of the very few mammals that are permanently white or whitish at all seasons; and although commonly termed a goat, really belongs to the same group as the serows, which it closely resembles in the form and colour of the horns. In winter the hair is very long and pure white in colour ; along the back it is erect, and much elongated on the withers and haunches, so as to give to the animal the appearance of possessing a pair of humps. The summer coat is comparatively short, and has a yellowish tinge. There is a black gland, sometimes as large as half an orange, at the back of the base of each horn. Height at shoulder, from 3 feet to 3 feet 9 inches; weight, about 300 lbs . Four local races have been named. Of these, the typical Rocky Mountain race is of medium size, with a broad skull; the British Columbian O. a. columbe is larger, with a narrow skull; while the Montana O. a. missoula, which also has a narrow skull, is small. The Alaskan O. a. kennedyi differs by its slender and widely divergent horns.

Distribution.-North America; throughout the Rocky Mountains, from the Salmon River, Idaho, nearly as far north as Cook's Inlet, Alaska.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 10흫 | 6 | $7 \frac{1}{2}$ | Cassiar | . Major J. F. Church. |
| 103 | $6 \frac{1}{4}$ | $7 \frac{1}{2}$ | Do. | K. K. Horn. |
| $10 \frac{1}{4}$ | 6 | $6 \frac{3}{4}$ | Montana . | - D. Davies. |
| $10 \frac{1}{4}$ | $5 \frac{1}{4}$ | 512 | British Columbia | R. Rankin. |
| $10 \frac{1}{4}$ | 6 | 7 | Do. | . H. B. Tate. |
| $10 \frac{1}{4}$ | 6 | ... | Cassiar | R. Beaumont. |
| $10 \frac{1}{4}$ | $5 \frac{3}{1}$ | 6 | Do. | - C. H. Young. |
| $10 \frac{1}{8}$ | 5 | $6 \frac{1}{8}$ | ? | E. N. Buxton. |
| $10 \frac{1}{8}$ | $5{ }^{\text {星 }}$ | $7 \frac{1}{8}$ | British Columbia | . Hon. M. Egerton. |
| IO | $5 \frac{3}{8}$ | 53 | Do. | . Rev. Lord Victor Seymour. |
| 10 | $5 \frac{1}{4}$ | $7 \frac{1}{4}$ | Cassiar . | M. W. Ward. |
| 9 9 | $5 \frac{1}{ \pm}$ | $6 \frac{1}{4}$ | Do. | . W. A. Conduitt. |
| $9 \frac{3}{4}$ | $4 \frac{1}{2}$ | $7 \frac{1}{2}$ | ? | S. H. Christy. |
| $9{ }^{3}$ | 6 | 63 | Cassiar | H. C. Wilson. |
| $9{ }^{3}$ | $4 \frac{3}{5}$ | 6 | Do. | - A. H. Goodall. |
| 9 9 | 6 | $6 \frac{3}{4}$ | Do. | - J. S. Shepherd. |
| 95 | $5 \frac{1}{ \pm}$ | $5{ }^{\frac{1}{2}}$ | British Columbia | - G. C. Whitaker. |
| 95 | $4 \frac{1}{2}$ | 7 | Do. | - T. A. Henderson. |
| $9{ }^{\frac{5}{8}}$ | 51 | $6 \frac{1}{8}$ | Cassiar | . Sir Edmund G. Loder, Bart. |
| $9{ }^{\frac{1}{2}}$ | $5^{\frac{1}{2}}$ | 5 | ? | F. Edelmann. |
| $9 \frac{1}{2}$ | $4{ }^{3}$ | $6 \frac{3}{1}$ | British Columbia | . P. N. Graham. |
| $9 \frac{1}{2}$ | $4{ }^{3}$ | $8 \frac{3}{4}$ | Do. | . R. M. Spence. |
| $9 \frac{1}{2}$ | 512 | $6 \frac{1}{4}$ | Alaska | . St. George Littledale. |
| $9 \frac{1}{2}$ | 4 ${ }^{\frac{1}{2}}$ | $\ldots$ | North America. | . J. D. Cobbold. |
| $9 \frac{1}{3}$ | $5 \frac{1}{4}$ | $6 \frac{3}{8}$ | East Kutenay, B.C. | . A. E. Butter. |
| 9 ${ }^{\frac{1}{2}}$ | 6 | 5 | British Columbia | . W. Neilson. |
| $9{ }^{\frac{1}{2}}$ | $5 \frac{3}{}$ | 51 | Do. | . H. F. Wallace. |
| $9{ }^{\text {喠 }}$ | $5 \frac{1}{2}$ | 6 | Do. | . P. K. Glazebrook. |

OWNER'S MEASUREMENTS.

| $12 \frac{1}{2}$ | $5 \frac{1}{4}$ | $111 \frac{1}{2}$ | British Columbia | Wilson Potter. |
| :---: | :---: | :---: | :---: | :---: |
| $11 \frac{1}{2}$ | ... | ... | Do. | Clive Phillipps-Wolley. |
| Q $11 \frac{1}{2}$ | $4{ }^{3}$ | $6 \frac{1}{4}$ | Montana | G. L. Harrison. |
| $10 \frac{7}{8}$ | 7 | ... | Cassiar | Col. Max C. Fleischmann. |
| $10 \frac{7}{8}$ | ... | ... | ? | S. E. White. |
| $10 \frac{1}{2}$ | 5 | $\ldots$ | Montana . | Walter James. |
| $10_{1}{ }^{3}$ | ... | $4^{\frac{7}{8}}$ | British Columbia | Madison Grant. |
| ¢ $10 \frac{1}{8}$ | $4 \frac{3}{1}$ | ... | Do. | Capt. A. Egerton. |
| ıо | 6 | $6 \frac{1}{2}$ | Idaho | R. Edmunds. |



Head of Greenland Musk-Ox.

The MUSK-OX (Ovibos moschatus).
In spite of its name, this Arctic ruminant has no near affinity with the members of the ox tribe, the cheek-teeth being more like those of the sheep and goats, the muzzle, except for a small strip between the nostrils, hairy, and the tail reduced to a mere stump concealed among the long hair of the hind-quarters. On the other hand, the resemblance to the sheep is by no means close, the horns, which in old males nearly meet in the middle line of the forehead, being of a totally different form and structure, and the skull likewise very distinct. Probably the genus is more or less nearly related to the serows and takins. In the males the horns are much flattened and expanded at the bases, after which they are bent suddenly down behind the eyes, to curve upwards again at the tips. In the females they are much smaller, less expanded, and not approximated at their bases. In both sexes their texture is coarse and fibrous, and the colour yellow. The long coat of dark brown hair depending from the back and sides like a mantle affords an adequate protection against the rigors of an Arctic winter; and the broad spreading hoofs, with hair on their under surface, give a firm foothold on snow and ice. Several races are known, including the typical

Canadian and the Greenland $O$ ．moschatus wardi．The latter is charac－ terised by the presence of a certain amount of white on the forehead and the smaller expansion of the horns．Height at shoulder，about 4 feet．Weight of a bull（piecemeal）， 579 lbs．（the late D．T．Hanbury）． Distribution．－Arctic America，approximately north and east of a line drawn from the mouth of the Mackenzie River to Fort Churchill on Hudson Bay，Greenland，and Grinnell－land；approximate southern limit，lat． $60^{\circ} \mathrm{N}$ ．About a century ago musk－oxen also inhabited the districts west of the Mackenzie，including Alaska．

A．－CANADIAN RACE（0．moschatus typicus）．

| Length on outside curve． | Breadth of palm． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 27 爯 | 10 | $27 \frac{1}{2}$ | Barren Grounds | The late David T．Hanbury． |
| $27 \frac{1}{2}$ | 10 | $23 \frac{1}{2}$ | Do． | H．Darrell． |
| 271 | $12 \frac{1}{2}$ | 27 | Do． | Earl of Lonsdale． |
| $26 \frac{7}{5}$ | II | 27 | Do． | American National Collection （Warburton Pike）． |
| 263 | $12 \frac{3}{8}$ | ．．． | Arctic America | British Museum（J．Rae）． |
| $24 \frac{3}{}$ | 11 | $25 \frac{1}{2}$ | Barren Grounds | Warburton Pike． |
| $24 \frac{1}{4}$ | $7{ }^{\frac{1}{2}}$ | 19 | Do． | J．Talbot Clifton． |
| $24 \frac{1}{4}$ | 101 $\frac{1}{2}$ | 26 | Do． | Hon．Walter Rothschild． |
| 24 | 93 | 238 | Arctic America | Sir Edmund G．Loder，Bart． |
| $23 \frac{1}{4}$ | 6 | $22 \frac{3}{4}$ | Do． | －A．Barclay Walker． |
| 23 | 10 | $23^{\frac{1}{2}}$ | Do． | His Majesty the King． |
| 23 | 7 | $21^{\frac{1}{2}}$ | Do． | Royal Scottish Museum． |

## B．－GREENLAND RACE（0．moschatus wardi）．

| Length on <br> outside curve． | Breadth <br> of palm． | Tip to Tip． | Locality． |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $24 \frac{3}{4}$ | $8 \frac{1}{4}$ | $22 \frac{1}{2}$ | Greenland | . | . |$\quad$ ．British Museum（the late Row－

OWNER＇S MEASUREMENTS．

| 33 | 121 ${ }^{\frac{1}{2}}$ | $24 \frac{1}{2}$ | Barren Grounds of Northern Canada | N．J．Dinnen． |
| :---: | :---: | :---: | :---: | :---: |
| $30 \frac{1}{4}$ | 13 年 | $30 \frac{1}{4}$ | －？ | J．C．Phillips． |
| 29 | 11 | 28 | Greenland | Dr．M．E．Johnstone． |
| 283 | 132 | $23 \frac{3}{4}$ | ？ | G．L．Harrison． |
| $27 \frac{1}{2}$ | 118 | 23 | Barren Grounds | Caspar Whitney． |
| $27 \frac{1}{4}$ | 105 | $27 \frac{1}{2}$ | Do． | Imperial Museum，Vienna． |
| ¢ $21 \frac{1}{8}$ | $4{ }^{\text {星 }}$ | $20 \frac{5}{8}$ | Arctic America | Do． |



Head of Tahr.

## The TAHR (Hemitragus jemlaicus).

The tahr and its relatives are the first representatives of that great group of ruminants which includes the true goats and sheep. In all these animals horns are, as a rule, present in both sexes, and are generally more or less distinctly angulated; while the cheek-teeth have tall and narrow crowns like those of the serows, which the tahr serve to connect with the true goats. From the latter tahr are readily distinguished by the small size of their horns, which exceed but little in length the head, as well as by the absence of a beard on the chin of the males. The typical tahr is easily recognised by the great length of the hair of the body, which, although in museum specimens generally combed straight, is very shaggy in nature ; and likewise by the form of the horns, which have a knotted sharp keel in front. Height at shoulder, from 36 to 40 inches ; weight, about 200 lbs. Mr. Wilson, "Mountaineer," had a pair of horns with a length of $16 \frac{1}{2}$ and girth Iol $\frac{1}{2}$ inches, as measured by Mr. A. O. Hume.

Distribution.-The Himalaya, from Bhutan to Kashmir.


## OWNER'S MEASUREMENTS.



## The ARABIAN TAHR (Hemitragus jayakeri).

A much smaller and rather shorter-haired species than the last, of a generally tawny-brown colour, with relatively longer and more slender horns, which are less boldly knotted on the front edge. Height at shoulder, about $24 \frac{1}{2}$ inches.

This species, of which the type specimen is in the British Museum, was first obtained by the late Col. Jayaker, in honour of whom it was named by Mr. O. Thomas in 1894.

Distribution.-Jebel Taw, and probably some of the other ranges of Oman, South-East Arabia.

| Length on front <br> curve. | Circum- <br> ference. | Locality. |
| :---: | :---: | :---: |
| $-11 \frac{5}{8}$ | $\ldots$ | Oman Mountains |
| $-11 \frac{1}{2}$ | $5 \frac{1}{3}$ | $?$ | | The late Lieut. -Col. A. S. G. |
| :---: |
| Jayaker. |
| Bombay Natural History Society. |



Head of Nilgiri Tahr.

## The NILGIRI TAHR or "IBEX" (Hemitragus hylocrius).

Although commonly designated by British sportsmen the "Nilgiri ibex," this species (the warriattu of the native shikaris) is really a member of the same genus as the Himalayan tahr. From that species it is at once distinguished by its short hair and the form of the horns ; the latter having the outer surface convex instead of flat, and lacking the knotted front keel. The general colour is dark blackish brown, old males developing a light saddle-like patch on the back. Height at shoulder, from 39 to 42 inches in the males and up to 35 inches in the females.

Distribution.-The hill-ranges of Southern India, including the Nilgiris, Anamalais, and the Western Ghats nearly to Cape Comorin ; usually at elevations of from 4000 to 6000 feet, but occasionally descending to lower levels. This species was greatly reduced in numbers by constant persecution, but since the herds have been under Government protection, and a special permit is necessary for shooting, there has been a large increase.

| $16 \frac{3}{4}$ | $8 \frac{7}{3}$ | $5 \frac{5}{8}$ | Nilgiris . | . | . | British Museum (Hume Collection). |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $16 \frac{1}{2}$ | $8 \frac{1}{2}$ | 5 | Do. . | . | . | Col. R. Hoare. |
| $16 \frac{1}{2}$ | $8 \frac{1}{4}$ | 6 | Do. . | . | . | S. G. Bird. |

Length on Circum- Tip to front curve. ference.

Locality.
Owner.


## OWNER'S MEASUREMENTS.




Head of Astor Markhor. Shot by Capt. H. Barstow in Gilgit.

## The MARKHOR (Capra falconeri).

The markhor, of which there are several races, passing more or less completely into one another, introduces us to the true goats (Capra). The males differ from the tahr by their larger horns, the length of which greatly exceeds that of the head, and likewise by the presence of a distinct beard on the chin. In most races of the markhor the beard is extended so as to form a fringe on the throat and chest; the hair on the body is also elongated; and the horns form a spiral, unlike the scimitar-shape characteristic of the ibex and goat. In Gilgit the summer coat is yellowish white, and the winter-dress of the old bucks dark iron-grey.

Distribution.-The Western Himalaya, Gilgit, Afghanistan, Bokhara, etc.

## $A$ and $B$ ．－ASTOR and PIR PANJAL MARKHOR

## （C．f．typica and C．f．cashmiriensis）．

In the Astor，C．falconeri typica，and Pir Panjal，C．falconeri cashmiriensis，races of the markhor the horns take the form of an open corkscrew－like spiral，with comparatively few turns，recalling those of the kudu；the spiral being most open，the spread widest，and the turns fewest in the Astor form．Height at shoulder of a Gilgit specimen， $38 \frac{1}{2}$ inches；of Kashmir specimens，from 38 to 4 I inches；weight， from about 200 to 240 lbs．The Astor race is found in Astor， Baltistan，and Chilas，while the Pir Panjal form inhabits the Pir Panjal and Kajnag ranges of Kashmir，and extends to the north－west into Hazara．In Chitral and Gilgit occur gradations between horns of the Pir Panjal and Astor types．

| Length． |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| On outside curve． | Straight line． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| $60 \frac{3}{4}$ | $39 \pm$ | $1 \mathrm{I}_{1}$ | 46 | Gilgit | －Capt．H．Barstow．（See illustration，p．358．） |
| 59 | 36 | $10 \frac{3}{4}$ | $\ldots$ | Kajnag | Lieut．－Col．S．D．Turnbull． |
| $57 \frac{3}{4}$ | 42 | $10 \frac{3}{4}$ | 41 | Do． | Major A．R．Knox． |
| $57 \frac{1}{2}$ | $40^{\prime}$ | ． | $47^{\frac{1}{2}}$ | Drosh | Capt．B．C．Graham． |
| 56 | $51 \frac{1}{3}$ | $\ldots$ | $\ldots$ | Near Bunji | Capt．T．S．Johnson． |
| 55 | $44 \frac{1}{4}$ | ${ }^{1}$ | 47 | ？ | East India Club． |
| 55 | $\ldots$ | $\ldots$ | $\ldots$ | Astor | The late Otho Shaw． |
| $54 \pm$ | $\ldots$ | $10 \frac{1}{2}$ | $26 \frac{1}{2}$ | ？ | Eritish Museum（Hume Collection）． |
| 54 | ．．． | $10 \frac{5}{8}$ | $33{ }^{3}$ | Astor | Martyn Kennard． |
| $53 \frac{3}{4}$ | $38 \frac{1}{4}$ | $12 \frac{1}{1}$ | $40 \frac{1}{2}$ | Do． | Lieut．－Col．J．Manners Smith． |
| $53 \frac{3}{4}$ | 37 爯 | 10 | 35 | Chilas | Major C．A．Smith． |
| $53{ }^{1}$ | $40^{\frac{1}{2}}$ | 12 | $43^{\frac{3}{4}}$ | Do． | Capt．J．A．Pottinger． |
| ${ }^{1} 53$ 年 | $42 \frac{1}{2}$ | $11^{\frac{1}{2}}$ | 52 about | Astor | ．Sir Victor＇Brooke’s Collec－ tion． |
| 53 | 40 | 11 | 42 | Gilgit | Capt．H．F．L．Grant． |
| 53 | $38{ }^{\text {爯 }}$ | $9 \frac{3}{4}$ | $35^{\frac{1}{2}}$ | Do． | Hon．Walter Rothschild． |
| 53 | $35 \frac{3}{4}$ | $1 \mathrm{I}^{\frac{3}{4}}$ | $34 \frac{1}{2}$ | Pir Panjal | ．Major F．W．H．Walshe． |
| 53 | $34 \frac{1}{4}$ | II | 32 | Astor | ．Lieut．－Col．the Hon．C．Wil－ loughby． |
| 523 | 372 | If | $35^{\frac{1}{2}}$ | Kajnag | －Major A．G．IV．Malet． |
|  |  |  | ${ }^{1}$ Shot | y Capt．Harry V．Bro |  |

Length.

Circum-
ference. Tip to Tip.

Locality

39 Gilgit . . . Col. G. D. F. Sulivan.
$44 \frac{1}{2} \quad$ Chilas
37 $\frac{1}{2}$ Gilgit
Astor
Pir Panjal
Haramosh . . Major P.H. G. Powell-Cotton.
Chilas . . . Capt. A. H. Cameron.
Kajnag . . . Sir H. E. M. James.
Do. . . . Col. J. W. A. Morgan.
Do. . . . Mess of the Seaforth High landers.37
$49 \quad 33 \frac{1}{7} \quad 10 \frac{1}{2} \quad 37 \frac{1}{2}$

| 49 | $32 \frac{3}{4}$ | I I $\frac{3}{4}$ |
| :--- | :--- | :---: |
| $48 \frac{3}{2}$ | $34 \frac{3}{4}$ | I2 $\frac{1}{2}$ |
| $48 \frac{3}{2}$ | 34 | IO $\frac{1}{4}$ |
| $48 \frac{1}{2}$ | $39 \frac{1}{2}$ | 9 |
| $48 \frac{1}{2}$ | 35 | I 3 |
| $48 \frac{1}{2}$ | $\ldots$ | II $\frac{1}{2}$ |
| $48 \frac{1}{2}$ | 32 | II |
| $48 \frac{1}{2}$ | $36 \frac{1}{2}$ | II |

$36 \frac{3}{4}$
$36 \frac{3}{4}$
$30 \frac{1}{2}$
27
41
45
$31 \frac{1}{2}$
$33 \frac{1}{2}$

On outside Straight
curve.
line.

| $52 \frac{1}{2}$ | 39 | 11 |
| :--- | :--- | :--- |
| $52 \frac{1}{2}$ | $38 \frac{3}{4}$ | $12 \frac{1}{4}$ |
| $51 \frac{5}{8}$ | $36 \frac{1}{2}$ | $11 \frac{3}{4}$ |
| $51 \frac{1}{2}$ | $40 \frac{1}{4}$ | $13 \frac{1}{2}$ |
| $51 \frac{3}{5}$ | $37 \frac{1}{8}$ | 10 |
| $51 \frac{1}{8}$ | $\ldots$ | 12 |
| 51 | $36 \frac{1}{2}$ | $11 \frac{1}{4}$ |
| 51 | $36 \frac{1}{4}$ | $15 \frac{1}{2}$ |
| 5 | $36 \frac{1}{2}$ | 11 |

J. Arbuthnot.

- Capt. B. H. Shaw-Stewart.
W. R. Read.

Astor . . . Sir Edmund G. Loder, Bart.
Chilas . . . Major W. Hayes-Sadler.
Major C. R. Kelly.
Capt. S. M. Toppin.
Baltistan . . . H. H. Cripps.
G. O. Smyth.

Chilas

Astor
Do.
Haramosh
Do.
G. O. Smyth.

Major L. W. S. Oldham.
Capt. A. Young.
British Museum (Hume Collection).
Lieut.-Col. E. B. Cook.
P. Radclyffe.
N. S. Regnart.

Haramosh . . Hon. H. G. O. Bridgeman.
Capt. H. A. G. Chamier.
Pir Panjal . . J. G. Millais.
Chilas . . . J. D. Coblbold.
Astor . . . Capt. M. Murphy.
Baltistan . . . Major C. A. Smith.
Capt. A. H. Wilson.


Skull and Horms of Pir Panjal Markhor.
From a specimen presented by the late Mr. A. O. Hume to the British Museum. Length.

On outside Straight curve. line

Circumference.

| $48 \frac{1}{4}$ | 35 | I I | $29 \frac{1}{2}$ |
| :--- | :--- | :--- | :--- |
| 48 | 34 | IO $\frac{3}{4}$ | 36 |
| 48 | $37 \frac{3}{4}$ | I $2 \frac{3}{4}$ | 29 |
| 48 | 37 | I I | 4 I |
| 48 | 34 | $9 \frac{1}{4}$ | 39 |

Locality.
$?$

Astor
Pir Panjal

Owner.
Capt. the Hon. A. C. Murray. His Majesty the King.

- British Museum (Hume Collection). (See illustration on this page.)
Capt. E. Berry.
Capt. A. Marshall.

Length. On outside Straight curve. line.

Circum- Tip to Tip.
$31 \frac{3}{4}$
$30 \quad$ Chilas (?)

Locality.
Owner.

| 4 S | 34 | $10 \frac{3}{4}$ | $31 \frac{3}{4}$ | H. W. Seton. |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 4 S | $36 \frac{1}{2}$ | II | 30 | Chilas (?) | Capt. E. Le G. Whitting. |

OWNER'S MEASUREMENTS.

| 163 | $\ldots$ | $\ldots$ | $\ldots$ | Pir Panjal | . | . | Major-General A. A. A. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Kinloch. |  |  |  |  |  |  |  |

Certain horns in the Hume Collection indicate a type in some degree intermediate between the Panjal and the Cabul type ; their place of origin is unknown, but was probably somewhere west of the Indus.

## CHITRAL SPECIMENS.

Length.
On outside
curve. Straight
line.

Circumference.
$50 \frac{1}{2} \quad 37$
$50 \quad 36 \quad$ Io
$47 \frac{1}{4} \quad 10 \frac{1}{2}$

Tip to Tip.
$34 \frac{1}{4}$
33
39

Locality.
Owner.
Chitral . . . Capt. R. A. Lyall.
Do. . . . Major R. H. Macdonald.
Do. . . . H. Gough.

## OWNER'S MEASUREMENTS.



## C.-CHIALTAN RACE (C. falconeri chialtanensis).

Differs from other races in the form of the spiral of the horns. May perhaps turn out to be a hybrid between the markhor and domesticated goat; some Chialtan specimens being almost certainly of this nature.

## Distribution.-The Chialtan Range of Baluchistan.

l,ength.
On outside Straight curve. line.

| -36 | 25 |
| :---: | :---: |
| $34^{\frac{1}{2}}$ | 26 |
| -34 | 27 |

Circum-
ference. Tip to Tip.
$8 \frac{1}{2}$
9
9

Locality.
Chialtan Range
Do.
Do.

Owner.
Capt. W. M. Hunt (The Field, June 7, 1913). British Museum (Col. H. Appleton).
Capt. W. M. Hunt (The Field, June 7, 1913).


Skull and Horns of Suleman Markhor. From a specimen presented by the late Mr. A. O. Hume to the British Museum.


Skull and Horns of Cabul Markhor. From a specimen presented by the late Mr. A. O. Hume to the British Museum.
D. and E.-CABUL and SULEMAN RACES
(C. falconeri megaceros and C. f. jerdoni).

In the Cabul race of the markhor (C. falconeri megaceros), typically from the trans-Indus districts near Cabul, the horns are nearly straight, but show a slightly open spiral ; being, in fact, intermediate between those of the Pir Panjal and Suleman races. Markhor from the Chitral valley generally have horns of the Cabul type, but in some cases these conform to the Pir Panjal type; both types occurring in the members of one and the same flock. In the Suleman markhor (C. falconeri jerdoni) the horns form a perfectly straight cone, upon which the spiral ridges run
like the "worm" of a screw. The distributional area of the latter race includes the trans-Indus hill-ranges on the frontier of the Punjab, Afghanistan, and Baluchistan, extending in the Suleman range as far as Mithankot, and also to the Quetta district.

| Length. <br> line. | Circumference. | Tip to Tip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $48 \frac{1}{3}$ | $7{ }^{\frac{3}{4}}$ | Odd horn | ? |  | British Museum. |
| 393 | 10 年 | $24 \frac{1}{4}$ | Afghanistan |  | British Museum (Col. Grant). |
| 39. | $12 \frac{1}{4}$ | 38 | Range 25 miles of Wana | N.W. | A. J. Grant. |
| $38 \frac{1}{2}$ | $10^{\frac{1}{2}}$ | $23{ }^{\frac{7}{5}}$ | Afghanistan | . | H.R.H. the Duke of Saxe-Coburg and Gotha. |
| 38 | 10 | 26 | Cabul . |  | Capt. O. H. Radford. |
| 37 | 10 | 32 | Kurram Valley | . | Lieut.-Col. Sir G. Roos-Keppel. |
| 353 | $9{ }^{3}$ | 15 | Khyber Pass |  | Major E. Kirkpatrick. |
| 34 | 11 | 23 | ? |  | G. F. Giffiard. |
| 33 | $9{ }^{\frac{1}{4}}$ | $19 \frac{3}{4}$ | Afghanistan |  | Sir Edmund G. Loder, Bart. |
| 323 | 93 | 20 | Waziristan |  | Major G. Dodd. |
| $32 \frac{1}{4}$ | $9{ }^{\text {䍃 }}$ | 28 | ? |  | British Museum (Hume Collection). |
| 32 | 10 | $27^{\frac{1}{2}}$ | Cabul |  | British Museum (Hume Collection). See illustration on page 365. |
| $31 \frac{1}{2}$ | 9 ${ }^{\frac{1}{2}}$ | 27 | Suleman Range |  | Hon. Walter Rothschild. |
| $30 \frac{3}{1}$ | 10 | 25 | Baluchistan . | . | Col. J. Biddulph. |
| 30 | $9{ }^{\frac{1}{2}}$ | $20 \frac{3}{4}$ | S. Waziristan |  | Capt. A. G. Shea. |
| 293 | $8 \frac{1}{7}$ | $23 \frac{3}{4}$ | Baluchistan . | . : | Lieut.-Col. R. H. Rattray. |
| $29 . \frac{1}{4}$ | 10 | 19 | Khyber Pass |  | Major A. L. Bickford. |
| 29 | $10 \frac{1}{2}$ | 16 | ? |  | American National Collection. |
| $28 \frac{1}{2}$ | $9 \frac{1}{2}$ | $18 \frac{3}{}$ | Sheik Budin | . | J. C. Phillips. |
| 27 | 9 | 18 | Do. |  | Col. J. Biddulph. |
| 263 | $11{ }^{\frac{1}{4}}$ | $22 \frac{1}{10}$ | Suleman Range |  | British Museum (Hume Collection). See illustration on page 364 . |

## OWNER'S MEASUREMENTS

| 36 | 11 | 32 | Bunnu | . | F. M. Hodgkins. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 331 | $10 \frac{1}{4}$ | 23 |  | ? | Bombay Natural History Society. |
| 32 $\frac{1}{2}$ | 10 | $22 \frac{1}{2}$ | Bunnu |  | Mess of the Queen's Own Corps of Guides. |
| $3{ }^{1 \frac{1}{4}}$ | $9{ }^{\frac{1}{2}}$ | $17{ }_{4}^{3}$ |  | ? | C. P. Henderson. |
| 31 | $9{ }^{3}$ | 25 |  | ? | R.E. Mess, Roorkee. |



Head of Tien Shan race of Asiatic Ibex. From Lord Elphinstone's specimen.

## The SAKIN or ASIATIC IBEX (Capra sibirica).

The first of the true ibexes, in all of which the long scimitar-shaped horns carry bold transverse knots on the front surface. In the present species the horns are characterised by their large size and welldeveloped front surface ; the second distinctive feature being the long beard of the males. Height at shoulder, from 40 to 42 inches. Weight, about 206 lbs.; when cleaned, from 128 to 53 lbs.

Distribution.-The mountains of Central Asia, from near Lhasa, the Tien Shan, and the Altai to the Himalaya (exclusive of the Pir Panjal), and from the neighbourhood of Herat to Kumaon and adjacent districts as far east as the source of the Ganges. Several local races of this species are recognised; the typical race ( $C$. sibirica typica) of the Sayansk range, the Irtish race (C. s. altaica), the Tien Shan race (C. s. almasyi), the Gilgit race (C. s. pedri), the Katutay ibex (C. s. lydekkeri), the Balti ibex (C. s. wardi), the Himalayan ibex (C. s. sacin) from the mountains to the northward of Kashmir, and the Lahul (C. s. filippii).

## TIEN SHAN RACE．

| Length on front curve． | Circum－ ference． | Tip to Tip |
| :---: | :---: | :---: |
| 58 | 119 ${ }^{\frac{1}{4}}$ | 44 ${ }^{\frac{1}{2}}$ |
| $57 \frac{3}{1}$ | I I | $40 \frac{1}{2}$ |
| 5712 | $10 \frac{3}{4}$ | 24 |
| 571 | II $\frac{3}{1}$ | 28 |
| 573 | II | 30 |
| $56 \frac{3}{4}$ | I $1 \frac{1}{2}$ | $36 \frac{1}{2}$ |
| $56 \frac{3}{1}$ | $10 \frac{1}{2}$ | 31 |
| $56 \frac{1}{4}$ | I I | 40 |
| 56 | $10 \frac{1}{4}$ | 219 |
| $54 \frac{3}{}$ | II ${ }^{\frac{1}{4}}$ | 29 |
| $54 \frac{3}{}$ | II $\frac{1}{4}$ | 301 |
| $54 \frac{1}{1}$ | $11{ }^{\frac{1}{4}}$ | $\ldots$ |
| ${ }^{1} 54$ | $10 \frac{3}{4}$ | 45 |
| $53 \frac{3}{4}$ | $11 \frac{1}{4}$ | 45 |
| 533 | $10 \frac{1}{2}$ | $33 \frac{1}{2}$ |
| $53 \frac{3}{}$ | $1{ }_{1} \frac{3}{1}$ | 34 |
| 531 | II $\frac{1}{2}$ | 42 |
| $53 \frac{1}{4}$ | $10_{4}^{3}$ | 21量 |
| $53 \frac{1}{4}$ | I $2 \frac{1}{4}$ | 35 |
| 53 | 12 | $35^{\frac{1}{2}}$ |
| $52 \frac{1}{2}$ | $12 \frac{1}{4}$ | 26 |
| 521 | I 1 I $\frac{1}{2}$ | 22 $\frac{1}{2}$ |
| 52 | $1 I^{\frac{1}{4}}$ | $40 \frac{8}{}$ |
| 51 垍 | $12 \frac{1}{2}$ | 4 S |
| 518 | 12 | 34 |
| 508 | I $1{ }^{\text {星 }}$ | 351 |
| $50 \frac{1}{4}$ | $10 \frac{8}{1}$ | 31 |
| 50 | I I | $30 \frac{1}{2}$ |
| 50 | $11 \frac{1}{4}$ | $24 \frac{1}{2}$ |
| 50 | 12 | $19 \frac{3}{4}$ |
| $48 \frac{1}{2}$ | 1018 | $38 \frac{1}{2}$ |
| $46 \frac{1}{2}$ | 12 | 20 ${ }^{\frac{1}{2}}$ |


| Locality． |  | Owner． |
| :---: | :---: | :---: |
| Tien Shan | n． | Col．H．Appleton． |
| Do． | ．． | C．H．Bury． |
| Do． | －． | H．M．von Archer． |
| Do． | ．． | Capt．G．R．H．Cheape． |
| Do． | ．． | A．Bayley－Worthington． |
| Do． | ．． | Lord Elphinstone． |
| Do． | ．． | Capt．J．F．Turner． |
| Do． | ．． | R．F．Glyn． |
| Do． | －． | P．F．Hadow． |
| Do． | ．． | P．B．Vander Byl． |
| Do． | ．． | Major A．D．Greenhill－Gardyne． |
| Do． | ．． | B．Chew． |
| Do． | ．． | IIis Majesty the King． |
| Do． | ．－ | J．H．Miller． |
| Do． | －• | Ford G．Barclay． |
| China | ．． | Major P．Hambro． |
| Tien Shan | n． | R．Hayne． |
| Do． | ．． | Col．C．B．Wood． |
| Do． | ．． | Capt．J．N．Price Wood． |
| Do． | ．． | St．George Littledale． |
| Do． | －． | P．Church． |
| Do． | ．． | T．P．Miller． |
| Do． | ．． | W．R．Read． |
| Do． | ．－ | Capt．H．Whitaker． |
| Do． | ．． | Capt．the Hon．G．H．Douglas－ Pennant． |
| Do． | ．． | British Museum（St．George Littledale）． |
| Do． | －． | C．C．Tower． |
| Do． | －． | Marquis of Lansdowne． |
| Do． | －． | Col．A．H．Ilussey． |
| Do． | ．． | J．V．Phelps． |
| Altai ． | ．． | Col．C．B．Wood． |
| Do． | ．． | ．IIon．Walter Rothschild． |

## LADAKI，BALTI，and KASHMIRI RACES．

Length on
front curve．
55

53年
51 妾
$49 \frac{3}{x}$ 49 $48^{3}$ $4 S \frac{1}{2}$ $48 \frac{1}{2}$ $48 \frac{1}{2}$ $48 \frac{1}{4}$ $47 \frac{1}{2}$ 47 $46 \frac{3}{4}$ $46 \frac{3}{4}$ $46 \frac{3}{4}$ $46 \frac{3}{4}$ $46 \frac{1}{2}$ $46 \frac{1}{2}$ $46 \frac{1}{4}$ 46 46 46 46 46 46 $45 \frac{3}{x}$ $45 \frac{3}{4}$ 45䍃

Circum－
ference．$\quad \mathrm{Tip}$ to $\mathrm{Ti}_{\mathrm{p}}$ ．

Locality．
$11 \frac{1}{2}$
$10 \frac{1}{2}$
9 $\frac{1}{2}$
10
$10 \frac{1}{4}$
$10 \frac{1}{2}$
95
9
${ }^{10 \frac{1}{2}}$
$10 \frac{1}{4}$
8 皇
1013
10
$9 \frac{1}{2}$
93
9 䍃
10
$10 \frac{1}{2}$
101
IO $\frac{1}{2}$
10 星
103
10
II
10 ${ }^{3}$
101
II
9
$10 \frac{1}{3}$
912

35 Gilgit
20 年
$34 \frac{1}{2}$
$21 \frac{1}{2}$
$9 \frac{1}{2}$
33
$30 \frac{1}{2}$
223
28
$29 \frac{3}{1}$
293
35

18 ${ }^{\frac{1}{2}}$
．．．

$$
25 \frac{1}{4}
$$

$22 \frac{1}{2}$
$25 \frac{1}{2}$
231
$12 \frac{1}{2}$
17 ${ }^{3}$
21 雱
$12 \frac{1}{4}$
24竞
14 ${ }^{\frac{1}{2}}$
$25 \frac{1}{4}$
．．．
I $3 \frac{1}{2}$

19
18
$33^{3}$

| Do． |  |
| :--- | :--- |
|  |  |
| Chitral |  |
| Skardo |  |
| Baltistan |  |

Kashmir ．
Do．．

Baltistan

Kashmir ．
？

Do．
Do．
Baltistan

Ladak ．．．

Lieut．－Col．B．E．M．Gurdon．
Col．J．Biddulph．
Lieut．－Col．J．Manners Smith．
British Museum（Lieut．－Col．
B．E．M．Gurdon）．
Major George Donglas．
H．H．Cripps．
Nubra，north of Leh ．British Museum（Hame Collec－
tion）．
Col．G．D．F．Sulivan．
Capt．S．H．Charrington．
Capt．R．H．R．Brocklebank．
Chitral ．．．M．Ostreham．
Lady Constance Stewart－ Richardson．
E．R．Harris．
Lieut．－Col．E．B．Cook．
P．Radclyffe．
Lieut．－Col．W．Goring．
G．A．Lloyd．
Major J．S．Bogle．
Capt．E．T．W．McCausland．
Baltistan ．．．Capt．R．S．H．Walpole．
Major C．E．Palmer．
Ladak ．．．P．F．Hadow．
Capt．H．G．Stafford．
Kashmir ．．．Capt．H．Meynell．
Do．．．．J．Platt．
Capt．H．Nicolay．
F．H．Norton．
Hon．A．G．Brand．
J．V．E．Lees．
Major J．B．Mackintosh．

Length on front curve.
$45^{\frac{1}{2}}$
$45^{\frac{1}{2}} \quad 9 \frac{3}{4}$
$45 \frac{1}{2}$
45룰
45
Circumference.

Tip to Tip.

| $19 \frac{1}{2}$ | Pamir | $\cdot$ | . | . | Lieut. Col. R. L. Kennion. |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $19 \frac{1}{2}$ | Baltistan | . | . | . | T. R. Ubsdell. |
| 27 | Do. | . | . | . | His Majesty the King. |
| $18 \frac{1}{2}$ |  | ? |  |  | Capt. A. Courage. |
| $12 \frac{1}{2}$ | Baltistan | . | . | . | Major C. B. Vandeleur. |

OWNER'S MEASUREMENTS.

| $56 \frac{1}{2}$ | $11 \frac{1}{8}$ | $37 \frac{1}{4}$ | Tien Shan | . | . | Lieut. Col. H. M. Biddulph. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 55 | $\ldots$ | $\ldots$ | Tagdumbash | . | . | Col. A. E. Ward. |

1 Picked up by Maj.-Gen. R. E. Hutchinson.

## The IBEX or STEINBOCK (Capra ibex).

This species, which only survives in a protected state, differs from the Asiatic ibex by the much smaller size of the beard of the male, as well as by a slight variation in the horns; the height at the shoulder reaching to about 34 inches. Weight, from 85 to 106 lbs. clean. Formerly distributed throughout the higher Alps of Switzerland, Savoy, and the Tyrol, but now surviving only in a few valleys on the Italian side of Monte Rosa. Most of the few specimens now obtainable are comparatively small, and good horns are very scarce in English collections.

| Length on front curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $34 \frac{1}{2}$ | 9 ${ }^{\frac{3}{4}}$ | 261 | Styria | Sir Edmund G. Loder, Bart. |
| 29 | $8{ }^{\text {a }}$ | $1{ }^{1} \frac{1}{1}$ | Valley of Aosta . | Rev. J. M. Gordon. |
| 283 | 83 | $17 \frac{1}{2}$ | Do. | J. Hamilton Leigh. |
| 28 | $9{ }^{1}$ | $17 \frac{1}{4}$ | Do. | Hon. Walter Rothschild. |

Length on front curve.

| $27 \frac{1}{2}$ | $9 \frac{1}{4}$ | $11 \frac{1}{2}$ |
| :--- | :--- | :--- |
| $26 \frac{3}{4}$ | $8 \frac{3}{8}$ | $22 \frac{1}{8}$ |

Weight.
... Valley of Aosta
Locality.
...

Owner.

- Royal Scottish Museum.

Do.
D

- British Museum.

OWNER'S MEASUREMENTS.

| $44 \frac{5}{8}$ | $10 \frac{1}{4}$ | $\ldots$ | 170 Ibs. | Valley of Aosta | H.M. the King of Italy. |
| :--- | :---: | :--- | :---: | :---: | :--- |
| $39 \frac{3}{4}$ | $10 \frac{1}{5}$ | $40 \frac{1}{4}$ | $\ldots$ | ? | Imperial Museum, Vienna. |
| $38 \frac{5}{8}$ | $\ldots$ | $\ldots$ | $\ldots$ | Valley of Aosta | H.M. the King of Italy. |
| 30 | 9 | 21 | $\ldots$ | ? | Dublin Museum. |
| $28 \frac{1}{4}$ | $9 \frac{3}{8}$ | 18 | $\ldots$ | Valley of Aosta | C. H. Wilczek. |



Ibex Head, in the possession of H.M. the King of Italy.


Skull and Horns of Abyssinian Ibex. Shot by Major P. H. G. Powell-Cotton.

## The WALA or ABYSSINIAN IBEX (Capra vali).

This ibex, the wala of the natives of Simien, differs from the Nubian ibex by its stouter build, shorter beard, and larger and more massive horns, on which the knots are but slightly prominent, as well as by its darker colour and superior size. The forehead of the skull has a conspicuous bony prominence. Although described by Ruippell in 1835 , this ibex was practically unknown till 1901, when a fine series of specimens was brought home by Major Powell-Cotton. Height at shoulder, about 40 inches. Weight, about 260 lbs .

Distribution.-The mountains of Simien, Abyssinia.

| $\begin{aligned} & \text { Length on } \\ & \text { front } \\ & \text { curve. } \end{aligned}$ | Circum. ference. | Tip to Tip. |  | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $43 \frac{7}{8}$ | 113 | 27 | Abyssinia | . . | - - | British Museum (Major I'. H. G. Powell-Cotton). |
| 435 | $1 \mathrm{I} \frac{1}{8}$ | 1212 | Do. | . . | . . | Major P. H. G. Powell-Cotton. |
| 43 | 10, ${ }^{\frac{1}{2}}$ | 23 | Do. | . | . . | Admiral the Hon. Sir Hedworth Meux. |
| ${ }^{1} 42{ }^{\frac{3}{4}}$ | $10 \frac{1}{4}$ | 188 | Do. | . . | . . | Her Majesty Queen Alexandra. |
| 418 | 11 | 163 | Do. | . | . . | Major P. H. G. Powell-Cotton. |
| 40雨 | II | ... | Do. | . . | . . | Hon. Walter Rothschild. |
| 913年 | $4^{\frac{7}{4}}$ | 85 | Do. | - . |  | Major P. H. G. Powell-Cotton. |

[^13]

Head of Nubian Ibex.
Shot in the Red Sea Province by Mr. J. H. Miller.

## The BEDEN or NUBIAN IBEX (Capra nubiana).

This species may be easily distinguished from both the Asiatic and the Alpine ibex by the form of the horns, which are very long, rather slender, and with the outer front angle much bevelled off, so that the proper front surface is very narrow, and its transverse knots proportionately short. Three races are recognised, namely, the typical Nubian form, C. n. typica, the S. Arabian C. n. mengesi, and the Sinaitic C. n. sinaitica. In the form of its horns the latter approximates to the wiid goat.

Distribution.-The mountains of Southern Arabia, Palestine, the Sinaitic Peninsula, Upper Egypt, and probably also those of Morocco and the interior of Senegambia. Arabian name, beden.

## A.-NUBIAN RACE (C. nubiana typica).



## OWNER'S MEASUREMENTS.

| 51 | 85 | $39 \frac{1}{2}$ | Upper Egypt | . | . | . | The late Prince Henry of Liechten- <br> stein. |
| :--- | :--- | :--- | :---: | :--- | :--- | :--- | :--- |
| 43 年 | $\ldots$ | $\ldots$ | Do. | . | . | . | C. S. Mann. |



Skull and Horns of Arabian Ibex. Shot by Major W. Merewether.

## $B$. and C.-S. ARABIAN and SINAITIC RACES (C. nubiana mengesi and sinaitica).

 50 Circumference.
$50 \quad 9$
... Southern Arabia ... Arabia

Locality.
Owner.


## OWNER'S MEASUREMENTS.

| $49 \frac{1}{8}$ | $8 \frac{1}{2}$ | 12 | Southern Arabia | . | . | Major W. Merewether. <br> illustration.) |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 39 | $\ldots$ | $\ldots$ | Sinai | . | . | . |
| Cee |  |  |  |  |  |  |



Skull and Horns of Sind Wild Goat. From a specimen presented by the late Mr. A. O. Hume to the British Museum.

## The PASANG or WILD GOAT (Capra hircus).

The horns of the wild goat (C. hircus agagrus) of the Caucasus and Persia-which is the ancestral form of the domesticated goat of Europe and Asia (C. hircus)-differ from those of the various species of ibex by having no distinct front surface, but merely a sharp notched keel, representing the inner front angle of the ibex horn. In old males the beard is very long. The general colour of the upper-parts is brownish grey in winter and reddish brown in summer, while the under-parts are white, and there are blackish brown and white markings on the body, face, and limbs. Height at shoulder reaching to 37 inches.

The so-called Sind ibex ( $C$. hircus blythi) forms a second local race of the species, inhabiting Sind and parts of Baluchistan, where it probably passes imperceptibly into the Caucasian race. It is distinguished mainly by a slight difference in the form of the horns. Other races are found in some of the islands of the Ægean Archipelago, where they appear to have been more or less crossed with domesticated breeds.
Distribution.-The islands of South-Eastern Europe, and the mountains of South-Eastern Europe and South-Western Asia from the Caucasus through Asia Minor and Persia to the confines of Baluchistan and Sind. Persian name, pasang (rock-footed).

## A.--CAUCASIAN RACE (C. hircus ægagrus).

Length on front curve.

| $55^{\frac{1}{2}}$ | $\ldots$ |
| :--- | :---: |
| $51^{\frac{1}{4}}$ | 9 |
| $48 \frac{1}{4}$ | $8 \frac{3}{4}$ |
| $47 \frac{1}{4}$ | $7 \frac{3}{4}$ |
| $46 \frac{1}{2}$ | $8 \frac{7}{8}$ |
| $46 \frac{1}{4}$ | $9 \frac{1}{2}$ |
| $45^{\frac{1}{2}}$ | $8 \frac{3}{4}$ |
| 45 | $7 \frac{1}{4}$ |
| $44 \frac{1}{2}$ | $8 \frac{7}{5}$ |
| $43 \frac{1}{2}$ | 10 |
| 43 | 9 |
| 43 | $8 \frac{1}{2}$ |
| 43 | $8 \frac{1}{8}$ | Circum ference.

## $55^{\frac{1}{2}}$

| $52 \frac{3}{8}$ | $7 \frac{7}{8}$ |
| :---: | :---: |
| $49 \frac{1}{2}$ | $7 \frac{3}{4}$ |
| -48 | 8 |
| $46 \frac{3}{4}$ | $7 \frac{5}{8}$ |
| 46 | $7 \frac{5}{8}$ |

Circum.
ference.

Locality.
Owner.

- Carl Hagenbeck.

The late Prince P. Demidoff.
. British Museum.

- Lieut.-Col. R. L. Kennion.
- F. C. Selous.
- T. Bowen Rees.
- R. Graham.
. Capt. A. W. White.
$21 \frac{3}{5}$ Caucasus . . . British Museum.
12 $\frac{1}{2}$ Persia . . . Hon. W. Erskine.
$15 \frac{3}{4}$ Taurus Range . . Sir Edmund G. Loder, Bart.
14를 N. Persia . . . Capt. C. T. Daukes.
$22 \frac{3}{8}$ ? I. Carr Saunders.

OWNER'S MEASUREMENTS.
$4^{6}$
Asia Minor
B. I Hodder.

14
Taurus Range
. Count C. Deym.
... Cilician Taurus
C. G. Danford.

93 ${ }^{\frac{3}{4}}$ Daghestan .

- E. N. Buxton.

21
Damascus .
. Dr. Albert von Stephani.
$21 \frac{1}{2}$
Asia Minor

- D. Forbes.


## B.-SIND RACE (C. hircus blythi).

Locality.

Owner.

- British Museum (Hume Collection). (Shot by Col. F. Marsion.) See illustration.
Capt. L. I. Haviland.
J. D. Inverarity.
. Sir Edmund G. Loder, Bart.
- Major C. S. Cumberland.


Head of Domesticated Goat from Daghestan．Sir Edmund G．Loder＇s specimen．

## DOMESTICATED GOATS．

| Length on front curve． | Circum－ ference． | Tip to Tip． | Locality． |  |  |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $52 \frac{1}{2}$ | $10 \frac{1}{2}$ | 405 | Daghestan | ． | － | － | Sir Edmund G．Loder，Bart． |
| 44表 | 6 | $29 \frac{1}{4}$ | Angora | － | ． | － | Do． |
| $40 \frac{1}{2}$ | 93 | $\ldots$ | Daghestan | ． | － | ． | Do． |
| $37 \frac{1}{2}$ | $7{ }^{13}$ | 323 | Scotland | ． | － | ． | Col．W．Hall Waiker． |
| －37 | $7 \frac{1}{2}$ | 35 | Meoble | ． | ． | ． | Walter Jones． |
| 353 | 73 | 389 | ？ | ？ |  |  | B．de Bertodano． |
| $34 \frac{3}{4}$ | $7 \frac{1}{2}$ | $3^{8 \frac{1}{2}}$ | Scotland | － | － | － | Duke of Bedford． |
| 34 | $8 \frac{1}{2}$ | 32⿺𠃊⿳亠丷厂犬 | Do． | － | ． | － | F．C．Selous． |
| 332 | 8 | 26， | Meoble | ． | － | － | Hon．O．C．Molyneux． |
|  |  |  | －Owner＇s | measu |  |  |  |



Skull and Horns of Spanish Ibex. H.M. The King of Spain's record specimen.

## The SPANISH IBEX (Capra pyrenaica).

Although commonly designated an ibex, the Spanish wild goat has horns more like those of one of the Caucasian ture, and is therefore better regarded as a species of that group. The horns, which have a sharp inner edge, are twisted in a very open semi-spiral, with the tips generally turned outwards, and are quite unlike those of the true ibex. In having dark and light markings on the limbs the species is, however, much more like the wild goat than either of the Caucasian ture. The beard of the males varies greatly in size according to age and season. Height at shoulder, from about 27 to 32 inches; weight, when clean, about io stone.
Distribution.-The Pyrenees and the high ranges of Central Spain, Andalucia, and Portugal. The typical race of the species inhabits the Pyrenees; the ibex of the Serra do Gerez, Portugal, said to have less spreading horns, is separated as C. pyrenaica lusitanica; those of the Sierra Nevada form a third race ( $C$. p. hispanica) , characterised by the slight development of the black markings; and a fourth race ( $C$. p. victoria), intermediate between the typical race and hispanica, is found on the Sierra de Grados.

| Length on outside curve． | Circum． ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $33 \frac{1}{2}$ | 9 ${ }^{\frac{1}{2}}$ | $26 \frac{1}{2}$ | Sierra de Gredos | H．M．the King of Spain． |
| 31 | $\delta^{\frac{3}{4}}$ | $\cdots$ | Pyrenees | －Sir Victor Brooke＇s Collection． |
| $30 \frac{1}{2}$ | 9 | 26 | Sierra de Gredos | f Marquis de Viana． <br> （Marquis de Villaviciosa． |
| $29 \frac{1}{\frac{1}{4}}$ | $9 \frac{1}{2}$ | 231 | Sierra Nevada | Abel Chapman． |
| 2 S | $9 \frac{1}{8}$ | $23 \frac{3}{8}$ | Spain ． | British Museum． |
| $27 \frac{3}{4}$ | 9 | 25 | Central Spain | Sir Edmund G．Loder，Bart． |
| 25. | $S_{2}^{1}$ | 165 | Spain ． | Hon．Walter Rothschild． |
| $25 \frac{1}{2}$ | $7 \frac{3}{4}$ | $10 \frac{1}{2}$ | Nr．Cordova | ．Lord Hincllip． |
| $2+\frac{1}{2}$ | 10 | 14 | Val d＇Arras | E．N．Buxton． |
| $23 \frac{3}{5}$ | S | 16 | Southern Spain ． | －Marques Marzales． |
| $22 \frac{3}{4}$ | $9 \frac{1}{2}$ | $18 \frac{3}{4}$ | Val d＇Arras | －E．N．Buxton． |
| $22 \frac{5}{8}$ | 10 | $15 \frac{9}{16}$ | Sierra de Gredos | Duke de Turancon． |
| ＋ $9{ }^{\frac{1}{2}}$ | $5 \frac{3}{3}$ | $6 \frac{1}{4}$ | Val d＇Arras | －E．N．Buxton． |

## OWNER＇S MEASUREMENTS．

| 3018 | $9 \frac{1}{2}$ | 2321 | Central Spain | Abel Chapman and W．J．Buck． |
| :---: | :---: | :---: | :---: | :---: |
| $29 \frac{3}{4}$ | $8 \frac{1}{4}$ | 23年 | Almeira | H．Brinsley Brooke． |
| $29 \frac{5}{8}$ | $9{ }^{\frac{7}{5}}$ | $20 \frac{7}{8}$ | Sierra de Gredos | Natural History Museum，Madrid． |
| $29 \frac{1}{2}$ | $8 \frac{1}{1}$ | $20 \frac{1}{2}$ | Sierra Nevada | Do． |
| $28 \frac{3}{4}$ | $10 \frac{1}{2}$ | 285 | ？ | Imperial Museum，Vienna． |
| $28 \frac{18}{}$ | 93 | $24 \frac{1}{2}$ | Sierra de Gredos | Marques de la Torrecilla． |
| 27\％ | $9 \frac{3}{5}$ | $20 \frac{1}{2}$ | Do． | Marques de Viana． |
| 271 年 | $10 \frac{1}{4}$ | $21 \frac{1}{15}$ | Do． | H．If．the King of Spain． |
| $27 \frac{1}{2}$ | $8 \frac{1}{2}$ | $20 \frac{1}{2}$ | Do． | Jose del Prado． |
| 27 | 101 | $20 \frac{1}{2}$ | Do． | H．Mr．the King of Spain． |
| $25 \frac{1}{2}$ | $9 \frac{1}{2}$ | 13 | Spain | W．J．Buck． |
| ¢ $10{ }^{\text {号 }}$ | $5{ }^{5}$ | $7 \frac{1}{2}$ | Val d＇Arras | A．E．Leatham． |


, Western Tur or Caucasian Ibex. Shot by Mr. P. B. Vander Byl.

## WESTERN TUR or CAUCASIAN IBEX (Capra severtzowi).

Of the two peculiar kinds of wild goats inhabiting the Caucasus and localiy known as ture, the present species is easily recognised by the approximation in the form of its horns to those of true ibex, and the uniform chestnut-brown colour of the male in the summer coat; the chin, beard, and lower part of the legs being dark brown. In adults the beard, when fully developed, is long, straight, and narrow. Height at shoulder, about 42 inches.

Distribution.-The western half of the main chain of the Caucasus. The typical race (C. severtzowi typica) inhabits the mountains west of Elbruz. It is the larger, and has the linots on the horns moderately developed. Still farther west, in the North-western Caucasus, although somewhat overlapping the range of the first, comes Dinnik's race (C. s. dinniki), the range of which to the west, like that of the species, is limited by Mount Shungus.

A．－TYPICAL RACE（C．severtzowi typica）．

| $\begin{aligned} & \text { Length } \\ & \text { Ln front } \\ & \text { crreve. } \end{aligned}$ | Circum－ ference． | $\begin{gathered} \text { Tip to } \\ \text { Tip. } \end{gathered}$ | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 40 | $13^{\frac{2}{3}}$ | $14 \frac{1}{2}$ | W．Caucasus ． | St．George Littledale． |
| 37 | I $1 \frac{1}{2}$ | $26 \frac{1}{2}$ | Do． | Do． |
| $34 \frac{3}{4}$ | II | 16 | Do． | British Museum． |

## B．－NORTH－WESTERN RACE（C．severtzowi dinniki）．

| Length on front curve． | Circum－ ference． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| 341 $\frac{1}{2}$ | 12 | 22 | Kuban，N．W．Caucasus． | Prince E．Demidoff． |
| 33 年 | $12 \frac{1}{\text { 采 }}$ | $\ldots$ | Do． | P．B．Vander Byl． |
| 321 | 11䍃 | $22{ }_{4}$ | Do． | Do． |
| $32 \frac{1}{4}$ | $11^{\frac{1}{2}}$ | $25 \frac{1}{4}$ | Do． | Prince E．Demidoff． |
| $30 \frac{5}{8}$ | $11^{\frac{3}{8}}$ | 163 | Do． | Sir Edmund G．Loder，Bart． |
| 30 | II ${ }^{\frac{1}{2}}$ | $19 \frac{1}{\frac{1}{2}}$ | Do． | Hon．Walter Rothschild． |



Head of Pallas's Eastern Tur. Shot by Prince E. Demidoff.

## EASTERN TUR or CAUCASIAN BHARAL (Capra caucasica).

Distinctly different from the last is the wild goat commonly designated by sportsmen the "Caucasian bharal"; this name being derived from the resemblance of its horns to those of the true Himalayan bharal. In spite of this point of resemblance, its affinities are, however, evidently with the goats, although it indicates a step from the more typical members of that group in the direction of the bharal. Both races are characterised by the width and shortness of the beard, which forms a curling fringe on each side of the chin. The general colour of the coat in the bharal-like race is uniform dull brown, except on the chin, the tip of the tail, and portions of the legs, where it is blackish brown. Height at shoulder, about 3 feet.

Although generally classed as typifying a species, Pallas's tur is best regarded as a race of the true C. caucasica, in which the horns are somewhat less bharal-like, and may show small knots in front.

Distribution.-The Central Caucasus and the Eastern Caucasus, from Kasbek to Daghestan.
A.-TYPICAL RACE (C. caucasica typica).

Distribution.-Central Caucasus to east of Elbruz.

Owner.


$\underset{\text { ference. }}{\text { Circum- }} \quad$| Tip to |
| ---: |
| Tip. |

Locality.
$29 \frac{1}{2}$

The following specimen, which has been regarded as a hybrid, is intermediate in character between the above and Cevertzowi.

| Length <br> on front <br> curve. | Circum- <br> ference. | Tip to <br> Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $22 \frac{3}{4}$ | 107 | $22 \frac{7}{8}$ | Elbruz District | . |

## B.-PALLAS'S RACE (C. caucasica cylindricornis).

| Length on front curve. | Circumference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 46 | $13 \frac{3}{1}$ | 8. ${ }^{4}$ | Eastern Caucasus | . | - Prince E. Demidoff. |
| $44 \frac{3}{4}$ | $13 \frac{1}{2}$ | 10 | Do. | - | . The late Prince P. Demidoff. |
| 43 | 14 | $17 \frac{1}{2}$ | Do. | - | - British Museum (the late Prince P. Demidoff). |
| $40 \frac{1}{2}$ | $12 \frac{1}{4}$ | I $5^{\frac{1}{2}}$ | Do. | . | - P. B. Vander Byl. |
| 40 | $12 \frac{1}{2}$ | 10 | Do. | . | . P. H. Thomas. |
| 39 | $13 \frac{1}{10}$ | 19 | Do. | . | . St. George Littledale. |
| $38 \frac{1}{2}$ | 13 | 17 | Do. | . | Do. |
| $38 \frac{1}{4}$ | $12 \frac{1}{2}$ | $\ldots$ | Eastern Caucasus | . | . Hon. Walter Rothschild. |
| $36 \frac{3}{4}$ | $13 \frac{1}{4}$ | 163 | Do. | . | . Count H. de Ganay. |
| 36 | 13 | $\ldots$ | Daghestan . | . | , J. D. Cobbold. |
| $35 \frac{1}{4}$ | 12 | $18 \frac{1}{4}$ | Eastern Caucasus | - | - Rhys Williams. |
| 35 | $12 \frac{3}{4}$ | $20 \frac{1}{4}$ | Do. | . | Mervyn G. Williams. |
| 35 | $12 \frac{1}{2}$ | 16 | Do. | . | S. Whitehouse. |
| $34 \frac{3}{4}$ | $13 \frac{3}{4}$ | $24 \frac{1}{4}$ | Do. | . | Duke of Alba. |
| $34 \frac{1}{2}$ | $10 \frac{7}{8}$ | $13 \frac{1}{2}$ | Do. | . | - Major Talbot. |
| $33^{\frac{3}{1}}$ | 13 | $17 \frac{1}{4}$ | Do. | . | - Sir Edmund G. Loder, Bart. |
| 32 | 13 | 19 | Do. | - | . Berthold Smith. |
| 32 | $11 \frac{1}{2}$ | 22 | Do. | - | - Sutton Timmis. |
| $31 \frac{1}{2}$ | 12 | $7{ }^{\text {星 }}$ | Do. | - | . F. G. Barclay. |
| 31 | 11 | 28 | Do. | - | . Capt. H. H. P. Deasy. |



Skull and Horns of Bharal.

## The BHARAL or BLUE SHEEP (Pseudois nahura).

Ta-sang-yang, Chinese.
With horns not unlike those of Pallas's tur, the bharal or blue sheep of Tibet differs from the goats by the absence of a beard and a strong odour in the males, and on account of these and other points of difference from the goats is placed next the sheep, of which group it forms a very aberrant member. The most distinctive external features are the comparatively smooth and olive-coloured horns, which curve at first outwards and then backwards from the sides of the head, and the bluish grey colour of the thick coat of the back and sides, the flanks, under-parts, and legs being handsomely marked with black and white. Height at shoulder, about 36 inches; weight, about i 30 lbs. In the complete absence of glands on the face, and the rudimentary condition of those between the hoofs, the bharal differs from typical sheep and approximates to goats.

Distribution.-From Hunza, and Shigar, in Baltistan, and near Sanju, south-east of Yarkand, to Sze-chuan and Shen-si, and from the main axis of the Himalaya, or locally some distance south of the same, to the Kuenluen and Altyn Tag; in summer usually met with at elevations between 14,000 and 16,000 feet, and apparently never found below about 10,000 feet.

| Length on front curve． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $31 \frac{1}{2}$ | $13 \frac{1}{1}$ | $22 \frac{1}{2}$ | Ladak | －J．Campbell of Kilberry． |
| 307 | 1213 | $21 \frac{7}{8}$ | Garhwal | －British Museum（Hume Collection）． |
| $30 \frac{1}{2}$ | IO | $1 S_{\frac{1}{2}}$ | ？ | Major F．G．T．Deshon（King Edward＇s Hospital for Officers）． |
| 30 | 13 呈 | $25 \frac{1}{4}$ | Ladak | －Hoon．Walter Rothschild． |
| 30 | 11 | 24 | Hanle，Spiti | －Major B．L．Carew． |
| $29 \frac{1}{2}$ | 115 | 251 | $?$ | H．R．IH．the Duke of Saxe－ Coburg and Gotha． |
| $29 \frac{1}{2}$ | 12 | $26 \frac{1}{2}$ | Northern Sikhim | －Major A．Pearse． |
| 28 星 | $10 \frac{1}{2}$ | $21 \frac{1}{2}$ | ？ | Major Lord Charles M．Nairne． |
| 283 | 121 ${ }^{1}$ | 22 | Chang－chenmo | －Capt．B．If．Shaw－Stewart． |
| $28 \frac{1}{2}$ | $1{ }^{1} \frac{1}{2}$ | $16 \frac{1}{4}$ | ？ | Major C．A．Vivian． |
| $2 S^{\frac{1}{2}}$ | $12 \frac{1}{4}$ | $26 \frac{1}{2}$ | Hanle ． | ．Major F．W．II．Walshe． |
| 28 | II | 20.1 | ？ | British Museum（Hume Collection）． |
| 28 | 11 | 16 | Hanle ． | －Arnold Pike． |
| 273 | $10 \frac{1}{2}$ | $23 \frac{1}{2}$ | ？ | R．H．Edmondson． |
| $27 \frac{3}{}$ | $10 \frac{18}{1}$ | 10 | L．adak | －Capt．G．Campbell． |
| $27 \frac{1}{2}$ | 13 | 34 | Kumaon | E．I．Neave． |
| $27 \frac{1}{2}$ | $10 \frac{3}{4}$ | $16 \frac{1}{1}$ | ？ | P．Radclyffe． |
| $27 \frac{1}{7}$ | 11 | $21 \frac{1}{2}$ | Ladak | －St．George Littledale． |
| 27 年 | 12 | $25 \frac{1}{1}$ | Do． | －Col．H．Appleton． |
| 27 | 12 年 | $22 \frac{1}{2}$ | Do． | －Capt．R．S．H．Walpole． |
| 27 | $1{ }^{1} 1$ | $25 \frac{3}{1}$ | Do． | －Capt．A．E．Cathcart． |
| 27 | $1{ }^{\frac{1}{2}}$ | 28 | Tibet | －Major C．S．Cumberland． |
| 263 | $1 \mathrm{O}_{2} \frac{1}{2}$ | $16 \frac{1}{1}$ | Ladak | ．Capt．W．F．Reichwald． |

## OWNER＇S MEASUREMENTS．

33年


Head of Arui.

## The ARUI, UDAD, or BARBARY SHEEP (Ammotragus lervia).

The only wild sheep found throughout the continent of Africa is the arui or fechstal of the Arabs, the udad or Barbary sheep of naturalists ; a species with horns not very unlike those of the bharal, and also lacking glands on the face, but readily distinguished by its uniformly tawny colour, the fringe of long hair depending from the throat, chest, and the upper portion of the fore-legs, and the unusual length of the tail, which exceeds that of all other wild sheep. In the length of this appendage the arui approaches many domesticated sheep, of which, however, it is not the ancestor. Height at shoulder, about 3 feet 3 inches. Three races are recognised.

Distribution.-The mountains of Northern and North-Eastern Africa, from Morocco to Egypt, and thence southwards nearly to Khartum, in about lat. I $6^{\circ} \mathrm{N}$.; also the desert south of Biskra.

| Length on outside curve． | Circum－ ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| $33^{\frac{1}{4}}$ | $13 \pm$ | $12 \frac{3}{4}$ | Algeria | ．Sir Abe Bailey． |
| $29 \frac{1}{8}$ | $12 \frac{1}{2}$ | 19 | Do． | V．Cholmondeley． |
| 283 | 12 | $14{ }^{\frac{3}{4}}$ | Do． | R．A．Cooper． |
| $28 \frac{1}{2}$ | $111 \frac{1}{2}$ | 18 | Do． | British Museum（Hon．John Ward）． |
| $28 \frac{1}{2}$ | 115 | 18.8 | Do． | Sir Edmund G．Loder，Bart． |
| $27 \frac{3}{1}$ | 16 | 302 | Sudan | D．P．MacGillivray． |
| $27 \frac{1}{2}$ | 12 | 21 | Tunisia | P．H．Thomas． |
| $26 \frac{1}{2}$ | ${ }^{11}$ | 19 | Algeria | W．H．Lindsay． |
| 26 | $11{ }^{1}$ | $16 \frac{1}{4}$ | Do． | －W．H．Edgar． |
| 26 | 13 | 24 | Sudan | A．L．Butler． |
| $25 \frac{1}{2}$ | $11 \frac{1}{2}$ | ${ }^{17}{ }^{\frac{1}{2}}$ | Algeria | Hon．John Ward． |
| $25^{\frac{1}{2}}$ | $11 \frac{1}{2}$ | 17 | Do． | F．de Murietta． |
| $25^{\frac{1}{2}}$ | $10 \frac{5}{8}$ | 16 | Do． | －Col．G．J．Cuthbert． |
| $24 \frac{3}{}$ | $10 \frac{7}{5}$ | 16 | Tunisia | －Capt．W．W．Pitt－Taylor． |
| $24 \frac{3}{4}$ | $11 \frac{1}{2}$ | $17 \frac{1}{2}$ | Algeria | E．Richardson Cox． |
| $24 \frac{3}{4}$ | 115 | $18 \frac{3}{4}$ | Do． | H．G．Watson． |
| $24 \frac{1}{1}$ | 12 年 | 173 | Dongola | －O．Atkey． |
| 233 | $10 \frac{1}{2}$ | 17 | Tunis | C．Trevor Wingfield． |
| 223 | 10 年 | 22 爯 | Algeria | －F．M．Bailey． |
| 225 | $1 \mathrm{I}^{\frac{1}{4}}$ | $14^{\frac{1}{4}}$ | Tunisia | －Capt．J．B．Jenkinson． |
| $22 \frac{1}{2}$ | 11 | $14 \frac{1}{4}$ | Algeria | Hon．Walter Rothschild． |
| 221 | 12 | $16 \frac{3}{4}$ | Dongola | Capt．W．H．Wilkin． |
| 922 | $11{ }^{\text {采 }}$ | 151 | Dongola | O．Atkey． |
| 22 | $11{ }^{\frac{1}{4}}$ | 16 | Red Sea Littoral | R．Wavell－Paxton． |
| 21 噪 | 10 全 | $18 \frac{1}{2}$ | Do． | Capt．S．S．Flower． |
| 21 年 | 10 䍃 | $17 \frac{1}{2}$ | Do． | Capt．the Hon．G．H．Douglas－ Pennant． |
| 21 | $10{ }^{\text {星 }}$ | $15 \frac{1}{8}$ | Do． | －G．C．Whitaker． |
| 21 | $11 \frac{1}{1}$ | IS ${ }_{\frac{1}{2}}$ | W．of Dongola | ．Earl of Kingston． |

## OWNER＇S MEASUREMENTS．

| 28 | $11 \frac{1}{2}$ | $16 \frac{1}{2}$ | S．Tunisia | ． | ．J．I．S．Whitaker． |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $27 \frac{3}{4}$ | $11 \frac{1}{4}$ | $141^{\frac{9}{6}}$ | Algeria | ． | ． | Viscount Edmond de Poncins． |
| $27 \frac{1}{2}$ | $12 \frac{5}{8}$ | $13 \frac{1}{8}$ |  | $?$ |  | Imperial Museum，Vienna． |
| $920 \frac{1}{4}$ | 10 | 16 | Algeria | ． | ． | A．E．Pease． |



Skull and Horns of Rocky Mountain Bighorn.

## The BIGHORN SHEEP (Ovis canadensis).

The bighorn of the American continent, inclusive of its local races, is a large sheep, distinguished from the Asiatic argalis, among other features, by the comparative smoothness of the horns, in which the outer front angle is prominent and the inner one rounded off, and also by the smaller size of the face-glands. There is a well-marked whitish patch on the rump, but the amount of white on the under-parts and legs shows considerable local variation. In the typical Rocky Mountain race (O. canadensis typica) the ears are long and pointed, with short hair, and the horns, which are very heavy, diverge but little outwards, and generally have the tips broken. The Californian $O$. canadensis nelsoni is a paler southern race. In O. canadensis stonei of the North-West Territories the colour of the back is very dark, and the white on the hind part of the belly and legs sharply defined. Both in this race and the white $O$. canadensis dalli of Alaska the horns are lighter, more divergent, and more sharply pointed, while the ears tend to become shorter, blunter, and more hairy. The grey O. c. famini tends to connect stonei with dalli, and as a matter of fact all three intergrade. Height at shoulder, about 3 feet 2 inches. Weight, about 350 lbs. Numerous other American races have been named.

The horns of the ewes are very small in comparison with those of the rams, seldom measuring more than 15 inches on the curve from base
to tip. Large male horns are now difficult to obtain, and of late years it is seldom that those of fresh-killed specimens are seen exceeding 38 inches on the curve from tip to tip.
Distribution.-The range of the American representatives of the bighorn extends from the Rocky Mountains southwards to Sonora, Northern Mexico, and California, and northwards to Alaska and the shores of Bering Sea. On the Asiatic side of Bering Strait the species is represented by two, or perhaps three, races nearly allied to the northern New World forms.

## A.-ROCKY MOUNTAIN BIGHORN (0. canadensis typica).

Specimens referable to some of the allied American races are included in this list.

| Length on front curve. | Circum. ference. | Tip to Tip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 42 | 16 | ... | Wyoming . | - • | T. W. H. Clarke. |
| 41 | 17 | 14 | Alberta | . . | G. L. Harrison. |
| $40 \frac{3}{4}$ | $16 \frac{1}{2}$ | ... | Yellowstone | . . | British Museum. |
| $40 \frac{1}{4}$ | $15 \frac{1}{4}$ | $20 \frac{1}{4}$ | ? |  | Sir Edmund G. Loder, Bart. |
| 40 | 15 | $21 \frac{1}{2}$ | British Columbia | - . | J. W. R. Young. |
| 395 | $15 \frac{3}{8}$ | $\ldots$ | Colorado | . . | St. George Littledale. |
| $39 \frac{1}{2}$ | $16 \frac{1}{2}$ | $24 \frac{3}{4}$ | Montana | . . | British Museum. |
| $39 \frac{1}{2}$ | $15 \frac{1}{2}$ | 19 | ? |  | Sir Edmund G. Loder, Bart. |
| 391 ${ }^{\frac{1}{2}}$ | 14 | $21 \frac{1}{2}$ | Mexico | . . | R. O. Crewe Read. |
| 383 | I $5 \frac{1}{2}$ | 22 | ? |  | Gerald Buxton. |
| $38 \frac{1}{4}$ | $16 \frac{3}{8}$ | $\ldots$ | Bighorn Mountains | S | Sir H. Seton-Karr. |
| $38 \frac{1}{4}$ | $15 \frac{1}{4}$ | $19 \frac{1}{1}$ | Montana. | . . | Edmund Littledale. |
| 381 | 16 | 19 | N.W. Territories | - . | S. Ratcliff. |
| 38 | 17 | $\ldots$ | Alberta, N. W.T. | . . | Arnold Pike. |
| 38 | 18 | 2 I | ? |  | Hon. Walter Rothschild. |
| 373 | $15^{\frac{7}{8}}$ | 233 | Mexico . | - • | J. A. H. Drought. |
| 371 | $15 \frac{1}{2}$ | 18 | Do. | . . | 1. N. Dracopoli. |
| $37 \frac{1}{2}$ | $16 \frac{1}{4}$ | $32 \frac{1}{2}$ | Californian Baja, M | Texico. | L. J. Cadbury. |
| $37 \frac{1}{2}$ | 16 | 15 | British Columbia | . . | Col. A. Charlesworth. |
| $37 \frac{1}{4}$ | I $5 \frac{1}{2}$ | 16 | Do. | . . | J. Turner-Turner. |
| 37 | $16 \frac{1}{4}$ | $\ldots$ | Montana . | - . | Major Maitland Kirwan. |
| 37 | 165 | 16 | British Columbia | . . | R. H. Venables Kiyrke. |
| 37 | 151 | $19 \frac{1}{2}$ | Wyoming | . . | II. A. C. Darley. |
| 37 | $15 \frac{1}{2}$ | $18 \frac{1}{2}$ | Do. | - - | Lord Rodney. |
| 36 量 | 19 | 15 | British Columlia | . . | C. H. Kennard. |
| $36 \frac{3}{4}$ | 151 | 22, $\frac{1}{2}$ | Wyoming | - - | Earl of Lonsdale. |
| 363 | $14 \frac{1}{2}$ | $22 \frac{1}{2}$ | Do. | . . | A. Willis. |
| $36 \frac{1}{2}$ | 16 | 15 | Do. | . . | W. F. Wailes-Fairbairn. |
| $36 \frac{1}{2}$ | 14 | $\ldots$ | ? |  | J. D. Cobbold. |
| $36 \frac{1}{2}$ | $15^{1}$ | 191 $\frac{1}{2}$ | ? |  | Capt. C. R. E. Radclyffe. |

Length on front curve.
361

36 36 36 $35^{3}$

Circumference.

| $14 \frac{3}{4}$ | 18 |
| :--- | :---: |
| 15 | 9 |
| $14 \frac{3}{4}$ | $16 \frac{1}{2}$ |
| $14 \frac{3}{4}$ | 16 |
| $15 \frac{1}{4}$ | 20 |
| $13 \frac{3}{4}$ | $17 \frac{1}{2}$ |
| 16 | 21 |
| $15 \frac{1}{4}$ | $18 \frac{1}{2}$ |
| $16 \frac{1}{4}$ | 17 |
| 16 | 12 |
| $5 \frac{1}{2}$ | 13 |

Locality.
British Columbia
Wyoming
Montana
Wyoming
Mexico . . . . R. F. Glyn.
British Columbia . . Hon. S. Tollemache.
Do.
Do. . . Sir Peter Walker, Bart.
Do.
Do.
Do.
Do.

Owner.
Capt. W. A. Armitage. J. L. Scarlett.
R. H. Sawyer.

Major G. Dalrymple White.
T. P. Kempson.
L. Ardern.
G. C. Whitaker.
A. Neilson.

OIVNER'S MEASUREMENTS.

| 4421 | 17 | 21 | Near Golden, B.C. . | Madison Grant. |
| :---: | :---: | :---: | :---: | :---: |
| $43^{\frac{1}{8}}$ | $16 \frac{3}{8}$ | $/ 18 \frac{1}{2}$ | British Columbia | Wilson Potter. |
| 43 | $18 \frac{1}{1}$ | ... | ? | H. E. Knobel. |
| $42 \frac{1}{1}$ | $16 \frac{1}{4}$ | 253 | Lower California | American National Collection. |
| $42 \frac{1}{2}$ | $16 \frac{1}{1}$ | $14 \frac{1}{2}$ | Do. | S. E. White. |
| $42 \frac{1}{2}$ | $16 \frac{1}{4}$ | 253 | Do. | G. H. Gould. |
| 42 | 16 | $\ldots$ | Do. | Capt. E. H. Funke. |
|  | $17 \frac{1}{1}$ | $\ldots$ | Wyoming | T. W. H. Clarke. |
| $4 \mathrm{I}^{\frac{3}{4}}$ | $17 \frac{1}{2}$ | 19 | Rocky Mountains | N. J. Dinnen. |
| $41^{\frac{1}{2}}$ | 15 | $\ldots$ | Kootenay, B.C. | Provincial Museum, B.C. |
| 4013 | $16 \frac{1}{2}$ | 17 | S. E. of British Columbia | American National Collection. |
| 40 | $15 \frac{1}{2}$ | $25^{\frac{1}{2}}$ | Lower California | J. C. Phillips. |
| 40 | 161 | .. | Do. | W. Kent. |
| 39 ! | ${ }^{17} 7$ | ... | Mexico | G. L. Harrison. |



Head of White Bighorn. Shot by Lieut. R. C. Dalglish, R.N.

# B．－WHITE BIGHORN（O．canadensis dalli）． 

Length on front curve．

Locality． ference．


## OWNER＇S MEASUREMENTS．

| $49 \frac{1}{4}$ | $14 \frac{1}{2}$ | 293 | Yukon | Major A．L．Snyder． |
| :---: | :---: | :---: | :---: | :---: |
| $44{ }^{\frac{3}{4}}$ | 14 䍃 | 341 | Do． | Wilson Potter． |
| $41 \frac{3}{5}$ | $14 \frac{1}{4}$ | 29 | Do． | American National Collection． |
| 41 素 | $12 \frac{1}{2}$ | 28⿺𠃊⿳亠丷厂彡 | Do． | J．C．Phillips． |
| 401 | $13 \frac{1}{2}$ | $27^{\frac{1}{2}}$ | Do． | H．Disston． |

## C．－GREY BIGHORN（O．canadensis fannini）．

A race characterised by the grey colour of the back．

Length on front curve．
$42 \frac{1}{2}$
$-40 \frac{1}{2}$ 37 35呈 35年 ¢9 9

Circum－ ference

14
I 3
135
$14 \quad 243$
13 ${ }^{3}$
$5^{\frac{1}{2}}$

Locality．
Yukon ．．．Hon．M．Egerton．
Near Dawson City ．Provincial Museum，B．C．
Yukon ．．．Hon．Walter Rothschild．
Do．．．．W．H．Bell．
？K．K．Horn．
Do．

Owner．

Prince Colloredo Mannsfeld．


Head of Black Bighorn. Shot by Major J. F. Church.
D.-BLACK BIGHORN (0. canadensis stonei).

| Length on front curve. | Circumference. | Tip to Tip. |  | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 42 | 14 ${ }^{\frac{1}{4}}$ | 28 | Cassiar | . . | - M. W. Ward. |
| 4 I | 14 | $28 \frac{1}{2}$ | Do. | - . | . Viscount Lascelles. |
| $40 \frac{3}{4}$ | $13 \frac{3}{1}$ | 25 | Do. | - . | - Lord Hindlip. |
| 40 | 15 | $24 \frac{1}{2}$ | Do. | - . | - C. H. Young. |
| 40 | 14 | $\ldots$ | Do. | - . | . C. D. Butler. |
| 40 | 12 妾 | $21 \frac{1}{2}$ | Do. | - . | - Major J. F. Church. |
| $39^{\frac{1}{2}}$ | $12 \frac{1}{2}$ | $27 \frac{1}{2}$ | Do. | - - | . Col. H. Appleton. |
| 39 | $13{ }^{1}$ | $22 \frac{3}{4}$ | Do. | . . | . K. K. Horn. |
| 39 | $14 \frac{1}{2}$ | $23 \frac{1}{4}$ | Do. | . . | . Capt. The Hon. G. H. DouglasPennant. |
| $37 \frac{1}{2}$ | $13 \frac{3}{4}$ | 23 | Do. |  | . W. M. Tangye. |
| 371 | $13 \frac{1}{2}$ | $1{ }^{1} \frac{1}{2}$ | Do. | - . | - R. Hayne. |
| 363 | $14 \frac{1}{4}$ | 24 | Do. | . - | - R. Beaumont. |
| 36 量 | 12 $\frac{1}{2}$ | $211 \frac{1}{4}$ | Do. | - - | - British Museum (J. M. Hanbury). |

## OWNER'S MEASUREMENTS.




Skull and Horns of Kamchatkan Bighorn. Shot by Prince E. Demidoff.

$$
\text { E.-KAMCHATKAN BIGHORN ( } 0 . \text { canadensis nivicola). }
$$

Although the Kamchatkan wild sheep is readily distinguished from the Rocky Mountain bighorn (O. canadensis typica) by the slenderness of the horns at the points, and their wider tip-to-tip measurement as well as by the shorter, blunter, and more thickly haired ears, the shorter face, the longer hair of the body, and the inferior size of the white patch on the rump, yet the white Alaskan and the black bighorn, in which the horns are of the Kamchatkan type, and the ears are shorter than in the Rocky Mountain race, tend to bridge over these points of difference. These transitions indicate that all the bighorns are essentially local modifications of the same animal ; the Asiatic forms being, as might be expected, the most aberrant. Height at shoulder, about 37 or 38 inches; weight, about 250 lbs .

Distribution.-Kamchatka.

| Length on front curve. | Circumference. | Tip to Tip. |  |  |  |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $39 \pm$ | $14 \frac{1}{2}$ | $28 \frac{1}{4}$ | Kamchatka | . |  |  | Prince E. Demidoff. |
| 383 | $14{ }^{\frac{1}{2}}$ | 305 | Do. | - | - | - | Do. |
| $-38$ | $13 \frac{1}{2}$ | 26 | Do. | - | - |  | Dr. F. H. II. Guillemard. |
| 35皇 | $13 \frac{1}{4}$ | 24 | D). | - | - | . | P. Niedieck. |


| Length on front curve. | Circumference. | Tip to Tip. | Locality. |  |  |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $35 \frac{1}{2}$ | 14 ${ }^{\frac{1}{2}}$ | $24 \frac{3}{4}$ | Kamchatka | - | - | - | St. Petersburg Museum. |
| 351 | $14 \frac{1}{7}$ | 24 $\frac{1}{2}$ | Do. | - | - |  | British Museum (St. George Littledale). |
| 35 | $13 \frac{5}{8}$ | 24 | Do. | - | . | . | W. S. Race. |
| $34 \frac{3}{4}$ | $14 \frac{1}{2}$ | $25 \frac{1}{2}$ | Do. | . | . | - | St. George Littledale. |
| 34 | $13 \frac{1}{2}$ | 235 | Do. | - | . |  | Hon. Walter Rothschild. |
| 33 | $13 \frac{3}{1}$ | 22 | Do. | - | - | - | Capt. C. R. E. Radclyffe. |
| $32 \frac{3}{4}$ | $13{ }^{\frac{1}{2}}$ | 23 | Do. | - | . | - | Sir Edmund G. Loder, Bart. |
| ¢ $10 \frac{3}{\text { 星 }}$ | 5 | $14{ }^{\frac{1}{2}}$ | Do. | - | . | . | Hon. Walter Rothschild. |

## F.-CLIFTON'S BIGHORN (O. canadensis borealis).

An East Siberian race closely allied to the last, but of a generally lighter colour, with a much larger and less well-defined white rumppatch, more white on the face, a darker tail, and larger ears.

Distribution.-The Stanovoi Mountains, the range between the valleys of the Yana and Lena, and other parts of Eastern Siberia. The only known examples in England were shot by Mr. J. Talbot Clifton, by whom a male was presented to the British Museum in 1902.

Length on front curve.

| $37 \frac{1}{2}$ | 11 | $22 \frac{1}{4}$ |
| :--- | :--- | ---: |
| 33 | 13 | $22 \frac{1}{2}$ |
| $32 \frac{3}{4}$ | $11 \frac{1}{2}$ | $24 \frac{1}{2}$ |
| $95 \frac{1}{2}$ | 35 | $5 \frac{1}{2}$ |

Locality.

Yana Valley . . . J. Talbot Clifton.
Do. . . . British Museum (J. Talbot Clifton).
Do. . . . J. Talbot Clifton.
Do.

Owner.

## The ARGALI SHEEP (Ovis ammon).

In common with the following members of the genus Ovis, this splendid sheep has the transverse wrinklings of the horns well developed, and glands present on the face, with pits for their reception in the skull. In the present species the horns of the adult rams are characterised by their large size, massiveness, and the outward direction of their tips. The hind-quarters often show a large amount of white, extending on to the thighs ; and the throat may be furnished with a voluminous ruff of long white hairs, which may or may not disappear in summer. Height at shoulder reaching in some races to about 4 feet; weight of adult male about 22 stone.

Regarding all forms of big Central Asiatic sheep, or argalis, as races of a single species, they may be classified as follows:-(I) The Tibetan race, Ovis ammon hodgsoni, of Tibet, with thick, massive horns, which do not form more than one complete circle, and have a maximum length of from $48 \frac{1}{2}$ inches to 57 inches, and a girth of from 17 inches to 19 inches; (2) O. a. mongolica, of Mongolia, nearly allied to the last; (3) O. a. typica, of the Altai, with the massive horns forming more than a complete circle, rounded in front, approximated to the sides of the face, and having a maximum length of from 59 inches to 62 inches, and a girth of from i 8 inches to 20 inches; (4) O. a. storcki, of south-eastern Kamchatka, distinguished by its small size; (5) O. a. sairensis, from the Saiar Mountains, with small but relatively massive horns, measuring from about $45 \frac{1}{2}$ inches to 47 inches in length, and $14 \frac{1}{2}$ inches to $15 \frac{1}{2}$ inches in girth; (6) O. a. karelini, of the Alatau, with a small rump-patch, and the horns more angulated in front than in O. a. typica, diverging more from the sides of the face, and having a maximum length ranging from $45 \frac{1}{2}$ inches to $49 \frac{1}{2}$ inches, and a girth of about 16 inches; (7) O. a. Iumei, of the Tien Shan N.-W. of Kashgar, nearly allied to the preceding, but with a larger rump-patch and other slight colour-differences, and outer angle of horns often rounded; (8) O. a. littledalei, of the Kulja district of the Tien Shan, with a rufous (instead of grey) colouring and no rumppatch, and long, thin horns, of which the maximum length ranges from 55 inches to 58 inches, with a girth of 17 inches or a fraction more ; (9) O. a. nigrimontana, a small outlying race from the Karatau of Bokhara, allied to littledalei ; ( I ) O. a. poli, of the Pamir, in which the horns are narrower and longer than in any of the other races, forming much more than one complete circle, with the front surface markedly angulated, and the maximum length ranging from 69 inches to 75 inches, and the girth from $14 \frac{1}{2}$ inches to 16 inches, or, rarely, 17 inches.

Although the gradation in horn-characters may not be absolutely complete from the hodgsoni to the poli type, it is sufficiently well marked to justify the view here taken of the mutual relationships of these wild sheep.

It cannot be guaranteed that all the undermentioned specimens are correctly classified.

Distribution.-The Highlands of Central Asia, from Bokhara to Mongolia ; also Kamchatka.


Head of Tibetan Argali.

## A.-TIBETAN ARGALI (0. ammon hodgsoni).

Chiefly distinguished from the Siberian argali by the development of a distinct white ruff on the throat of the males, which appears to persist in summer, and also by the less degree of lateral expansion of the horns, which do not form more than a single complete circle, are not " nipped in" below the eyes, and generally broken at the tips. The wrinkles on the horns are perhaps somewhat less prominent, and the outer front angle is frequently well developed.

The height at the shoulder is apparently rather less than in the typical argali. A ram shot by Lieut.-Col. Greenaway measured 76 inches from the nose to the tip of the tail, and weighed about 212 lbs . In another ram, whose age was estimated at io years, the height at the
shoulder was 43 inches, the girth 50 inches, and the weight 205 lbs. (Major Powell-Cotton).
Distribution.-The plateau of Tibet, from Northern Ladak to the
districts north of Sikhim, and northwards to the Kuenluen; eastern
limits unknown.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 57 | I 83 | 29 | Tibet | . Arnold Pike. |
| $50 \frac{1}{2}$ | 18 年 | 19 | Pangong Lake | . Sir Edmund G. Loder, Bart. |
| $49 \frac{1}{2}$ | 19 | $21 \frac{1}{4}$ | Tibet. | . Capt. F. M. Bailey. |
| 48 | 16 | 23 | Rudok | . Major G. A. L. Carew. |
| 48 | $18 \frac{1}{2}$ | 20 | Ladak | . Lieut.-Col. II. C. Morland. |
| 48 | 18 | 3 I | Do. | . Lieut. Col . Hon. A. Dalzell. |
| 47 $\frac{1}{4}$ | 163 | 24 | Do. | . K. C. Zarzhetsky. |
| 47 | 17 | $27 \frac{1}{4}$ | ? | Col. H. Appleton. |
| $46 \frac{1}{2}$ | 193 | 20 | Ladak | - British Museum (Hume Collection). |
| $46 \frac{1}{2}$ | $16 \frac{3}{1}$ | $\ldots$ | Do. | . Lieut. -Col. H. M. Biddulph. |
| 46 | 16 | 17 | ? | Hon. R. A. Ward. |
| 45 ${ }^{\frac{1}{2}}$ | $16 \frac{1}{4}$ | 17 | ? | Duke of Teck. |
| $45^{\frac{1}{2}}$ | $17 \frac{1}{4}$ | 19 | ? | C. P. Radclyffe. |
| 45 ${ }^{\frac{1}{4}}$ | $17 \frac{1}{4}$ | $17 \frac{1}{2}$ | ? | Capt. R. S. Kennedy. |
| 45 ${ }^{\frac{1}{4}}$ | $18_{1}^{1}$ | $19{ }^{\frac{1}{2}}$ | ? | C. E. Bryant. |
| 45 | 17 | 16 | Ladak | . J. V. Phelps. |
| 45 | 16 | $19{ }^{\frac{1}{2}}$ | Do. | . P. F. Hadow. |
| 45 | 17 | 22 量 | Do. | . Col. C. B. Wood. |
| 442 | $17 \frac{1}{4}$ | 19 | Do. | . WV. A. Conduitt. |
| 44 ${ }^{\frac{1}{2}}$ | 17 | 22 | ? | Major F. G. T. Deshon. |
| 44 | 16 | $17 \frac{1}{2}$ | Ladak | . Duke of Bedford. |
| 44 | 16 | $17 \frac{1}{2}$ | Do. | W. R. Lawrence. |
| 44 | 17 | $18 \frac{1}{2}$ | Do. | - . Major C. MacI. Ritchie. |

OWNER'S MEASUREMENTS.

| 50 | 17 | $\ldots$ | Tibet. | . | . | . | Major W. II. Lane. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $49 \frac{3}{4}$ | I 8 | $\ldots$ | Ladak | . | . | . | Capt. G. W. S. Sherlock. |
| $49 \frac{1}{2}$ | 18 | $\ldots$ | Tibet | . | . | . | G. Burrard. |
| $48 \frac{1}{2}$ | 19 | $\ldots$ | Do. | . | . | . | E. Howard Brooke. |
| 48 | $18 \frac{1}{2}$ | $\ldots$ | Do. | . | . | . | Col. T. K. E. Johnston. |
| 47 | $17 \frac{1}{2}$ | 18 |  | $?$ |  | Lieut. Col. G. W. Brazier-Creagh. |  |
| ${ }^{1} 46 \frac{1}{2}$ | $16 \frac{1}{2}$ | 21 | Do. | . | . | . | Major P. H. G. Powell-Cotton. |
| 46 | 19 | $\ldots$ |  | $?$ |  | Major C. S. Cumberland. |  |



Head of Siberian Argali. Shot by Mr. J. H. Miller in the Altai.

## B.-SIBERIAN ARGALI (0. ammon typica).

A more or less distinct white patch on the rump, not extending on to the thigh, which is dark-coloured like the back; no ruff on the throat, even in the long winter-coat. In summer the coat of old males, which is very short, tends to become more or less light-coloured all over. Height at shoulder, from about 45 inches to 4 feet ; weight, from about 250 to 350 lbs . As in the Tibetan race, considerable individual variation may be noticed in the horns, some having the outer front angle much more developed than usual ; it does not appear that these differences can be accounted for by age.

Distribution.-In former times apparently extending from the Baikal
Mountains to the Altai ; now chiefly restricted to the latter area.

| Length on front curve. | Circum. ference. | Tip to Tip. |  | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 621 | $19 \frac{3}{4}$ | $38 \frac{1}{4}$ | Altai | - |  | St. George Littledale. |
| 623 | $19 \frac{1}{1}$ | $41 \frac{1}{2}$ | Do. | . |  | Col. C. B. Wood. |
| 62 | 19 | $38 \frac{3}{4}$ | Do. | - |  | II. I. Elwes. |
| 61 $\frac{1}{2}$ | $20 \frac{1}{2}$ | $37 \frac{1}{2}$ | Do. | - | . . | J. H. Miller. (See illustration.) |
| 61 $\frac{1}{2}$ | $19{ }^{\frac{1}{4}}$ | 394 | Do. | - |  | British Museum (St. George Littledale). |


| Length on front curve. | Circum. ference. | Tip to 'Tip. |  | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 60 | 20 | 41 | Altai | . . | - . | Lord Elphinstone. |
| 59끌 | $21 \frac{1}{2}$ | $42 \frac{1}{2}$ | Do. | . . | - . | T. P. Miller. |
| 5912 | 20 | $41 \frac{1}{2}$ | Do. | . . |  | IIon. Walter Rothschild. |
| $59 \frac{1}{8}$ | $19 \frac{1}{3}$ | $38 \frac{1}{4}$ | Do. | . . |  | St. George Littledale. |
| -59 $\frac{1}{8}$ | $19 \frac{1}{2}$ | 40 | Do. | . . |  | American National Collection. |
| 59 | IS | $36 \frac{1}{4}$ | Do. | . . | . . | H. W. Seton-Karr. |
| 59 | 19 | $37 \frac{1}{2}$ | Do. | - . |  | Ford G. Barclay. |
| $56 \frac{1}{2}$ | $18 \frac{1}{3}$ | 332 | Do. | - - |  | Major C. S. Cumberland. |
| 56 | I S $_{1}^{2}$ | 35 | Do. | - • |  | British Museum. |
| 56 | $17 \frac{3}{4}$ | 33 | Do. | - . |  | E. W. Dixon. |
| $55 \frac{1}{4}$ | $18 \frac{1}{2}$ | $36 \frac{1}{4}$ | Do. | - |  | Count E. Hoyos. |
| 55 | 18 | 39 | Do. | - |  | Prince E. Demidoff. |
| 55 | $19 \frac{3}{4}$ | $34^{\frac{3}{4}}$ | Do. | . . |  | D. Carruthers. |
| 55 | 191 ${ }^{\frac{1}{2}}$ | 39 | Do. | - • | $\cdot$ | Col. Max C. Fleischmann. |
| $54 \frac{1}{2}$ | 19 | 33 | Do. | . . |  | R. Hayne. |
| $54 \frac{1}{4}$ | 18 | 332 | Do. | . . | - - | Lord Osborne Beauclerk. |
| $53 \frac{1}{4}$ | 21 $\frac{3}{4}$ | $33 \frac{1}{2}$ | Do. | - . |  | Duke of Bedford. |
| $53 \frac{1}{1}$ | 19 | 22 | Do. | - . | . . | St. George Littledale. |
| 53 | 18 | 39 | Do. | - | - | W. E. Pease. |
| $52 \frac{1}{2}$ | $19 \frac{1}{2}$ | 39 | Do. | - . | - . | J. R. Bradley. |
| 52 | 21 | $30 \frac{1}{2}$ | Do. | - - | - | P. B. Vander Byl. |
| -926 | 73 | 23䍃 | Do. | . . | - . | Berlin Museum. |



Mongolian Argali (O. a. mongolica). Shot by Col. J. H. Abbot Anderson.

## C.-MONGOLIAN ARGALI (0. ammon mongolica).

Allied to the Tibetan race, having a distinct yellowish-white throat-ruff, but apparently less massive horns, in which the outer front angles may be much rounded off. The white on the buttocks and hind surface of legs more abundant and purer in colour.

## Distribution.-Eastern Mongolia and Manchuria to the north of Pekin.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 503 | 18 | 29 | N. Shan-si, S. Manchuria | Col. J. H. Abbot Anderson. |
| 49 | 161 ${ }^{1}$ | 25 | S. Mongolia | H. Fowler. |
| 47 | $16 \frac{3}{ \pm}$ | 251 | Do. | G. N. Atkinson. |
| $44 \frac{3}{4}$ | $16 \frac{1}{2}$ | 23 | Manchuria | H.R.H. Menri de Bourbon, Comte de Bardi. |
| 41 | 173 | $19 \frac{1}{2}$ | N. Shan-si | Major Sir T. S. Tancred, Bart. |
| $4{ }^{1}$ | $17 \frac{1}{4}$ | $24 \frac{1}{2}$ | Do. | M. G. Brisker. |

## D.-SAIAR ARGALI (0. ammon sairensis).

This rather small sheep is in some respects intermediate between poli and ammon, but differs from both in having the face brown above and white on the muzzle. The horns are less finely ridged than those of anmon and form a longer spiral.

Distribution.-The Saiar or Sair Mountains.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $47^{\frac{1}{2}}$ | $15 \frac{1}{2}$ | 27 | Saiar Mountains | . British Museum (St. George Littledale. Type). |
| -47 | $15 \frac{1}{4}$ | 30 | Do. | American National Collection. |
| ${ }^{1} 46 \frac{1}{4}$ | $14 \frac{1}{4}$ | 27 | Irtish District | . Hon. Walter Rothschild. |
| 46 | $13 \frac{1}{4}$ | 273 | Saiar Mountains | - J. C. Phillips. |
| ${ }^{1} 40$ | $14^{\frac{3}{8}}$ | 2913 | Nr. Sairam Nor | . Lord Elphinstone. |

## E.-ALATAU ARGALI (O. ammon karelini).

Rump-patch smaller than in next race ; horn characters mentioned under head of species.

Distribution.-Typically the Alatau and adjacent parts of Altai.

| Length on <br> front curve. | Circum- <br> ference. | Tip to Tip. | Locality. | Owner. |  |
| :---: | :---: | :---: | :---: | :--- | :--- |
| 53 | $16 \frac{1}{2}$ | $33 \frac{1}{4}$ | Alatau Mountains | . J. H. Miller. |  |
| $49 \frac{1}{2}$ | $16 \frac{1}{4}$ | $25 \frac{1}{2}$ | Do. | . | Sir Edmund G. Loder, Bart. |
| $45^{\frac{1}{2}}$ | $14 \frac{3}{4}$ | 34 | Do. | . | Do. |

> F.-KASHGARIAN ARGALI (0. ammon humei).

General colour in winter greyish, with a ruff and large rump-patch.
Distribution.-Tien Shan, north-west of Kashgar.

| Length on <br> front curve. | Circum- <br> ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 47 | $13^{\frac{1}{4}}$ | 40 | N. -W. of Kashgar | . | | British Museum |
| :---: |
| Collection). | (co-type ; Hume

## G.-LITTLEDALE'S ARGALI (0. ammon littledalei)

General colour in winter rufous, with a yellowish ruff but no rumppatch.

Larger than sairensis, with the same brown forehead and white muzzle, but the ears smaller and rather farther away from the horns, and the latter less "nipped in " below the eyes than in the typical argali, and showing more of their inner surfaces in a front view. This is a "thin-horned" sheep.

Distribution.-Typically the east end of the Tien Shan, to the south-east of Kulja, or Ili.

Length on front curve．

Circum
ference．

Tip to Tip．
$41 \frac{3}{4}$
$40 \frac{1}{2}$
41
45
35童
37
43
44
43
36 章
54．
$54 \frac{1}{4}$
$53 \frac{3}{4}$
$53 \frac{1}{2}$
53 年
52
$5^{\frac{1}{2}}$
51

| 58 | 17 | $41 \frac{3}{4}$ |
| :--- | :--- | :--- |
| 58 | $15 \frac{1}{4}$ | $40 \frac{1}{2}$ |
| $57 \frac{1}{4}$ | $17 \frac{1}{2}$ | 41 |
| $55^{\frac{1}{2}}$ | 15 | 45 |
| $55^{\frac{1}{2}}$ | $16 \frac{1}{4}$ | $35 \frac{3}{4}$ |
| $55 \frac{1}{4}$ | 16 | 37 |
| 55 | 18 | 43 |
| 55 | 16 | 44 |
| 55 | 16 | 43 |
| $54 \frac{1}{4}$ | $14 \frac{3}{4}$ | $36 \frac{3}{4}$ |
| $54 \frac{1}{4}$ | 16 | 34 |
| $53 \frac{3}{4}$ | $15 \frac{1}{2}$ | 38 |
| $53 \frac{1}{2}$ | 17 | $41 \frac{1}{4}$ |
| $53 \frac{1}{4}$ | $15 \frac{1}{2}$ | $40 \frac{1}{2}$ |
| 52 | $15 \frac{3}{4}$ | $42 \frac{3}{4}$ |
| $51 \frac{1}{2}$ | 17 | $41 \frac{1}{2}$ |
| 51 | $16 \frac{1}{2}$ | 39 |

Owner．

A．Bayley－Worthington．
W．R．Read．
Major A．D．Greenhill Gardyne．
Col．H．Appleton．
Capt．J．N．Price Wood．
Lieut．－Col．G．E．Pereira．
－Col．H．Appleton．
－H．R．H．the Duc d＇Orléans．
Lord Osborne Beauclerk．
T．P．Miller．
A．W．Berg．
C．H．Bury．
B．Chew．
H．Whitaker．
J．H．Miller．
St．George Littledale．
British Museum（St．George Littledale．Type）．


Bokharan Argali．

## H．－BOKHARAN ARGALI（0．ammon nigrimontana）．

The characters of this race are given under the heading of the species． Distribution．－The Karatau（Black Mountain）of Bokhara，Russian Turkestan．

| Length on front curve． | Circum－ ference． | Tip to Tip． |  | Locality． |  | Owner． |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $35 \frac{3}{4}$ | $10 \frac{1}{2}$ | 24 | Bokhara | － |  | D．Carruthers． | （See illustration．） |
| 33 | $10 \frac{1}{2}$ | 213 | Do． |  |  | Sir Edmund G | Loder，Bart． |



Skull and horns of Marco Polo's Argali. Sir Edmund G. Loder's specimen.

## I.-PAMIR or MARCO POLO'S ARGALI (0. ammon poli).

Distribution.-The Pamir plateau, extending to Hunza. This argali was first definitely made known in England by specimens obtained during the Second Yarkand Mission under the late Sir D. Forsyth during the years 1873 and 1874 ; since which date it has been killed by Mr. St. George Littledale, Major C. S. Cumberland, Col. H. Bower, Viscount de Poncins, and other sportsmen.

Length on front curve.

Locality.
Owner.



Skull and horns of Oiis poli in the collection of Mr. George L. Harrison.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 65 | $16 \frac{1}{2}$ | $49 \frac{1}{2}$ | $?$ | Col. C. F. Blane. |
| $64{ }^{\frac{1}{2}}$ | 161 ${ }^{1}$ | 46 | Pamir | . Major C. C. Ellis. |
| $64 \frac{1}{4}$ | 161 ${ }^{2}$ | 41 | Do. | . W. Lawrence. |
| $64 \frac{1}{4}$ | $15^{\frac{1}{4}}$ | 39 | Do. | . H. C. V. Hunter. |
| 64 | $15 \frac{1}{2}$ | 50 | Little Pamir | . Major R. P. Cobbold. |
| 64 | 15. | 39 | Do. | . A. Ezra. |
| 64 | 15 | 49 | $?$ | Duke of Portland. |
| 635 | $16 \frac{1}{8}$ | 42 $\frac{1}{2}$ | Pamir | Hon. Walter Rothschild. |
| 63 | $14 \frac{3}{8}$ | $32 \frac{1}{4}$ | Do. | Col. G. D. F. Sulivan. |
| 63 | 16 | $49 \frac{1}{2}$ | Little Pamir | Bachelors' Club (Major R. P. Cobbold). |
| 623 | $16 \frac{1}{4}$ | 51 | Tagdumbash | Capt. T. W. Greenfield. |
| $62 \frac{1}{2}$ | 15 | 57 | Do. | Sir Edmund G. Loder, Bart. |
| 62 | I $5 \frac{1}{2}$ | $46 \frac{1}{2}$ | Do. | G. L. Harrison. |
| 62 | $14 \frac{1}{2}$ | 432 | Do. | L. C. Sanford. |
| 611 $\frac{1}{2}$ | 15 ${ }^{\frac{1}{2}}$ | $46 \frac{1}{4}$ | Do. | . E. L. Phelps. |
| $60 \frac{3}{4}$ | I $5 \frac{3}{1}$ | $46 \frac{7}{8}$ | Pamir | St. George Littledale. |
| 60 | I $5 \frac{3}{4}$ | $46 \frac{3}{4}$ | Tagdumbash | - Capt. T. W. Greenfield. |
| 60 | $15^{\frac{1}{2}}$ | 46 | Do. | - I'. Church. |
| 60 | $15 \frac{3}{4}$ | 43 | Do. | J. C. Phillips. |
| $59 . \frac{1}{4}$ | 16 | 46 | Do. | . Capt. H. H. P. Deasy. |
| 59 | $15^{\frac{1}{2}}$ | 40 | Do. | Lord Curzon of Kedleston. |
| 59 | $15 \frac{3}{4}$ | 41 | ? | Marty Kennard. |
| 59 | $16 \frac{1}{2}$ | $44 \frac{1}{1}$ | ? | R. F. Glyn. |



## OWNER'S MEASUREMENTS.




Head of Shapo or Ladak Urial.

## The URIAL or SHAPO (Ovis vignei).

A much smaller sheep than most of the Asiatic argalis, with comparatively slender and well-wrinkled horns of considerable length, which when fully developed curve forwards along the sides of the face; the males with a more or less developed mainly whitish ruff on the throat. General colour varying from rufous brown to grey in summer, with the chest, under-parts, and portions of the legs white, and sometimes blackish "points." Females with small horns. Height at shoulder, about 32 inches ; weight, about 120 lbs .
Distribution.-From Ladak and Zanskar to Russian Turkestan, Transcaspia, Afghanistan, Baluchistan, Southern Persia, the NorthWest Frontier of India, the Punjab Salt-Range, and Sind. Four local races, two of which probably intergrade in the Indus valley, are recognised:-The typical urin of Astor, the sha or shapo of Ladak ( O. vignei typica) with much black in the ruff; the Afghan urial (O.v.cycloceros) of Afghanistan, Baluchistan, and the TransIndus districts, in which the points of the horns tend to turn up, and the front angles may be knotted; the Punjab urial ( $O, v$. punjabiensis) of the Cis-Indus Punjab, in which the size is less, the colour redder, the ruff much developed, and the horns form a close-coiled spiral; the Kopet-Dagh urial ( $O, v$. arkal) of the Ust-Urz plateau and the Kopet-Dagh and Alag-Dagh, in which the front of the horns is much flattened, with the two angles very pronounced, and the ruff wholly white in front, the general colour being rufous.

## A.-SHAPO or LADAK URIAL (0. vignei typica).



## OWNER'S MEASUREMENTS.

$\square$
Io
13

II 9

Near Leh
Gilgit .
Ladak .
Chilas.

Lieut.-Col. A. E. Warcl.
F. M. Hodgkins.

Sir Edmund G. Loder, Bart.
R.E. Mess, Roorkec.


Urial Skull and Horns in the Mess of the S.IV. Militia, Wana.

## $B$.-AFGHAN URIAL (0. vignei cycloceros). ${ }^{1}$

| Length on front curve. | Circum- <br> ference. | 'Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $41 \frac{1}{2}$ | 12 | I $5 \frac{1}{2}$ | ? | The late Major G. Dodd. |
| $39 \frac{1}{2}$ | 103 | $18 \frac{1}{4}$ | Waziristan | Major F. H. Taylor. |
| 383 | 93 | 912 | Chita Oapar Range, near Attock | Royal Artillery Mess, Woolwich (Lieut.-Col. C. F. Massey). |
| $37 \frac{1}{2}$ | $10 \frac{1}{4}$ | II | Haji Khan, Kelat, 3000 ft . | British Museum (Hume Collection). |
| $36 \frac{3}{1}$ | 9 | 9 | Hills north - west of Peshawur | Mess of the 6oth Rifles (Lord Walter Fitzgerald). |
| 35 ${ }^{\frac{1}{2}}$ | 10 $\frac{1}{2}$ | 16 | Gulran, Afghanistan | British Mnseum (Dr. J. Aitchison). |
| 351 | $10 \frac{1}{2}$ | 12 | S. Waziristan | Capt. A. G. Shea. |
| $35 \frac{1}{4}$ | $10 \frac{1}{2}$ | $9{ }^{\frac{1}{2}}$ | Waziristan | Major F. H. Taylor. |
| 3412 | $10 \frac{1}{2}$ | 11 | Do. | Sir Edmund G. Loder, Bart. |
| 341 $\frac{1}{2}$ | $8 \frac{1}{4}$ | 16 | Sind | L. Napier. |
| $33 \frac{1}{2}$ | 95 | 8 ${ }^{\frac{3}{4}}$ | ? | Major R. L. Tottenham. |
| $33 \frac{1}{2}$ | $9 \frac{3}{4}$ | $15 \frac{3}{4}$ | Waziristan | Capt. J. F. Turner. |
| $32 \frac{1}{2}$ | $9{ }^{\frac{1}{2}}$ | I I | ? | Capt. E. A. Fielden. |

## C.-SALT RANGE URIAL (0. vignei punjabiensis).

| Length on <br> front curve.Circum- <br> ference. |
| :--- |
| Tip to Tip. Locality. Owner. <br> $34 \frac{3}{4}$   |
| 94 |



Urial. Shot by Col. H. V. Biggs, near Rawal Pindi.

| Length on <br> front curve. | Circum- <br> ference. |
| :---: | :---: |
| $33 \frac{1}{\frac{1}{2}}$ | 9 |
| $32 \frac{3}{3}$ | 9 |
| $32 \frac{3}{3}$ | $7 \frac{3}{ \pm}$ |
| $32 \frac{1}{4}$ | 10 |
| $31 \frac{1}{2}$ | $9 \frac{1}{2}$ |
| $31 \frac{1}{2}$ | 12 |
| $3 I$ | 9 |
| $3 I$ | $9 \frac{3}{3}$ |

Tip to Tip. Locality.
I4 $\frac{1}{2}$ Salt-Range
I2 $\frac{1}{2}$ Near Rawal Pindi.
12 Punjab .
$11 \frac{1}{2}$ ?
16 $\frac{3}{t}$ Salt-Range
$10 \frac{1}{4}$ ?
I7 J Jhelam
I4 $\frac{1}{2}$ Do.

Owner.
Capt. R. Milne.
. Major E. G. de Labillière.
G. Blois Johnson.

British Museum (Hume Collection).
Lieut.-Col. H. W. Codrington.
Lieut.-Col. J. Manners Smith.
Capt. W. F. Brayne.
Lieut. -Col. R. H. Rattray.

## D.-KOPET DAGH URIAL (0. vignei arkal).

Length on
front curve. $\quad \begin{gathered}\text { Circum. } \\ \text { ference. }\end{gathered}$

| 45 ${ }^{\frac{1}{4}}$ | I I | 161 ${ }^{\frac{1}{4}}$ | N. Persia | Capt. C. T. Dankes. |
| :---: | :---: | :---: | :---: | :---: |
| 39 ${ }^{\frac{1}{2}}$ | 121 | $14 \frac{1}{7}$ | Russian Turkestan | Prince E. Demidoff. |
| 381 | 12 | 14 ${ }^{\frac{1}{4}}$ | N. Persia | Capt. C. T. Daukes. |
| $3^{8}$ | 11 ${ }^{\text {b }}$ | I I $\frac{1}{4}$ | Persia | Lord Osborne Beauclerk. |
| 38 | 1013 | 13 | $1) \mathrm{O}$ | Major P. M. Sykes. |
| 37爯 | 12 | 17 | Elburz Mountains, (north side) | Lieut.-Col. K. L. Kennion. |
| 37 | I I | 10:12 | North I'ersia | A. Bayley-Worthington. |



## VARIOUS RACES-OWNER'S MEASUREMENTS.

| $39{ }^{\frac{3}{1}}$ | $\cdots$ | ... | ? | Mess of the 27 th Punjabis (the late Major G. Dodd). |
| :---: | :---: | :---: | :---: | :---: |
| $39 \frac{1}{2}$ | 10 | 9 | Seistan, Persia | Bombay Natural History Society. |
| 38 | 103 | 9 | Waziristan | Mess, S.W. Militia, Wana. The late Capt. G. B. Brown. (See illustration, page 409.) |
| $37 \frac{1}{2}$ | $8{ }^{\text {星 }}$ | 9 | Do. | R.E. Mess, Roorkee. |
| $37 \frac{1}{4}$ | $9{ }^{9}$ | - | Near Rawal Pindi . | Col. H. V. Biggs. (See illustration page 4io.) |
| $36 \frac{3}{4}$ | $9 \frac{7}{8}$ | 5 尔 | ? | Dr. Albert von Stephani. |
| $36 \frac{1}{4}$ | 9 ${ }^{\frac{1}{2}}$ | 14 | Near Quetta | F. Beaty. |
| $35^{\frac{1}{2}}$ | 107 | $20 \frac{3}{4}$ | ? | Mess of the 215 Punjab Infantry. |
| $34 \frac{1}{2}$ | 114 | 21 | Gilgit | J. West. |

## The RED or GMELIN'S SHEEP (Ovis orientalis).

Apparently differs from all the preceding species by the absence of horns in the females; the horns of the males being not unlike those of the urial, but usually curving backwards, so that their points are situated behind the neck instead of beneath the eyes. General colour of upper parts some shade of yellow or foxy red in summer ; in winter, brownish with a whitish saddle-patch; the under parts and lower portions of the legs, as well as muzzle, white. A smaller throatfringe than in the urial, which is always black. Height at shoulder, typically about 2 feet 9 inches.

Distribution.-Cyprus, Persia, Asia Minor, and Transcaucasia.

## A.-CYPRIAN RACE (0. orientalis typica).

The typical race, distinguished by its small size, coloration, and the complete rounding-off of the front outer angle of the horns of the rams. This is the smallest of the wild sheep, standing only about 28 inches at the shoulder. Weight, about 70 lbs .

Distribution.-Troödos Mountains of Cyprus.


- Owner's measurements.


## B.-ARMENIAN RACE (0. orientalis gmelini).

Distribution.-The mountains of Armenia and other parts of Asia Minor, and Transcaucasia. Heads from the Cilician Taurus approach the Cyprian type and may indicate a distinct race.

| Lenglh on <br> outside curve. | Circum- <br> ference. |
| :---: | :---: |
| $40 . \frac{1}{2}$ | $10 \frac{1}{2}$ |
| 36.1 | 103 |

Tip to Tip. Locality.
$5^{\frac{1}{2}}$

5

Owner.
British Museum (VV. Burchart Sarker). British Museum.


Armenian Mouflon. Shot by Mr. P. H. Thomas.

| Length on <br> outside curve.Circum. <br> ference. | Tip to Tip. | Locality. |
| :---: | :---: | :---: | :--- | :--- | :--- |

## C.-PERSIAN RACE ( 0 . orientalis erskinei).

In some instances the horns curve forward, when this sheep is practically indistinguishable from an urial. If the two really intergrade, the name $O$. orientalis has priority over $O$. cycloceros.

Distribution.-South flank of the Elburz Mountains of Persia.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $27 \frac{1}{2}$ | 10 | 14 | Elburz Range | . . | Hon. W. Erskine. |
| $24 \frac{3}{4}$ | 9 ${ }^{\frac{1}{2}}$ | $\begin{gathered} \text { I } 5 \frac{3}{x} \\ \text { (no beard) } \end{gathered}$ | S. slopes of the | Elburz. | Capt. the Hon. G. H. Douglas. r'ennant. |
| 24 | $9^{\frac{1}{2}}$ | $17 \frac{1}{ \pm}$ <br> (beard) | Do. |  | Do. |



Head of Mouflon. Shot by Count Andrassy.

## The MOUFLON (Ovis musimon).

The large light-coloured saddle on the otherwise dark winter-coat of the rams and the form of the horns are so distinctive of the species that nothing in the way of description need be attempted in this place. The horns of rams normally curve forwards so as to have their tips near the eyes, and are comparatively massive, with the wrinkles of a type somewhat different from that obtaining in the red sheep. Two races appear recognisable, in one of which the ewes are hornless, while in the other they have short horns. Height at shoulder, about 27 inches.

Distribution.-At the present day the islands of Sardinia and Corsica. Probably the race with hornless ewes is restricted to one of these islands.

| Length on front curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $38 \frac{1}{2}$ | 8 | $1{ }^{1} \frac{1}{2}$ | Sardinia | Duke of Bedford. |
| $34 \frac{1}{2}$ | $8{ }_{4}$ | $16{ }^{\text {\% }}$ | Do. | W. Moncreiffe. |
| $33 \frac{1}{2}$ | 9 | 9 | Do. | IIon. M. Egerton. |
| 32 年 | 9 | 9 | Do. | C. Sloane-Stanley. |
| 32 | $8 \frac{3}{3}$ | $14 \frac{1}{2}$ | Do. | American National Collection. |
| 31 | 83 | 10 | Do. | C. G. R. Lee. |


| Length on front curve． | Circum－ ference． | Tip to Tip． |  | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $30 \frac{1}{4}$ | S | 14 | Sardinia | ．． | Rhys Williams． |
| $30 \frac{1}{4}$ | $S_{4}^{1}$ | 10 | Do． | ．． | Major B．H．Piercey． |
| 29 ${ }^{\frac{3}{4}}$ | S | $12 \frac{1}{2}$ | Do． | ．． | C．Sloane－Stanley． |
| 293 | S | $\ldots$ | Do． | ．． | I．D．Cobbold． |
| $29 \frac{5}{8}$ | $S_{4}^{3}$ | I I | Do． | ．． | Hon．R．A．Ward． |
| 287 | $S_{\frac{1}{5}}$ | 21 | Do． | ．． | E．N．Buxton． |
| 283 | 9 | 10 | Do． | ．． | F．G．Barclay． |
| $28 \frac{1}{2}$ | 85 | $9 \frac{1}{2}$ | Do． | ．． | Sir Edmund G．Loder，Bart． |
| $28 \frac{1}{2}$ | S $\frac{3}{4}$ | 7 | Bohemia | （introduced） | J．Hamilton Leigh． |
| $28 \frac{1}{4}$ | 95 | 93 | Sardinia | ．． | Edinburgh Museum． |
| $27 \frac{7}{8}$ | S量 | $5{ }^{\frac{1}{4}}$ | Do． | ．． | W．E．Pease． |
| 275 | $8 \frac{3}{4}$ | 9 | Do． | ．． | Prince E．Demidoff． |
| $27 \frac{1}{2}$ | $\oint^{3}$ | 6 年 | Do． | ．． | Commander J．E．Cameron，R．N． |
| $27 \frac{3}{8}$ | S ${ }^{1}$ | $6 \frac{1}{4}$ | Do． | ．． | Lieut．E．S．Fleetwood Nash， R．N． |
| 27 | $S_{2}^{1}$ | 10 | Do． | ．． | British Museum． |

OWNER＇S MEASUREMENTS．

| 344 | 9 ${ }^{\frac{1}{2}}$ | $18 \frac{3}{4}$ ？ | IIungary（introduced） |  | Count 11．Andrassy． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 32 ${ }^{\text {采 }}$ | $9 \frac{1}{8}$ | $\ldots$ | Austria | do． | Count G．Andrassy． |
| $31 \frac{1}{4}$ | $S_{2}^{1}$ | $11 \frac{1}{2}$ | Bohemia | do． | WV．Winans． |
| $29 \frac{3}{4}$ | 8 量 | 1012 | Do． | do． | Count Erdödy． |
| $29 \frac{1}{4}$ | $9{ }_{1} \frac{1}{6}$ | $13 \frac{1}{4}$ ？ | Do． | do． | W．Winans． |
| $27 \frac{1}{2}$ | $10_{4}^{1}$ | $18 \frac{1}{2}$ ？ | Do． | do． | I．H．Thomas． |
| 27 | $8 \frac{1}{2}$ | 19？ | Do． | do． | W．Winans： |
| 26 | 1038 | ． $10 \frac{1}{2}$ ？ | Corsica | ． | Col．J．Marriott． |

## DOMESTICATED SHEEP (Ovis aries).

The history and ancestry of the various breeds of domesticated sheep are lost in the mists of antiquity, and naturalists are unable to point with certainty to the wild stock from which any or all of them are derived. This is the more to be regretted, seeing that the Swedish breed is the type of the genus Oiis. Most domesticated breeds differ from wild sheep by the woolly nature of their coat ; but since hairy tame sheep are met with in Africa and elsewhere, this point of difference is of comparatively little importance. More weight has been attached to the length of the tail, which may be longer than in the arui ; but in some breeds like that of Soa, and also in the Himalayan Barwal and Hunia sheep, this appendage is comparatively short, and its length in other breeds is probably due to a kind of degeneration. The ancestry of domesticated breeds may therefore be looked for among the mouflons or urial or some allied extinct form, since the horns of most breeds approximate to the mouflon-type. In many breeds-Dorsetshire, for example-the females are horned; and four, or even five, horns occur in the males of certain breeds. Some eastern sheep, like the Wallachian, have departed from the mouflon-type by the development of upright corkscrew-horns comparable in form with those of the markhor, but with the twist of the spiral in the opposite direction.

| Length on outside curve. | Circum- <br> ference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 451 ${ }^{\frac{1}{2}}$ | 9 | 15 | Scotland | J. A. H. Drought. |
| 41 | 10 | 21 | Do. | - J. C. Lyell. |
| $39 \frac{1}{2}$ | $8_{4}^{3}$ | 21 | ? | H. E. Surtees. |
| 37 | $8_{\frac{1}{4}}$ | 20 | Loch Awe, N.B. | H. Murray. |
| $35 \frac{1}{2}$ | S | $16 \frac{7}{8}$ | ? | Sir Victor Brooke's Collection. |
| $35^{\frac{1}{2}}$ | $8 \frac{1}{2}$ | 24 | Dorset | Hon. Walter Rothschild. |
| 33 | II | $22 \frac{1}{4}$ | Yarkand | British Museum (Hume Collection). |
| 231 | $7^{\frac{1}{2}}$ | $32 \frac{1}{2}$ | W. Kan-su | H. F. Wallace. |

## OWNER'S MEASUREMENTS.



## Many-horned Breeds.

| Length on <br> outside curves. | Circum- <br> ference. | Tip to Tip. | Number of <br> Horns. | Owner. |
| :---: | :---: | :---: | :--- | :--- |
| $23 \ldots 20 \frac{1}{2}$ | $6 \frac{1}{2} \ldots 4 \frac{1}{4}$ | 29 | Six | J. G. Millais. |
| $21 \frac{1}{4} \ldots 17 \frac{1}{2}$ | $7 \frac{1}{2} \cdots 5$ | 35 | Four | Capt. H. II. Banner. |
| $21 \ldots 20$ | $6 \frac{3}{4} \cdots 4 \frac{1}{4}$ | $25 \frac{1}{4}$ | Do. | D. McDouall. |
| $20 \frac{1}{4} \ldots 16$ | $6 \ldots 4 \frac{3}{4}$ | $15 \frac{1}{2}$ | Do. | The late Sir IH. B. Meux, Bart. |
| $19 \frac{3}{4} \cdots 14$ | $6 \frac{1}{2} \cdots 4 \frac{1}{2}$ | $21 \ldots 16$ | Do. | P. C. Millbank. |
| $19 \frac{1}{2} \ldots 14 \frac{1}{4}$ | $8 \ldots 5 \frac{1}{4}$ | $27 \ldots 9 \frac{1}{4}$ | Do. | British Museum. |
| $19 \frac{1}{2} \ldots 19$ | $7 \ldots 4 \frac{3}{4}$ | $9 \frac{3}{4} \cdots 22$ | $\ldots$ | R. I. Cuninghame. |
| $19 \ldots 18 \frac{1}{2}$ | $9 \ldots 6$ | $3 \frac{1}{2} \cdots 5 \frac{9}{4}$ | Four | Sir Basil S. Brooke, Bart. |

The following belong to the Wallachian breed :-

| Length on the curve. | Length in a straight line. | Girth. | Tip to Tip. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $34 \frac{3}{4}$ | 24妾 | 8 | $40 \frac{1}{2}$ | British Museum. |
| 33 | $17 \frac{1}{2}$ | $7 \frac{1}{2}$ | 191 | H.R.II. the Duc d'Orléans. |
| 32 | 24 | $7 \frac{1}{4}$ | 38 | Do. |
| 28 | 191 | $7 \frac{1}{2}$ | $38 \frac{8}{4}$ | Hon. Walter Rothschild. |
| 23 ${ }^{\frac{1}{2}}$ | 21 | $8 \ddagger$ | $33^{\frac{1}{2}}$ | Sir Edmund G. Loder, Bart. |
| ¢ 12 2\% | 10 ${ }^{\frac{1}{2}}$ | $4 \frac{1}{1}$ | $17 \frac{1}{x}$ | British Museum. |

Unicorn Sheep. - An artificial product from the Himalayan Barwal breed :-

Locality.
Nepal . . . Duke of Bedford.


## The AFRICAN BUFFALO (Bos [Bubalus] caffer).

Gamus, Sudani.
Gădărs, Galla.
Inyati, Swazi and Zulu.
IIboar and Nyati, Chilala and Chibisa.

Mbogo and Nyati, Swahili.
Nadi, in Barotsi and Ngami.
Nari, Basuto.
Beva, Hausa.

All African buffaloes may be regarded as referable to a single species, of which the extreme forms are represented by the great black Cape buffalo and the small red buffalo of the Congo ; B. c. cottoni of the Semliki Forest, in which only adult bulls are black, being one of the intermediate types. The number of races that have been named is so large that they cannot be quoted here.
A.-SOUTHERN RACES (B. caffer typicus, etc.).

Among the distinctive features of the typical race may be noted the enormous helmet-like mass formed by the closely approximated bases of the horns in old bulls, the backward inclination and comparatively slight angulation of the horns themselves, the shortness of the face, and the great width and size of the heavily fringed and flapping ears. In colour, both the skin and the sparse hairs with which it is clothed are for the most part jetty black; the hairs themselves being directed uniformly backwards from the nape to the rump. Height at shoulder, about 5 feet.
Distribution.-Southern and Eastern Africa. Except on the Zambesi, Chobi, and some neighbouring rivers, buffaloes have now become very scarce in South Africa; but between Umtali and the east coast at Beira, and also from the latter station to the mouth of
the Zambesi, they are to be met with in vast herds, and a few years ago existed in countless numbers. Here they are much protected by the unhealthy nature of the country, which is deadly to Europeans, except between the end of May and November. Except a few protected herds in the Addo bush, the Knysna and Zitzikamma forests, and thickets of the Fish and Sunday rivers, the species has long since been exterminated in the Cape. The Ankoli buffalo has been described as B. c. radcliffei, and is characterised by the flattened and less rugged horns; while the name B. $c$. neumami has been given to the buffalo of northern Uganda, and B.c.athiensis to the B.E. African race. The Kivu B. c. mathecusi of the Albert Edward Nyanza district is a smaller horned animal, with a white tail-tip, related to the Sudani race.


Ankoli Buffalo. Shot by F. A. Knowles in Uganda.

Length

| on front |
| :---: |
| curve. | $\quad$| Tip to |
| :---: |
| Tip. |

Locality.
Owner.

Width of palm measured on face of horn.

| $52 \frac{1}{2}$ | 483 | $\ldots$ | 47 | I $1 \frac{3}{1}$ |
| :---: | :---: | :---: | :---: | :---: |
| $51 \frac{1}{4}$ | 47 | $\ldots$ | $39 \frac{1}{4}$ | I I |
| $50 \frac{3}{3}$ | 461 | $\ldots$ | $43 \frac{1}{4}$ | 10 |
| 50 | 45 $\frac{1}{2}$ |  | 37 | I $1 \frac{1}{2}$ |
| 50 | 451 |  | $40_{4}^{1}$ | 11 |
| 493 | 47 | $\ldots$ | 451 | 11 |
| $49 \frac{3}{ \pm}$ | $44^{\frac{1}{2}}$ | $\ldots$ | $32 \frac{1}{1}$ | 103 |
| 493 | 45 ${ }^{\frac{1}{4}}$ |  | $40 \frac{1}{2}$ | $9 \frac{3}{4}$ |
| 493 | $47 \frac{1}{2}$ |  | $48 \frac{1}{2}$ | 10 $\frac{1}{2}$ |
| 49 ${ }^{\text {年 }}$ | 44 $\frac{3}{4}$ | $\ldots$ | 35 |  |


| Uganda . | Her Majesty (Queen Alexandra. |
| :---: | :--- | :--- |
| (Shot by F. A. Knowles.) |  |


| Greatest width． |  | Length on front curve． | Tip to Tip． | Width of palm measured on face of horn． | Locality： | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Outside． | Inside． |  |  |  |  |  |
| 49 | 453 ${ }^{\frac{3}{4}}$ | $\ldots$ | $46 \frac{1}{4}$ | $9 \frac{1}{4}$ | East Africa | R．G．C．Napier． |
| 49 | 461 | $\ldots$ | 47 | $10 \frac{3}{4}$ | Lomagundi＇s Country． | E．T．Palmer． |
| 49 | $44 \frac{1}{2}$ | ．． | $40^{\frac{1}{3}}$ | $11 \frac{1}{4}$ | Limpopo | Sir Richard Glyn，Bart． |
| $48 \frac{3}{}$ | 43 | 41 | 32 | $10 \frac{1}{2}$ | East Africa | E．C．Gepp． |
| 485 | 44 | $\ldots$ | $35^{\frac{1}{2}}$ | $9{ }^{\text {8 }}$ | Chiromo，B．C．A． | Hon．Walter Rothschild． |
| 4 S | 43 | $\ldots$ | 36 | 12 | East Africa | E．B．Horne． |
| $4^{8}$ | 44 $\frac{3}{\frac{3}{4}}$ | ．．． | 39 | 9 | Rhodesia | C．Grey． |
| $47 \frac{3}{4}$ | 42 ？ | $\ldots$ | 31. | $11 \frac{1}{2}$ | East Africa | S．S．Bagge． |
| 473 | $43{ }^{\frac{3}{1}}$ | $\ldots$ | 42 | $9{ }^{\frac{1}{2}}$ | Do． | F．Santos Saurez． |
| $47 \frac{3}{1}$ | － $44{ }^{\frac{1}{4}}$ | $\ldots$ | $40 \stackrel{1}{3}$ | $10 \frac{3}{4}$ | Do． | Sir J．Hume Campbell，Bart． |
| $47 \frac{1}{2}$ | 432 | $34 \frac{1}{1}$ | 391 | 10 | Do． | H．R．H．Prince Willianı of Sweden． |
| $47 \frac{1}{2}$ | 42 | $\ldots$ | $37 \frac{1}{4}$ | $1{ }^{\frac{1}{2}}$ | Ngamiland | Mervyn G．Williams． |
| 471 ${ }^{\frac{1}{2}}$ | $42 \frac{3}{4}$ | $\ldots$ | $36 \frac{1}{2}$ | $12 \frac{1}{4}$ | Natal | Capt．J．C．Phillips． |
| $47 \frac{1}{4}$ | $42 \frac{3}{1}$ | $\ldots$ | 42 | 10 | East Africa | Capt．H．A．Case． |
| 47 | 407 | $\ldots$ | ．．． | $12 \frac{1}{4}$ | Do． | Sir F．J．Jackson． |
| 47 | $42 \frac{1}{2}$ | $\ldots$ | 351 | $1{ }^{\frac{1}{2}}$ | Do． | H．G．Barclay． |
| 47 | 421 | $\ldots$ | 38 | $10 \frac{1}{4}$ | Do． | Duke of Alba． |
| $46 \frac{3}{4}$ | 421 $\frac{1}{2}$ | $\ldots$ | 318 | $9 \frac{1}{4}$ | Do． | Capt．W．H．Wilkin． |
| 463 | $4^{1 \frac{3}{4}}$ | $\ldots$ | 361 | 11 | Do． | Duchess d＇Aosta． |
| $46 \frac{3}{4}$ | $41 \frac{1}{2}$ | $\ldots$ | 35 | $7 \frac{1}{3}$ | Do． | Col．G．Gimlette． |
| 461 | 42 ${ }^{\frac{1}{2}}$ | $\ldots$ | $38 \frac{1}{2}$ | $9 \frac{1}{4}$ | Do． | A．F．C．Hartley． |
| $46 \frac{1}{2}$ | 42 $\frac{1}{2}$ | $\ldots$ | $31 \frac{1}{2}$ | $10 \frac{1}{2}$ | Do． | Marquis de la Scala． |
| $46 \frac{1}{2}$ | $41 \frac{1}{2}$ | $\ldots$ | $33 \ddagger$ | 8 ${ }_{\underline{2}}$ | Do． | Hon．Mrs．Blyth． |
| $46 \frac{1}{2}$ | 42量 | $\ldots$ | $41 \frac{1}{4}$ | 10 | Do． | I．N．Dracopoli． |
| $46 \frac{1}{ \pm}$ | 43 | $\ldots$ | 42 $\frac{1}{2}$ | $10 \frac{1}{4}$ | Do． | Baron M．de Rothschild． |
| $46 \frac{1}{4}$ | $42 \frac{1}{2}$ | $\ldots$ | $39 \frac{1}{1}$ | $10 \frac{1}{2}$ | Do． | S．E．Milsom． |
| 46 | $40 \frac{1}{2}$ | $\ldots$ | 36 | 10 | Do． | Lord Hindlip． |
| $45^{3}$ | 41 | $\ldots$ | 273 | S | Pungwe ． | Sir Abe Bailey． |
| 453 | 414 | $\ldots$ | $37 \frac{1}{8}$ | ．．． | South Africa | British Museum． |
| 45 $\frac{3}{4}$ | 423 | $\ldots$ | $44 \frac{1}{4}$ | $9{ }^{\text {喿 }}$ | East Africa | F．C．Stern． |
| 453 | 401 | ．．． | 31 ${ }^{\frac{3}{4}}$ | 1 I | Do． | Capt．F．W．Barrett． |
| 45六 | $41 \frac{1}{2}$ | $\ldots$ | $32 \frac{1}{4}$ | 10 $\frac{3}{1}$ | Do． | H．S．L．Scott． |
| 451 | 40 | $\ldots$ | $27 \frac{3}{4}$ | II | Do． | Capt．D．H．Macdonell． |
| 451 | 4 I | $\ldots$ | 344 | 10 | Nyasaland | Capt．R．Meinertzhagen． |
| 45 $\frac{1}{2}$ | $40 \frac{1}{4}$ | $\cdots$ | $3 \mathrm{I} \frac{3}{4}$ | II | N．W．Rhodesia | Hon．Guy Wilson． |
| $45^{\frac{1}{2}}$ | 40 | $\ldots$ | 29，$\frac{1}{2}$ | 9 | East Africa | Capt．T．H．Rivers Bulkeley． |
| 4512 | 423 | ．．． | 43旁 | 91 | Do． | H．Sampson． |
| $45 \pm$ | $41 \frac{1}{2}$ | $\ldots$ | $37 \frac{1}{4}$ | 10 | Do． | Major S．Belfield． |
| 454 | 4 I | $\ldots$ | 301 | $9 \frac{3}{4}$ | Do． | M．Seth－Smith． |
| 451 | $40 \frac{3}{4}$ | $\ldots$ | 32 量 | 9 | Tana Valley | Major H．De Prée． |
| $45 \frac{1}{4}$ | $41 \frac{1}{4}$ | $\ldots$ | 371 | ．．． | ．．． | British Museum． |
| 45 | $39 \frac{1}{2}$ | $\ldots$ | 33 | 10 | Fast Africa | Capt．G．Wynne Finch． |
| 45 | ．．． | ． | 44 | 10 | Do． | H．S．Keating． |
| 45 | $41 \frac{1}{4}$ | ．．． | $34{ }^{3}$ | $10 \frac{1}{4}$ | ？ | H．de la Pasture． |
| 45 | ．．． | $\ldots$ | 44 | $10 \frac{1}{2}$ | East Africa | H．H．Williams． |
| 45 | 41 | $\ldots$ | 32 | 9 ${ }^{\frac{1}{2}}$ | N．W．Rhodesia | Lieut．－Col．Frank Lee． |
| 45 | $39 \frac{1}{2}$ | $\ldots$ | 29 | I 114 | East Africa | Capt．R．Clemm． |
| 45 | $39^{\frac{1}{2}}$ | $\ldots$ | 26 | $11{ }^{\text {䍃 }}$ | Do． | L．L．Biddle． |
| 45 | 40： |  | 312 | 10 | Do． | P．F．Hadow． |


| Greatest | width． Inside． | Length on front curve． | Tip to Tip． | Width of palm measured on face of horn． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 44 ${ }^{\frac{3}{4}}$ | $40 \frac{1}{4}$ | $\cdots$ | $36 \frac{3}{4}$ | 9 | East Africa | Capt．P．Chapman． |
| $44 \frac{3}{4}$ | 398 ${ }^{\text {崖 }}$ | $\ldots$ | $27 \frac{1}{2}$ | $8 \frac{1}{2}$ | Uganda ． | G．Blaine． |
| $44 \frac{3}{4}$ | 395 | $\ldots$ | 2712 | $11 \frac{1}{4}$ | East Africa | Sir Robert Harvey，Bart． |
| $44 \frac{3}{\text { }}$ | $41 \frac{1}{2}$ | $\ldots$ | $39 \frac{1}{4}$ | $11 \frac{1}{2}$ | N．W．Rhodesia | G．de P．Colvile． |
| 44量 | $39 \frac{3}{4}$ | ．．． | 241 | $9 \frac{3}{4}$ | Do． | O．C．Bevan． |
| 44 ${ }^{\frac{3}{4}}$ | $40 \frac{1}{4}$ | $\ldots$ | $36 \frac{1}{2}$ | $11 \frac{1}{2}$ | Ngamiland | F．T．Garbutt． |
| $44^{\frac{1}{2}}$ | $39 \frac{1}{4}$ | $\ldots$ | 29 | 12 | Pungwe ． | F．S．Staples． |
| 44를 | 383 | ． | 29 | $9 \frac{1}{4}$ | East Africa | H．R．H．the Duke of Con－ naught． |
| 44 $\frac{1}{2}$ | $39 \frac{1}{4}$ | ． | 29 | 15 | Chobi Valley | F．C．Selous． |
| 44 $\frac{1}{2}$ | 40 | ． | 38 | $10 \frac{1}{4}$ | East Africa | D．Davies． |
| 44 ${ }^{\frac{1}{2}}$ | $39 \frac{1}{4}$ | ． | $33 \frac{3}{4}$ | $10 \frac{1}{2}$ | N．W．Rhodesia | J．H．Leche． |
| 44 $\frac{1}{2}$ | ．．． | ． | $37 \frac{1}{2}$ | 12 | East Africa | F．Charrington． |
| 44 ${ }^{\frac{1}{2}}$ | 40 | ． | $39 \frac{1}{4}$ | II | Do． | Dr．A．E．Herz． |
| 44를 | 4 I | $\ldots$ | $38 \frac{1}{2}$ | 10 | N．W．Rhodesia | R．Beaumont． |
| 44 | 39 | ． | $27 \frac{3}{1}$ | 11 | Do． | Capt．H．E．Hambro． |
| 44 | $39 \frac{1}{2}$ | $\ldots$ | 36 | $9{ }^{\frac{1}{2}}$ | N．E．Rhodesia | W．A．Conduitt． |
| 44 | 41 | $\ldots$ | $39 \frac{1}{2}$ | $10 \frac{1}{2}$ | B．C．Africa | Dr．J．O．Shircore． |
| ¢ $943 \frac{1}{2}$ | $40 \frac{1}{2}$ | $\ldots$ | 29 | $6 \frac{1}{4}$ | East Africa | N．C．Cockburn． |
| ¢ 42 2 ${ }^{\frac{1}{2}}$ | $38 \frac{1}{4}$ | $\ldots$ | 32 | 5 | N．E．Rhodesia | J．Turner． |

OWNER＇S MEASUREMENTS．

| 54\％ | $\ldots$ | $\ldots$ |  | 161 | German E．Africa | E．von Sick． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5 I | 47 | ．． | 40 | II | Uganda ． | Major H．W．A．Christie． |
| 51 | 47 | $\ldots$ | 39 | 14 ${ }^{\frac{1}{4}}$ | East Africa | H．B．Kittermaster． |
| $48 \frac{3}{5}$ | ．．． | $\ldots$ | $35{ }^{\text {㥻 }}$ | $\ldots$ | UpperZambesi | F．W．Walker． |
| $48 \frac{1}{4}$ | 43 | $\ldots$ | $30 \frac{1}{2}$ | I $1 \frac{1}{4}$ | Sabi Valley | American National Collection． <br> （See illustration，p． 418 ．） |
| 48 | $\ldots$ | $\ldots$ | $44^{\frac{1}{2}}$ | 11 ${ }^{\frac{1}{2}}$ | East Africa | R．O．Roberts． |
| 47 | $\ldots$ | $\ldots$ | 3 I | 12 | Zitzi Forest，S． Africa． | Capt．E．H．Studdy． |
| $46 \frac{1}{4}$ | 40 $\frac{1}{2}$ | ．． | 39 | 12 | N．E．Rhodesia | O．Letcher． |
| 46 | ．．． | $\ldots$ | 35 | $\ldots$ | N．IV．Rhodesia | C．S．Mann． |

As will be seen from the illustrations，the greatest width scarcely conveys a correct idea of all specimens．


Horns of Bechuana Buffalo．Sir Edmund G．Loder＇s Specimen．


Skull and Horns of Sudani Buffalo.

## B.-NORTHERN RACES (B. caffer æquinoctialis, etc.).

The Sudani race is a smaller animal than the Cape buffalo (height at shoulder, about 4 feet), with the general colour blackish or tawny brown, tinged locally with rufous, and tending to greyish on the legs. Horns smaller, much more flattened at the bases, where they are more widely separated, and in some, although not all, cases retreating less markedly behind the plane of the eyes. The Sudani race was originally described on the evidence of a skull from East Central Africa, but also occurs on the White Nile. The name B. c. asracensis has been applied to the buffalo of the Bahr-el-Azrek, a tributary of the Blue Nile, on the southern frontier of Abyssinia. Its horns are described as being more like those of the Cape race.

| Greate | width. |
| :---: | :---: |
| 44 | $42 \frac{1}{2}$ |
| 41 ] | 374 |
| 40 | 39 |
| 40 | $37 \frac{1}{2}$ |
| 40 | 37 |
| 393 | 35: |
| 39 l | 35 |


| $\begin{gathered} \text { Tip to } \\ \text { Tip. } \end{gathered}$ | Width of palm. | Locality. |
| :---: | :---: | :---: |
| 43 | 812 | White Nile |
| $34{ }^{\text {易 }}$ | $8 \frac{1}{2}$ | Mongala |
| 39 | 10 | White Nile |
| 383 | $8 \pm$ | Kordofan |
| 32 | $11{ }^{\frac{7}{5}}$ | Abyssinia |
| $27 \frac{1}{2}$ | 9 | Sutan |
| 34 | S! | White Nile |

P. Niedieck.
E. M. Sinauer.

Lieut.-Col. J. W. Yardley.
Capt. C. C. Maurl.
E. Lort-Phillips.

Capt. F. L. Livingstone-Learmonth.
Capt. A. H. Vivian.

| Greatest Outside． | width． Inside． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Width of palm． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 39 | 36 | 33 星 | 10 | White Nile | ．WV．F．Wailes－Fairbairn． |
| $38 \frac{7}{8}$ | 33 | $25 \frac{1}{4}$ | 12 | Do． | Douglas McDouall． |
| $38 \frac{1}{2}$ | $35 \frac{1}{4}$ | $3{ }^{1}$ | S $\frac{1}{12}$ | Do． | ．II．R．H．the Duke of Connaught． |
| $33^{1}$ | $34 \frac{1}{2}$ | 32.8 | 7 | Do． | －Major P．M．Dove． |
| $33^{\frac{1}{1}}$ | $34{ }^{\frac{7}{8}}$ | $32 \frac{1}{4}$ | $S_{4}^{3}$ | Do． | R．McD．Hawker． |
| $38 \frac{1}{4}$ | 34 | $23 \frac{1}{2}$ | 10 | Do． | Capt．R．F．Balfour． |
| 38 | 34 | 33 | $\ldots$ | Do． | F．WV．Greswolde－Williams． |
| 3 S | $34^{\frac{1}{2}}$ | 28： | $7{ }^{\text {星 }}$ | Do． | G．H．Cheetham． |
| 3 S | 34 | 29 | S | Do． | Major H．D．Pearson． |
| $37 \frac{3}{1}$ | $33 \frac{1}{2}$ | $26 \frac{1}{4}$ | 10 | Do． | ．Capt．C．E．Hills． |
| $37 \frac{1}{4}$ | $34 \frac{1}{8}$ | $33 \frac{1}{4}$ | S 5 | Lado | －Major P．H．G．Powell－Cotton． |
| 371年 | 34 | $33 \frac{1}{4}$ | 9 ${ }^{\frac{1}{2}}$ | White Nile | －I＇．Santos Saurez． |
| $37 \frac{1}{4}$ | 33 | $28^{1}$ | 9 | Do． | －Capt．W．E．Reymes Cole． |
| 37 | $34 \frac{1}{2}$ | 351 | $10 \frac{1}{2}$ | Bahr－el－Ghazal | ．G．Blaine． |
| 37 | $32 \frac{1}{4}$ | 23量 | $9{ }^{\frac{1}{4}}$ | White Nile | －Lord Desborough． |
| $36 \frac{5}{8}$ | $32 \frac{1}{2}$ | 26 | $S_{4}^{1}$ | Sudan | －Capt．A．Craufurd． |
| $36 \frac{1}{2}$ | $32 \frac{1}{4}$ | $26 \frac{1}{3}$ | S | Do． | P．M．Tottenham． |
| $36 \frac{1}{2}$ | 33 | $30 \frac{1}{2}$ | $9 \frac{1}{2}$ | Do． | Col．A．Colville． |
| $36 \frac{1}{2}$ | 313 | 29 | 9 | Do． | －Capt．the Hon．M．P． Macnaghten． |
| $36 \frac{1}{4}$ | 32 毫 | $32 \frac{1}{2}$ | $7 \frac{1}{2}$ | Do． | Countess of Sefton． |
| $36 \frac{1}{4}$ | 32 | $29 \frac{1}{4}$ | 9 | Do． | C．C．Tower． |
| $36 \frac{1}{4}$ | 32 | 225 | S $\frac{1}{2}$ | White Nile | H．E．Allen． |
| 36 | $32 \frac{1}{2}$ | 29 | $9^{\frac{1}{2}}$ | Do． | J．V．Colby． |
| 36 | $33 \frac{1}{2}$ | 32 | $9{ }^{\frac{1}{2}}$ | ？ | British Muscum． |
| 353 | 32 | $30 \frac{1}{2}$ | 9 | Sudan ． | R．A．Colvin． |
| 353 | $33^{\frac{1}{2}}$ | 35 | $7 \frac{1}{2}$ | Do． | G．C．Whitaker． |
| 351 ${ }^{\frac{1}{2}}$ | $3 \mathrm{I} \frac{3}{4}$ | $28_{\frac{1}{4}}$ | $8 \frac{1}{4}$ | White Nile | E．N．Buxton． |
| 35 ${ }^{\frac{1}{2}}$ | 32 | 2S | 8 | Lado | －Major P．H．G．Powell－Cotton． |
| 351 | $32 \frac{1}{2}$ | $31 \frac{1}{4}$ | $7{ }^{\text {量 }}$ | White Nile | S．H．Whitbread． |
| ¢ $35 \frac{1}{2}$ | 32 | $25 \frac{1}{4}$ | 5 | Dinder Valley | ．．C．D．Eyre． |
| 35 | $31 \frac{3}{4}$ | 29 $\frac{3}{1}$ | $8 \frac{1}{1}$ | Blue Nile | Capt．N．A．Orr－Ewing． |
| 35 ${ }^{\frac{1}{1}}$ | $30 \frac{5}{8}$ | 21豆 | 93 | Do． | Capt．H．R．Headlam． |
| $35 \frac{1}{4}$ | 30 | I S $_{\frac{1}{2}}$ | 8！ | Do． | ．Lieut．－Col．J．Ponsonby． |
| 35 | 32 | 312 | S | Do． | ．．Norman B．Smith． |

## OWNER＇S MEASUREMENTS．

| $43{ }^{3}$ | $37 \frac{1}{2}$ | $28 \pm$ | 11 | Nimuli | F．A．Knowles． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 393 | $34 \frac{1}{2}$ | $30 \frac{1}{2}$ | $8:$ | Solat | E．M．Tabor． |
| 38 䍃 | 351 | 35 ${ }^{\frac{1}{3}}$ | 91 | White Nile | Sir IV．Garstin． |



Skull and Horns of Congo (?) Dwarf Buffalo.

## C.-SHORT-HORNED RACES (B. caffer brachyceros, B. c. planiceros, B. c. nanus, etc.).

Bona, Hausa.
Despite the differences in size, colour, and the form of the horns between the dwarf red buffalo of the Congo (B.c. namus) and its gigantic black cousin of the Cape, such a gradual transition can be traced from the one type to the other, that both are evidently nothing more than local modifications of one variable species. In the dwarf buffalo of the Congo the colour of the hair is red or yellow, the ears are fringed with very long hair, and the horns are much flattened at the base, with long smooth tips directed upwards. This type may be traced, with some modifications, to the Gabun. In Ashanti it is replaced by the red B.c. beddingtoni. In Gambia and Senegambia there is a larger brownish buffalo, with more laterally expanded and recurved horns known as B. c. planiceros. In the south Nigerian B.c. lunti cows and young bulls are dun. In the Kwilu district of the Congo occurs a dark-coloured race (B. c. simpsoni,) typified by a female head in the British Museum. Another type is the Lake Chad buffalo (B.c. brachyceros), first discovered by the early explorers Denham and Clapperton. In height the Congo dwarf buffalo only reaches some 42 inches at the shoulder. Weight, 579 lbs. clean.

| Length on outside curve. | Circumference. | Tip to Tip | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 28 | 20 | 20 | Senegambia | Hon. Walter Rothschild. |
| $27 \frac{1}{2}$ | $20 \frac{1}{2}$ | 123 | Gold Coast | Capt. C. H. Armitage. |
| 261 | 19 | 18 | N. Nigeria | Capt. J. C. Parker. |
| $26 \frac{1}{2}$ | $19 \frac{1}{4}$ | 7 | Do. | . Capt. H. V. Venables Kyrke. |
| 26 | $18 \frac{3}{4}$ | $22 \frac{3}{4}$ | Do. | G. C. W. King. |
| 26 | $22 \frac{1}{2}$ | 20 | French Congo | C. S. Mann. |
| 253 | $17 \frac{1}{4}$ | $17 \frac{1}{2}$ | S. Nigeria | W. D. Downes. |
| $25 \frac{1}{2}$ | $18 \frac{3}{4}$ | 15 | N. Nigeria | F. Cogan. |
| 25글 | $20 \frac{1}{2}$ | 12 | S. Nigeria | Lieut. A. W. Hunt, R. N. |
| 25 | $17 \frac{1}{2}$ | $\ldots$ | Portuguese Guinea | M. V. Hay. |
| $24 \frac{3}{4}$ | 19 | $7 \frac{1}{2}$ | Sierra Leone | Capt. W. B. Stanley. |
| $24 \frac{3}{4}$ | 23 ${ }^{\frac{1}{2}}$ | 141 | N. Nigeria | Capt. O. M. Harris. |
| 24 ${ }^{\frac{3}{4}}$ | $21 \frac{3}{4}$ | 26 | Do. | H. de C. Mathews. |
| $24 \frac{1}{2}$ | $18 \frac{1}{2}$ | 15 | Do. | J. C. Sciortino. |
| 24 | $15^{\frac{1}{2}}$ | 7 | Do. | Capt. L. M. Bucknill. |
| 24 | $19 \frac{1}{4}$ | 17 | Do. | Capt. G. C. Kelly. |
| 24 | 183 | $13 \frac{1}{2}$ | Nepoko Valley, Cong | R. de la Huerta. |
| 23 $\frac{1}{2}$ | $23 \frac{1}{2}$ | 12 | Do. | Duke of Peneranda. |
| 232 | 15 | 10 | Gold Coast | Major G. S. C. Jenkinson. |
| $23 \frac{1}{2}$ | 20 | $16 \frac{1}{4}$ | Do. | . Capt. G. W. Dawes. |
| 23 | 19 | $20 \frac{1}{2}$ | N. Nigeria | R. M. Blackwood. |
| 23 | $16 \frac{1}{2}$ | $8 \frac{1}{4}$ | Nigeria | Sir Abe Bailey. |
| 223 | $16 \frac{1}{2}$ | 12 | Ashanti | C. Beddington. |
| $22 \frac{3}{4}$ | $17 \frac{3}{4}$ | 20.1 | N. Nigeria | . H. S. Berkeley. |
| $22 \frac{1}{2}$ | 17 | 14 | Gold Coast | Capt. T. WV. C. Carthew. |
| 22 $\frac{1}{2}$ | $16 \frac{1}{2}$ | 181 | Nigeria . | Major-Gen. P. S. WVilkinson. |
| 224 | 21 | 123 | N. Nigeria | C. S. Burnett. |
| 22 | 14 | 15 | Congo | Capt. II. M. Stephenson. |
| 22 | $19 \frac{1}{4}$ | $9 \frac{1}{4}$ | Do. | J. Seally Bell. |
| $21 \frac{1}{3}$ | $17 \frac{1}{2}$ | $9 \frac{1}{2}$ | Near Kimmasi | . The late Dr. W. H. Langley. |
| $21 \frac{1}{2}$ | 15 | 8 | Gold Cohast | Capt. G. H. Hastings. |
| 2118 | $12 \frac{3}{4}$ | 21 | West Africa | British Museum. |
| 21 | 179 | $14 \frac{1}{4}$ | Portuguese Guinea | C. S. Burnett. |
| 21 | 15 | 94 | Nigeria | A. Ohlsson. |
| 2 I | $17 \frac{1}{2}$ | I6 ${ }^{\frac{1}{4}}$ | Do. | Major J. F. Loder-Symonds. |
| 아 21 | 1 I | 16 | N. Nigeria | - G. J. Letham. |


| Length on outside curve． | Circum． ference． | Tip to Tip． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: |
| ¢ $20 \frac{1}{2}$ | II | $6 \frac{9}{1}$ | Nigeria ．． | W．D．Barker． |
| $20 \frac{1}{2}$ | 17 | I $7 \frac{3}{4}$ | Senegambia | G．Fenwick－Owen． |
| $20 \frac{1}{2}$ | 16 ${ }^{\frac{1}{2}}$ | 10 | Nigeria ． | －Major D．F．MacCarthy Morrogh． |
| 우 20 $\frac{1}{2}$ | 13 年 | $14 \frac{1}{1}$ | Do．． | R．M．Blackwood． |
| 2012 | 15 | 11 | Benue Valley ． | ．Capt．E．J．Wolseley． |
| 2012 | $14^{\frac{1}{2}}$ | $6 \frac{1}{2}$ | N．Nigeria | $\therefore$ A．B．Harcourt． |
| $20 \frac{1}{2}$ | 20 | I I $\frac{1}{2}$ | S．Nigeria | ．C．Bowyer－Smijth． |
| 204 | 18 空 | 12 | Do． | ．Capt．K．M．Heron． |
| $20 \frac{1}{4}$ | $17 \frac{1}{\underline{2}}$ | 16 | Sierra Leone | ．Capt．J．F．Bill． |
| 20 | IS | $12 \frac{1}{1}$ | S．Nigeria | ．Capt．W．V．Nugent． |
| $19 \frac{3}{1}$ | 14 | 13 | Sierra Leone | Capt．E．J．Carter． |
| 19 | 10 | $\ldots$ | Lake Chad | Hon．Walter Rothschild． |
| 18 景 | $11 \frac{1}{2}$ | $3 \frac{1}{2}$ | Nigeria ． | IV．H．Broun． |
| 18 量 | 16 | $\mathrm{S}_{\frac{1}{1}}$ | ？ | A．WV．Boddy． |
| $18 \frac{1}{2}$ | 12 | 69 | Gambia | H．C．Goddard． |
| I $\mathrm{S}_{2}$ | 17 | 15 | N．Nigeria | Major J．B．Cockburn． |
| I $8_{2}$ | 17 | S $\frac{1}{2}$ | Do． | J．F．Pett． |
| $18 \frac{1}{2}$ | I $1 \frac{1}{2}$ | $13 \frac{3}{4}$ | Senegambia | Hon．Ualter Rothschild． |
| 우 I $8 \frac{1}{2}$ | 10，$\frac{1}{2}$ | I $1 \frac{1}{2}$ | Do．． | G．Fenwick－Owen． |
| I $8 \frac{1}{2}$ | $17 \frac{1}{\text { 星 }}$ | $4 \frac{3}{4}$ | Congo | Col．I．J．Harrison． |
| 우 183 | 10 童 | $5^{\frac{1}{2}}$ | Lake Chad District | British Museum（Capt．Denham，R．N．， and Col．Clapperton）． |

OUVNER＇S MEASUREMENTS．

| $26 \frac{9}{4}$ | $21 \frac{1}{2}$ | $26 \frac{3}{4}$ | N．Nigeria | H．G．Glenay． |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $22 \frac{9}{4}$ | 17 | $14 \frac{3}{4}$ | Sierra Leone ． | Capt．H．A．Carter． |

The following specimens from the French Congo may belong to B．caffer brachyceros：－

## Shot by the late Prince P．Demidoff．

| Length． | Girth． | Tip lo Tip． |
| :---: | :---: | :---: |
| 28 | $24 \frac{3}{1}$ | $13 \frac{3}{1}$ |
| 26 | $21 \frac{1}{2}$ | $18 \frac{1}{2}$ |
| $25 \frac{1}{2}$ | 25 | $21 \frac{1}{2}$ |
| $922 \frac{1}{2}$ | 16 | $16!\frac{1}{2}$ |



Head of Indian Buffalo. Shot by the late Maharaja of Cooch Behar.

The INDIAN BUFFALO or ARNA (Bos [Bubalus] bubalis).
No one is the least likely to confuse this animal with the African species. Both belong, indeed, to the same group of the genus Bos, and have the same rounded upper portion of the head and angulated horns. In the Indian species, however, the head is much longer, the ears are narrower and less heavily haired, and the horns of the male are widely separated on the forehead and totally different in form. Two types of horns may be recognised-one very massive, and curving regularly up from each side of the head in a subcircular manner; the other more slender, directed for the greater part of their length almost straight out from the head, and always with a wider spread. The first is the typical race ( $B$. bubolis typicus), while the second, or Assam, race (probably now extinct) is B. bubalis macroceros. A third race from Assam has been named B.b. fillous, and is distinguished by the concave profile of the skull and its dun colour. Height at shoulder, about $\sigma$ feet 2 inches; girth behind shoulder, io feet $\delta$ inches. In a bull shot by the late Maharaja of Cooch Behar the length from the nose to the tip of the tail was 14 feet 2 inches, and to the base of the tail II feet; the maximum girth being io feet 8 inches, and the weight of the head, when cut off, 158 lbs.

Distribution.-Typically India, where the range includes the plains of the Bramaputra and Ganges from the eastern end of Assam to Tirhut, and the Terai as far west as Rohilcund, the plains near the coast in Midnapore and Orissa, and also the plains in the Eastern Central Provinces as far south as the Godaveri and Pranhita rivers. Buffaloes also occur in Ceylon, as well as in the Malay and IndoChinese countries ; but whether any of the latter are truly wild is uncertain. In a domesticated state, South Europe, Egypt, etc. Native name of male, arna; of female, arni.

| Length outside curve. | Circum. ference. | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside. | Widest outside. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 773 | $17 \frac{7}{5}$ | $\ldots$ | $\ldots$ | ... | ? | British Museum (Sloane Collection). |
| 70 | $18 \frac{1}{2}$ | 60 | $67 \frac{3}{4}$ | 72 | Near Dubri, Assam | J. H. Whitehouse. |
| $65 \frac{3}{4}$ | 20.4 | $\ldots$ | $\ldots$ | $\ldots$ | Do. | British Museum (Col. J. Mathie). |
| 62 | 17 | ${ }_{101}$ | $\ldots$ | $\ldots$ | Do. | Hon. Walter Rothschild. |
| 9617 | $15{ }^{3}$ | $22 \frac{1}{6}$ | $45 \frac{1}{4}$ | $\ldots$ | Cooch Behar . | H.H. the Maharaja of Cooch Behar. |
| $961 \frac{1}{2}$ | 16 | 22 | 48 | $\ldots$ | Assam | Hon. Walter Rothschild. |
| 60 | 22 | $\ldots$ | 64 | 72 | Central Provinces | Major B. Vincent. |
| 60 | 20 | 40 | 52 | $\ldots$ | ? | Sir Edmund G. Loder, Bart. |
| 960 | $13^{\frac{1}{2}}$ | $57^{\frac{1}{2}}$ | $62 \frac{3}{4}$ | $67 \frac{5}{8}$ | Assam | Capt. L. P. Haviland. |
| ¢ 959 罂 | 16 | 48 | 57 | $63 \frac{1}{4}$ | Do. | J. C. Phillips. |
| 59 | 23 | 34 | 49 | 563 | Do. | T. H. Monteath. |
| $57^{\frac{3}{4}}$ | $17^{\frac{1}{2}}$ | $55^{\frac{1}{2}}$ | 65 | 714 | Central Provinces | J. May. |
| 57 | $18 \frac{1}{2}$ | $4{ }^{1 \frac{1}{2}}$ | 60 | ... | Do. | Col. G. D. F. Sulivan. |
| 57 | 15 | 49 | 52 | $\ldots$ | Assam | A. H. Straker. |
| ¢ 57 | $14 \frac{1}{2}$ | 53 | 61 | $\ldots$ | ? | Sir Edmund G. Loder, Bart. |
| $56 \frac{1}{4}$ | $21 \frac{1}{2}$ | 40 | $52 \frac{3}{4}$ | $\ldots$ | Assam | British Museum (Hume Collection). |
| ¢ 56 | $19 \frac{1}{4}$ | $33 \frac{7}{5}$ | 501 | $\cdots$ | Cooch Behar | H.H. the Maharaja of Cooch Behar. |
| 56 | $17 \frac{1}{2}$ | 62 | $6 \mathrm{I}^{\frac{1}{2}}$ | $64 \frac{1}{2}$ | Bengal | G. Monteath. |
| 56 | $18 \frac{1}{4}$ | 108 | $\ldots$ | $\ldots$ | Assam | H.R.If. the Duc d'Orléans. |
| $55^{\frac{1}{2}}$ | $18 \frac{1}{2}$ | 29 | 44 | ... | ? | J. Carr Saunders. |
| 55 | 22 | $55^{\frac{1}{2}}$ | 62 | 66 | Central Provinces | L. T. Harris. |
| 542 | 1818 | 381 | $48{ }^{7}$ | ... | ? | British Museum (Hume Collec tion). |
| ¢ $544^{\frac{7}{2}}$ | 123 | 693 | 70 | ... | Assam | Do. |
| $54 \frac{1}{2}$ | $19 \frac{1}{2}$ | $24 \frac{1}{2}$ | $40 \frac{1}{2}$ | 49 | ? | Stockholm Museum. |

Length
on
Circum．Tip to Widest Widest outside ference．Tip．inside．outside． curve．

| $54 \frac{1}{2}$ | 19 | 50 | 59 | 64 | ？ | Viscount Powerscourt． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 54 | $18 \frac{1}{2}$ | 34 | $47^{\frac{1}{2}}$ | $54 \frac{3}{1}$ | Cambodia | H．R．H．the Duc de Mont－ pensier． |
| ${ }^{1} 53$ 䂞 | $\stackrel{23}{\left(6 \mathrm{ft} .2 \frac{2}{2}\right. \text { in }}$ | $30$ at sho | $42 \frac{1}{2}$ | $\cdots$ | Cooch Behar | H．H．the Maharaja of Cooch Behar． |
| 53 | 19 | $36 \frac{1}{2}$ | $48{ }^{3}$ | 56 | ？ | Col．H．Lysons． |
| 52 | 20 | 219 | $4{ }^{1 \frac{1}{2}}$ | $49 \frac{1}{4}$ | Central Provinces | Earl of Sefton． |
| 51䍃 | $18 \frac{1}{2}$ | 22 | $38 \pm$ | $\ldots$ | Assam | Sir Peter Walker，Bart． |
| 515 | 18 | $3^{8}$ | 50 | 56 | Central Provinces | Ifon．J．Best． |
| $51 \frac{1}{2}$ | 19 | 43 | $52 \stackrel{3}{4}$ | $60 \frac{1}{2}$ | Do． | Capt．A．McB．Woodside． |
| 513 | 193 | 453 | 50 | $\cdots$ | Do． | Major P．H．G．Powell－ Cotton． |
| $50 \frac{3}{4}$ | 22 | $34^{\frac{1}{2}}$ | 44：$\frac{1}{2}$ | $50 \frac{1}{2}$ | Cooch Behar | －The late Sir Henry D．Tich－ borne，Bart． |
| $50 \frac{3}{4}$ | 183 | $54 \frac{1}{2}$ | $60 \frac{1}{4}$ | 65 | Patna | Brig．－Gen．F．H．Whitby． |
| 503 | 19 ${ }^{\frac{1}{2}}$ | $34^{\frac{1}{2}}$ | 463 | 54 | Central Provinces | H．Tyler． |
| $50 \frac{1}{2}$ | $19 \frac{1}{4}$ | 23 量 | $42 \frac{1}{2}$ | $49^{\frac{1}{2}}$ | Do． | H．H．Cripps． |
| 50 | 20 | $34 \frac{1}{4}$ | 47 | $53^{\frac{1}{2}}$ | Cochin China | －D．Dickson． |
| 50 | $18 \frac{1}{2}$ | $48 \frac{1}{2}$ | 60 | $\ldots$ | Central Provinces | Major C．F．Pinney． |
| 50 | $13 \frac{1}{4}$ | 33 | $38 \frac{1}{2}$ | $\ldots$ | Assam | Noel Fenwick． |
| 50 | 17 | 31 ${ }^{3}$ | 50 | $\cdots$ | Do． | Col．D．M．Lumsden． |
| 50 | $19 \frac{1}{2}$ | $36 \frac{1}{2}$ | 46 | $52 \frac{1}{2}$ | Do． | －A．Ezra． |
| 493 | 191 | $33 \frac{5}{8}$ | 48 | $55 \frac{1}{7}$ | Central Provinces | ．Countess of Sefton． |

## OWNER＇S MEASUREMENTS．

| 71 $+80 \frac{1}{2}$ | $21 \frac{1}{2}$ 18 | $34^{\frac{3}{1}}$ | 60 64 | 78 | Near Dubri，Assam Do． | Measured by the late A．O． <br> Hume ；shot by A．Forbes． <br> The late Sir A．Campbell－Orde． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $67 \frac{1}{2}$ | ．． |  |  | ．． | Do． | Major H．Gidney． |
| ¢ $644^{\frac{1}{2}}$ | 18 | $4^{2 \frac{1}{2}}$ | 60 | 96 | Do． | J．Campbell of Kilberry． |
| $59 \frac{1}{2}$ | $18 \frac{1}{2}$ | $\ldots$ | 54 | $61 \frac{1}{2}$ | Eastern Bengal | R．E．Mess，Roorkee． |
| $59 \frac{1}{2}$ | 15 | ．．． | 53 | 59 | ？ | Sir Savile Crossley，Bart． |
| ¢ $57 \frac{1}{3}$ | $15{ }^{\text {号 }}$ | 951 ${ }^{\frac{1}{2}}$ | $\ldots$ | $96 \frac{1}{2}$ | Cooch Behar | H．H．the Maharaja of Cooch Behar． |
| 57 | 18 | $\ldots$ | $\ldots$ | $\ldots$ | Central Provinces | J．D．Inverarity． |
| 56 | 18 | 2912 | $\ldots$ | $57 \frac{1}{2}$ | ？ | J．Whitaker． |

The following specimens are，with one exception，from Ceylon ：－

| Length on outside | Circum． ference． | Tip to Tip． | Widest inside． | Widest outside． | Locality． |  | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 40 | $15^{\frac{1}{2}}$ | 24 | $35 \frac{1}{1}$ | 42 | Ceylon | ．． | F．T．Wright． |
| ¢ $37 \frac{1}{4}$ | $9{ }^{\frac{3}{4}}$ | 42.1 | 47 | $50 \frac{1}{2}$ | Do． | ．． | M．J．Alderson． |
| 35 | 13童 | IS | $30 \frac{1}{1}$ | $37 \frac{1}{2}$ | Do． | ．． | Marquis of Stafford． |
| $34 \frac{1}{4}$ | $15 \frac{1}{1}$ | $25 \frac{3}{5}$ | 35 | $\ldots$ | Do． | ．． | Earl Cairns． |
| ¢ $33{ }^{\frac{1}{\text { a }}}$ | 9 | $31 \frac{1}{2}$ | 37 | $\ldots$ | Do． | ．． | Do． |
| 33 年 | 13 | 32 亲 | $3 S$ | 43 | Do． | － | Major F．H．N．Pym． |
| $31 \frac{38}{13}$ | 16 | 28 | $\ldots$ | $38 \frac{1}{2}$ | Do． | ．－ | Marquis Camden． |
| $31 \frac{1}{2}$ | I $5 \frac{1}{2}$ | 27 | $3+$ | 38 | Do． | ．． | P．Niedieck． |
| $3 \mathrm{I} \frac{1}{2}$ | 16 | $\ldots$ | $47^{\frac{1}{7}}$ | $\ldots$ | South A （introd | nstralia aced） | H．L．Heber Percy． |
| 29 | $13 \frac{1}{2}$ | $2 S \frac{1}{2}$ | $33^{\frac{1}{4}}$ | 37 | Ceylon |  | K．J．F．Bickersteth． |

OWNER＇S MEASUREMENTS．

| 35 | $14 \frac{1}{2}$ | $39 \frac{1}{4}$ | 42 | $47 \frac{1}{2}$ | Ceylon | ．If．R．H．Prince George of |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Bavaria． |  |  |  |  |  |  |



Head of Anoa.

## The ANOA (Bos [Bubalus] depressicornis).

The smallest wild member of the ox tribe, characterised by its straight, upright horns, and the frequent presence of white spots on the sides of the head or elsewhere. Although so different in the form of the head and horns from the adult Indian buffalo, the anoa is in these respects much more like the young of the latter ; and the two are connected to a considerable extent by the tamarau, or Philippine buffalo (Bos mindorensis) of the island of Mindoro. As in all the Oriental buffaloes, the hair of the fore-part of the back is directed forwards in the anoa. Height at shoulder; about 3 feet 3 inches. Two races are recognised.

Distribution.-The island of Celebes.



Head of European Bison. Shot by H.H. the Prince of Monaco.

## The BISON (Bos [Bison] bonasus).

The great elevation of the fore-quarters, the mass of long hair clothing the head, shoulders, and fore part of the body, together with the peculiar form of the head and horns, the latter of which are cylindrical, serve at once to distinguish bison from the other members of the ox tribe. There is also a difference in the number of ribs between the bison and the more typical oxen, the number in the former being 14 pairs, against 13 in the latter. In the European species the mass of hair on the fore-quarters is not so long as in its American cousin, the form of the skull is different, and the hind-quarters do not fall away nearly to the same extent. Some differences may be noted between Caucasian and Lithuanian specimens, which are now referred to separate races. Height at shoulder, 6 feet I or 2 inches. In a Caucasian bull killed by Mr. Littledale, the length from the nose to the root of the tail measured 10 feet 1 inch, the height at the shoulder, 5 feet 1 I inches, and the approximate girth of the body, 8 feet 4 inches. Weight (Mr. W. Winans), 200 I lbs.

Distribution.-At the present day restricted to the Caucasus and the forest of Bielowitzka in Lithuania ; the herds in the latter district existing in a protected state. The name aurochs, commonly misapplied to the bison, belongs to the extinct wild ox of Europe. The Caucasian race is named B. b. caucasius.

| $\underset{\substack{\text { Length } \\ \text { onoutside } \\ \text { curve. }}}{ }$ | $\begin{gathered} \text { Circum- } \\ \text { ference. } \end{gathered}$ | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \\ & \text { Tip. } \end{aligned}$ | Widest inside． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 20 | 12 | 20 | $\ldots$ | Pilawin Game Park | W．Winans． |
| 18 星 | 121 | 133 | 19 年 | Lithuania． | British Museum（H．I．M．the Tzar Alexander）． |
| 18 | 121 $\frac{1}{8}$ | 16 | 20 | Caucasus | St．George Littledale． |
| $17 \frac{1}{2}$ | го | I $8 \frac{1}{2}$ | $\ldots$ | Lithuania ． | Major Algernon Heber－Percy． |
| $17 \frac{18}{4}$ | $13 \frac{1}{1}$ | 17 | $\ldots$ | Do． | Prince of Monaco． |
| 163 | $12 \frac{1}{4}$ | 217 | 241 | ？ | Sir Edmund G．Loder，Bart． |
| 163 | $11{ }^{\text {星 }}$ | $18{ }^{\text {a }}$ | $21 \frac{1}{2}$ | Woburn | G．L．Harrison． |
| 916 | $8 \frac{1}{4}$ | 12 | $\ldots$ | Do． | Royal Scottish Museum． |
| $915 \frac{1}{\text { a }}$ | 8 | 6 | ．．． | Lithuania． | Major Algernon Heber－Percy． |
| 14 | 14 | $26 \pm$ | $\ldots$ | Woburn | Royal Scottish Museum． |
| 913 | 81 | 93 | 14 | Caucasus | St．George Littledale． |

OWNER＇S MEASUREMENTS．

| $18 \frac{1}{5}$ | $10 \frac{1}{\text { ¢ }}$ | $17 \frac{1}{2}$ | $20 \frac{1}{7}$ | Lithuania | The late Prince Henry of |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $17 \frac{\text { \％}}{}$ | $13 \frac{3}{10}$ | $13 \overline{\text { \％}}$ | $20{ }_{10}^{19}$ | Do． | Liechtenstein． Do． |
| 15 卒 | 125 | 214 |  | Do． | Imperial Museum，Vienna． |



Skull and Horns of Record American Bison. Shot by Lord Rendlesham.

## The AMERICAN BISON (Bos [Bison] bison).

Some of the points distinguishing this species from the European bison have been mentioned under the head of the latter, but it may be added that in the typical race of the former the horns are shorter, thicker, blunter, and more sharply curved. In the skull of the American animal the sockets of the eyes have a more tubular form. Height at shoulder, about 5 feet 9 inches; weight, from 15 to 20 cwt ; an adult bull weighed by W. T. Hornaday scaled 2 Ioo lbs.

Distribution.-The greater portion of Western North America, ascending to the Great Slave Lake, and descending to New Mexico and Texas ; now nearly exterminated. American writers recognise two-races-the prairie-bison ( $B$. bison typicus), and the larger wood-bison (B. bison athabasca) of the forest highlands of the North-West.


| Length on outside curve. | Circumference. | Tip to Tip. | Widest inside spread | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ${ }^{1}{ }_{1} 6 \frac{1}{2}$ | 122 ${ }^{1}$ | $19 \frac{3}{8}$ | $\ldots$ | Colorado | - Sir Edmund G. Loder, Bart. |
| $16 \frac{1}{4}$ | $13 \frac{1}{2}$ | $14 \frac{1}{4}$ | $\ldots$ | ? | Dıke of Portland. |
| 161 ${ }^{\frac{1}{2}}$ | 13 | 22 䍃 | ... | Wyoming . | Prince Nicolas Ghika. |
| ${ }^{2}{ }_{16} 6 \frac{1}{8}$ | $15^{\frac{7}{8}}$ | $25 \frac{3}{4}$ | $\ldots$ | Colorado | Sir Edmund G. Loder, Bart. |
| $15 \frac{3}{4}$ | 14 | $27 \frac{3}{4}$ | $\cdots$ | N.W. Territory | - E. G. Jenkins. |
| $15 \frac{1}{2}$ | $14 \frac{3}{5}$ | $\ldots$ | $19 \frac{3}{4}$ | Wyoming . | - St. George Littledale. |
| $15^{\frac{1}{8}}$ | 105 | $15 \frac{1}{2}$ | $\ldots$ | Do. | - Abel Chapman. |
| 14 | 13 | $21 \frac{1}{2}$ | $\ldots$ | Do. | . G. L. Harrison. |

OWNER'S MEASUREMENTS.

| $20 \frac{1}{1}$ | $16 \frac{1}{8}$ | $33 \frac{1}{2}$ | ... | ? | W. II. Root. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 19 | $12 \frac{1}{2}$ | $\ldots$ | $\ldots$ | W. Montana | P. Liebinger. |
| ${ }^{1} 188$ | 15 | $27 \frac{1}{2}$ | $\ldots$ | ? | American National Collection. |
| $18 \frac{1}{2}$ | 15 | 25 | $\ldots$ | Wyoming | P. N. Graham. |
| 18 | 14 | $\ldots$ | $\ldots$ | Montana | F. Sauter. |
| $17 \frac{1}{2}$ | $12 \frac{1}{2}$ | $\ldots$ | $\ldots$ | S.W. Montana | Theodore Roosevelt. |
| 17 | 14 | $17 \frac{1}{2}$ | $\ldots$ | Yellowstone, Montana | Count E. Hoyos. |
| $16 \frac{\overline{7}}{8}$ | $12 \frac{1}{4}$ | 20 홍 | $\cdots$ | Wyoming | Dr. Aibert von Stephani. |
| 163 | 13 | 1912 | $\ldots$ | Nebraska | Imperial Museum, Vienna. |



Skull and Horns of Wild Yak. From a specimen in the British Museum, presented by the late Mr. A. O. Hume.

## The YAK (Bos [Poëphagus] grunniens).

The plateau of Tibet is remarkable for the number of its peculiar mammals, among which is the yak. Apparently its nearest relatives are the bisons, but the yak has not the great elevation of the withers in comparison with the hind-quarters so distinctive of the latter, and the long hair forms a fringe on each side of the flanks, shoulders, and thighs, as well as a tuft on the chest, while the tail is clothed with a huge mass of similar long hair, forming, when cut off and mounted, the well-known "chowries." Yak-horns are much larger than those of living bison, and have a totally different curvature ; while there are also important differences in the skull. Height at shoulder, from about 4 feet 10 inches to at least $5 \frac{1}{2}$ feet; girth behind shoulder, 9 feet $\mathrm{I} \frac{1}{2}$ inches; length from between horns to base of tail, 8 feet $\frac{1}{2}$ inch;
tail, 3 feet $2 \frac{1}{2}$ inches; from between horns to nose, 1 foot $3 \frac{1}{2}$ inches (Lieut.-Col. H. M. Biddulph). Weight, about i I 40 lbs. Wild yak are uniformly blackish brown in colour, any trace of white indicating domestication, and probably cross-breeding.

Distribution.-The plateau of Tibet, part of the Kan-su province of China and North-eastern Ladak, at elevations between about I 4,000 and 20,000 feet. The grunting cry from which the animal takes its name is peculiar to the domesticated breeds.


| Length on outside curve. | Circumference. | Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 30 | $14 \frac{1}{4}$ | $19 \frac{3}{4}$ | ? | Major Sir W. R. Codrington. |
| 30 | $14 \frac{3}{4}$ | 30 | ? | J. C. Phillips. |
| OWNER'S MEASUREMENTS. |  |  |  |  |
| 40 | 18 | ... | Kuenlun Mis. | . A. D. Carey. |
| 39 | .. | ... | ? | Lucknow Museum. |
| $38 \frac{1}{4}$ | I $8 \frac{1}{2}$ | $26 \frac{1}{4}$ | Kuenlun Mts. | . British Museum. (Hume Collection; shot by late A. Dalgleish.) |
| 33 | 16 | 18 | N. W. Tibet | . Capt. S. H. Charrington. |
| $32 \frac{7}{8}$ | $13 \frac{1}{2}$ | 19 | Tibet | . Capt. B. H. Shaw-Stewart. |
| $32 \frac{3}{4}$ | 14 | $17 \frac{1}{8}$ | Chang Chenmo . | . Major P. H. G. Powell-Cotton. |
| $31 \frac{7}{8}$ | $14 \frac{1}{4}$ | $18 \frac{1}{4}$ | Do. | Do. |



The GAUR or INDIAN BISON (Bos [Bibos] gaurus).
This splendid wild ox, the so-called bison of Anglo-Indian sportsmen, is the typical representative of a group of Oriental species nearly related to the domesticated ox, but presenting certain well-marked points of difference. Among these may be noted the shorter head and tail, the frequently elliptical section of the horns, and, above all, the presence of a more or less distinct ridge running from the withers to the middle of the back, where it terminates in a sudden step. In the gaur this ridge is strongly developed, and in the typical race the summit of the forehead forms a high arch between the horns, which bends forward to form a concave profile. With the exception of the white "stockings" common to all the members of the group, the colour of the gaur is uniform ; but the much-flattened horns are of a peculiar yellowish-green tint at the base. The height of adult bulls at the shoulder usually varies from about 6 feet to 6 feet 4 inches, though
specimens of more than 5 feet 5 or 6 inches are not often killed ；it is， however，stated that a Nilgiri bull stood 6 feet 10 inches，while Kachar and Burmese bulls have been asserted to reach 7 feet at the withers．

Distribution．－The forest hill－tracts of Peninsular India，Assam，Burma， Siam，and the Malay Peninsula，as well as the forests along the outer Himalaya as far west as Nepal．South of the Ganges，where it has not been exterminated，the gaur inhabits suitable districts in Chutia Nagpur，Orissa，the Northern Circars，Central Provinces， Hyderabad territories，and all the Western Ghats．The Burmese race，or pyun（ $B . g$ ．readei），is nearly black，with a throat－tuft； and in the Malay race，or saladang（B．g．lubbacki），the arch on the crown of the skull is less developed，and may be absent．

A．－WILD RACES．

| Widest outside． | Circum－ at base． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Widest inside． | Length on curve of longer | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $44 \frac{1}{1}$ | 20 | 42 | $41^{\frac{1}{4}}$ | $23 \frac{1}{2}$ | Eastern Bengal C | Capt．L．P．Haviland． |
| 44 | 21 | $29 \frac{1}{2}$ | $38 \frac{1}{4}$ | $33 \frac{1}{2}$ | Burma | J．McF．Petters． |
| 43\％ | $17 \frac{1}{2}$ | 34 | 39 | $30 \frac{3}{4}$ | Parambikolam ． | G．Elliot Browning． |
| 43 | 20 | 31 | 38 | 32 | Cooch Belhar ． | H．H．the Maharaja of Cooch Behar． |
| 43 | 17 | $32 \frac{1}{2}$ | $\ldots$ | $29 \frac{1}{2}$ | Coimbatore， S ． India | P．Church． |
| $42 \frac{1}{2}$ | $18 \frac{1}{2}$ | 25 | 33 年 | $33 \frac{1}{2}$ | Travancore | Capt．T．W．Greenfield． |
| $42 \frac{1}{2}$ | $19 \frac{1}{2}$ | 3 I | $35 \frac{3}{4}$ | $3{ }^{1 \frac{1}{4}}$ | Madras | Col．T．J．R．Lucas． |
| 42 | 18 | $34^{\frac{1}{2}}$ | $37^{\frac{3}{4}}$ | $29 \frac{1}{2}$ | Central Provinces | Hon．H．G．O．Bridgeman． |
| $41^{\frac{1}{2}}$ | 16 | 30 | ．． | 29 | Assam | A．J．Walter． |
| $41 \frac{1}{2}$ | $19 \frac{3}{4}$ | $26 \frac{1}{2}$ | 36 | 31 | Mysore | Capt．C．P．Graham． |
| $41 \frac{1}{4}$ | 20 | $32 \frac{1}{2}$ | $36 \frac{1}{4}$ | 30 | ？J | J．F．Bryant． |
| 41 | 18 | 24 | $\ldots$ | $33^{\frac{3}{4}}$ | Madura District | Bethnal Green Museum （J．D．Goldingham）． |
| 4 I | $17 \frac{1}{2}$ | $28 \frac{1}{2}$ | 35 | 31采 | Central Provinces | W．J．Considine． |
| 41 | 20 | $34 \frac{1}{2}$ | $36 \frac{1}{2}$ | 27 | Siam | J．H．Thurston． |
| 41 | 193 | 37 | ．．． | $27 \frac{3}{}$ | $\underset{\substack{\text { Kalkerry, } \\ \text { India }}}{ } \mathrm{S} .$ | Col．W．E．Fairholme． |
| $40 \frac{1}{2}$ | 20 | 25 | $\ldots$ | $34{ }^{\frac{3}{4}}$ | Vardi Mullay | Baron von Massow． |
| 40 | $19 \frac{1}{2}$ | 283 | $34 \frac{1}{2}$ | 31 | Travancore | A．Lampard． |
| 40 | $19 \frac{1}{4}$ | 26 | $34 \frac{1}{2}$ | 32 | Burma | A．E．English． |
| 40 | 17 | 317 | 34 | $27 \frac{1}{2}$ | E．Madras | W．O．Horne． |
| 40 | 15 | 33 年 | $\ldots$ | 26 | Central I＇rovinces | C．F．Egerton． |
| 39 年 | $18 \frac{1}{2}$ | 34 | 35. | $26 \frac{1}{4}$ | ？ | R．McD．Hawker． |


| Widest outside. | Circumference at base. | Tip to Tip. | Widest inside. | Length on outside curve of longer horn. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $39 \frac{1}{2}$ | 20 | $25 \frac{1}{7}$ | $33^{\frac{1}{2}}$ | 31 | Anamalais | C. W. Wood. |
| 39- $\frac{1}{2}$ | 17 | $30 \frac{1}{4}$ | $34 \frac{1}{2}$ | $28 \frac{1}{4}$ | ? | Major F. C. SambornePalmer. |
| $39^{\frac{1}{2}}$ | 207 | 31 | $33 \frac{1}{2}$ | $27 \frac{1}{2}$ | ? | Capt. E. W. Thompson. |
| $39 \frac{1}{2}$ | I $8 \frac{1}{2}$ | 22 | $32 \frac{1}{2}$ | $33 \frac{1}{2}$ | ? | A. M. Leake. |
| $38 \frac{3}{ \pm}$ | $17 \frac{1}{2}$ | $25 \frac{3}{4}$ | $32 \frac{3}{4}$ | 30 | ? | A. H. Sharp. |
| 38. | $17 \frac{3}{4}$ | $28 \frac{1}{2}$ | $33 \frac{1}{2}$ | $27 \frac{3}{4}$ | Cooch Behar | I. R. Beaumont. |
| 38 | IS | 2212 | 33 | 313 | Madras | S. Cox. |
| 38 | I 8 | 233 | 32 | 29 | Burma | H. E. Beamish. |
| 38 | 19 | IS | 31 | 34 ${ }^{\frac{1}{2}}$ | ? | Sir Edmund G. Loder, Bart |
| 38 | $19 \frac{1}{2}$ | 24 | $31 \frac{1}{2}$ | 31 | ? | Rev. H. C. B. Stone. |
| 375 | $17 \frac{1}{1}$ | $30 \frac{3}{4}$ | 32 | $24 \frac{1}{4}$ | ? | Capt. A. C. H. Trevor. |
| $37 \frac{1}{2}$ | $20 \frac{3}{4}$ | 33 | $33 \frac{1}{1}$ | 25 | Burma | Capt. T. A. Headlam. |
| $37 \frac{1}{2}$ | $17 \frac{1}{4}$ | $27 \frac{1}{2}$ | $32 \frac{3}{4}$ | 25星 | ? | G. Sandeman. |
| $37 \frac{1}{2}$ | IS | 19 | $32 \frac{1}{4}$ | 31 | ? | Colonel Baillie. |
| $37 \frac{1}{4}$ | $1{ }^{1} \frac{1}{2}$ | $26 \frac{1}{2}$ | $3 \mathrm{I} \frac{3}{4}$ | 28 | Central Provinc | J. C. T. Fairweather. |
| $37 \frac{1}{4}$ | 20 | 25 | $31 \frac{1}{4}$ | 29 | Chutia Nagpu District | Lieut.-Col. J. W. Y'ardley. |
| 37 | $17 \frac{1}{4}$ | $31 \frac{1}{2}$ | 33 | 24 | ? | Duke of Sutherland. |
| $36 \frac{1}{2}$ | $21 \frac{1}{2}$ | $22 \frac{1}{4}$ | $29 \frac{3}{4}$ | 28 | Pahang | J. Scott Mason. |
| $36 \frac{1}{2}$ | $17 \frac{1}{2}$ | 17 | $\ldots$ | 28 | Mysore | Col. G. H. Evans. |
| $36 \frac{1}{2}$ | 16 | 18 | 31 | 318 | ? | W. Evetts. |
| $36 \frac{1}{2}$ | I 81 | 263 | ... | 261 | ? | Lieut. Col. R. H. Fraser. |
| $36 \frac{1}{4}$ | $18 \frac{1}{2}$ | $20 \frac{3}{4}$ | 293 | $29 \frac{1}{2}$ | Marntha . | J. G. Heyder. |
| $36 \frac{1}{4}$ | 185 | $24 \frac{1}{2}$ | $30 \frac{3}{4}$ | 273 | Malay States | G. Hemmant. |
| 36 | $17 \frac{1}{4}$ | $23 \frac{1}{4}$ | $29 \frac{1}{2}$ | 28 | S. India . | Capt. C. S. Timins. |
| 36 | $\ldots$ | $2 \mathrm{I} \frac{1}{4}$ | 31 $\frac{1}{4}$ | $24 \frac{1}{2}$ | Malay States | H. E. Stewart. |
| ¢ 31 | $14 \frac{3}{4}$ | $20 \frac{3}{4}$ | $26 \frac{1}{4}$ | $24 \frac{3}{4}$ | ? | Capt. E. H. Wildblood. |
| $\bigcirc 97$ | 13.1 | 13 | 22 | 24 | N. Travancore | British Museum (Hume Collection). | OWNER'S MEASUREMENTS.


| ... | 20 | ... | $\ldots$ | $40 \frac{1}{2}$ | Belgaum | H. Murray. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 46 | 20, $\frac{1}{2}$ | 33 | 40 | $\ldots$ | Malay States | H. Da. Prah. |
| 45 $\frac{1}{8}$ | 172 | 36 | $39^{\frac{7}{8}}$ | $33 \frac{1}{1}$ | N. Travancore | G. E. Bewley. |
| 44 | $20 \frac{1}{2}$ | 23 | $\ldots$ | 40 | Wynaad | F. Ditmas. |
| 43王 | 18 | 33 | 38 | 31 | Burma | G. H. Bell. |
| 43를 | $17 \frac{3}{4}$ | $2 \mathrm{~S}_{4}$ | $\ldots$ | $\ldots$ | Travancore | H.H. the Maharaja of Travancore. |


| Widest outside． | Circum－ ference at base． | Tip to Tip． | Widest inside． | Length on outside curve of longer horn． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 43 | $20 \frac{1}{4}$ | $18 \frac{3}{1}$ | $\cdots$ | $39 \frac{1}{4}$ | Salwin，Burma | Bombay Natural History Society＇s Museum． |
| 43 | 17 | 305 | $\cdots$ | 293 | ？ | K．J．K．Juntke． |
| $42{ }^{\frac{7}{8}}$ | $18 \frac{1}{4}$ | $\ldots$ | $34 \frac{1}{4}$ | $30 \frac{1}{4}$ | Pegu，Burma | Capt．W．F．Brayne． |
| $42 \frac{1}{4}$ | $16 \frac{3}{4}$ | $32 \frac{3}{4}$ | $\ldots$ | $\ldots$ | ？ | W．B．Drury． |
| 42 | 22 | 29 $\frac{1}{2}$ | $\ldots$ | $\cdots$ | Madras | C．W．G．Morris． |
| $4^{1 \frac{1}{2}}$ | 17 | ．．． | $\ldots$ | 33 | Burma | S．E．F．Jenkins． |
| $39 \frac{1}{2}$ | 2012 | 28 | $\ldots$ | 271 | Duars | E．T．Partridge． |
| $38 \frac{1}{2}$ | 20 | 23妥 | 32 | ．．． | S．Madras | Capt．S．H．Charrington． |

## N．B．－In the following specimens the maximum width is inside measurement．

| Widest inside． | Circum－ ference at base． | $\begin{aligned} & \text { Tip to } \\ & \text { Tip. } \end{aligned}$ | Length on outside curve of horn． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 39 | 173 | $28 \frac{1}{2}$ | $29 \frac{1}{2}$ | Siam | A．Waley． |
| 374 | $18 \frac{1}{2}$ | 22 | $30 \frac{1}{4}$ | Travancore | A．T．Mackenzie． |
| 36 | 17 | $26 \frac{1}{4}$ | $27 \frac{1}{2}$ | Assam | L．Truninger． |
| 36 | 15 | $26 \frac{1}{4}$ | 26 | Central Provinces | Major John Fuller． |
| 35 | $17 \frac{1}{4}$ | $20 \frac{1}{4}$ | $27 \frac{1}{2}$ | Tezpore，Assam | A．Y．Thomson． |
| 35 | 18 | 23 | 26 | Burma | Capt．S．L．Robinson． |
| $34 \frac{3}{1}$ | 18 | 221 | 28 | Assam | Hon．S．Tollemache． |
| $34 \frac{1}{2}$ | 18 | $23 \frac{1}{2}$ | $33 \frac{1}{8}$ | Cooch Behar | H．H．the Maharaja of Cooch Behar． |
| 34 | 181 | $20 \frac{1}{4}$ | $27 \frac{1}{2}$ | Travancore | Lieut．－Col．the Hon．E．Baring． |
| 34 | 15 | 245 | $24 \frac{1}{2}$ | ？ | Major H．De Prée． |
| 34 | 19 | 27 | 24 | Burma | W．F．Loftus－Tottenham． |
| $33{ }^{3}$ | 18 | $23 \frac{3}{}$ | 25 | Kanara | Lieut．－Col．G．J．Fitzgerald． |
| $33 \frac{1}{2}$ | 18 | 15 | $28 \frac{1}{2}$ | Travancore | Capt．H．L．Cottingham． |
| $33 \frac{1}{1}$ | 15 | 22 | 23 | Assam | Col．E．T．Paul． |
| 32 ${ }^{\text {号 }}$ | $17 \frac{1}{8}$ | 321 | $27 \frac{7}{8}$ | Central Provinces | Major C．S．Cumberland． |
| 32 䍃 | $18 \frac{1}{2}$ | 233 | 26 | Do． | Major G．de H．Smith． |
| $32 \frac{1}{2}$ | 19 | $16 \frac{1}{2}$ | 26 | Do． | Major C．F．Pinney． |
| 32 ${ }^{\frac{1}{2}}$ | $17 \frac{1}{8}$ | 218 | 31量 | Travancore | British Museum（Hume Collection）． |
| \％ 22 | $1 \mathrm{O}_{2}^{1}$ | $14{ }^{5}$ | 22 | ？ | Major H．De Prée． |

Measurements of Entire Specimens furnished by H.H. the late Mailaraja of Cooch Behar.



Skull and Horns of Gayal. From a specimen bequeathed to the British Museum by the late Mr. A. O. Hume.

## B.- DOMESTICATED BREED or GAYAL.

The gayal is a rather smaller animal than the wild gaur, nearly black in colour, with a large dewlap, and a straight line between the bases of the massive horns, which are but little divergent, curved upwards, nearly cylindrical in section, and of dark colour. The head is short, with the forehead broad and flat. It is a domesticated breed of the gaur, probably derived from the Malay and Tenasserim race of the latter.
Distribution.-Kept in a semi-domesticated condition by many of the hill-tribes of Assam, Chittagong, etc.



Head of Tsaine or Burmese Bantin. From a specimen shot by
Maj.-Gen. H. D'U. Keary.

## The BANTIN or TSAINE (Bos [Bibos] sondaicus).

This member of the gaur group departs somewhat less widely from the normal type of cattle than does the gaur, the ridge on the withers being less developed, and the horns almost cylindrical. The cows are always reddish coloured, although the bulls may be black, and in the latter sex at least there is typically a large white patch on the rump. Very distinctive of the species is the presence of a horny shield on the crown of the head connecting the bases of the horns. Height at shoulder, about 5 feet 9 inches. The humped cattle of India are probably domesticated derivatives of the bantin.
Distribution.-Burma, the Malay Peninsula, Siam, Borneo, Java, Bali, and perhaps Sumatra. Several distinct races of the bantin are distinguishable. First, the true bantin, or Java ox ( $B$. sondaicus typicus), from Java, and perhaps some of the other Malay islands and the Peninsula. In this race the old bulls become of a deep blackish-brown colour. The same tint is characteristic of the adult male Bornean bantin (B. sonddicus lowi), but the horns are directed more uprightly. A third race is the tsaine ( $B$. sondaicus birmanicus), which inhabits Burma, and may extend northwards to Manipur. Old bulls generally retain the fawn-colour of the cows
throughout life，showing more or less of grey on the head，but it is stated that very old individuals are occasionally nearly black．The Siamese tsaine，which，in at least some individuals，is profusely speckled with white，has been named $B$ ．s．porteri．Another race is represented by the Cochin China tsaine，of which the general colour is orange．

| Length on outside curve． | Circum． ference． | Tip to Tip． | Widest inside． | Widest outside． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $34 \frac{1}{2}$ | $11 \frac{7}{8}$ | 21 | $32 \frac{1}{2}$ | $36 \frac{3}{4}$ | Cochin China ． | H．R．H．the Duc de Montpensier． |
| $31 \frac{1}{2}$ | 161 $\frac{1}{2}$ | $21 \frac{1}{2}$ | $31 \frac{1}{4}$ | $36 \frac{1}{4}$ | Upper Burma ． | ．H．W．James． |
| 30 | $16 \frac{1}{4}$ | 24 $\frac{1}{2}$ | 32 | ．．． | Do． | ．Capt．H．W．Marsden． |
| 29 | 13 | $24 \frac{3}{4}$ | $33 \frac{3}{1}$ | 373 | Do． | －Capt．W．R．Savage． |
| 29 | 16 | 28 | 34䍃 | ．．． | Burma | H．L．P．Walsh． |
| $2 S_{\frac{1}{2}}$ | $17 \frac{3}{4}$ | $28 \frac{1}{2}$ | 34 | $\ldots$ | Do． | ．W．O．Hannyngton． |
| $2 S_{2}^{2}$ | $16 \frac{3}{\text { a }}$ | $40 \frac{3}{4}$ | $40 \frac{3}{4}$ | ．．． | Do． | ．Capt．T．A．Headlam． |
| 28 | 15 | $19 \frac{3}{4}$ | 29 $\frac{1}{2}$ | 35 | Do． | －Capt．L．E．Burne． |
| $27 \frac{3}{4}$ | $14 \frac{3}{4}$ | 192 | $30 \frac{1}{2}$ | 35 | Do． | ．Capt．J．M．Stewart． |
| $27 \frac{1}{4}$ | 15 | $34 \frac{1}{4}$ | 383 | 425 | Do． | Maj．－Gen．H．D＇U．Keary． （Seeillustration，p．445）． |
| 27 | $14 \frac{1}{2}$ | $20 \frac{1}{4}$ | $2 S^{\frac{1}{2}}$ | $\ldots$ | Upper Burma ． | British Museum（R．McD． Hawker）． |
| 27 | $17 \frac{3}{1}$ | $24 \frac{3}{4}$ | $32 \frac{3}{4}$ | $\cdots$ | Do． | J．McF．Petters． |
| 27 | 163 | $23 \frac{3}{4}$ | $29 \frac{3}{4}$ | $34 \frac{1}{4}$ | Do． | P．Grace． |
| 26⿺𠃊 | $16 \frac{1}{2}$ | $21 \frac{1}{2}$ | 28 | ．．． | Java | Sir Edmund G．Loder， Bart． |
| $26 \frac{1}{2}$ | $14 \frac{1}{1}$ | $24^{\frac{1}{2}}$ | 32 | $\cdots$ | Lower Burma ． | －S．F．Hopwood． |
| 261 | 16 | 22 | $30 \frac{1}{2}$ | $35 \frac{1}{2}$ | Do． | ．T．Norman． |
| 26 | 163 | 32 | 35 | $39 \frac{3}{4}$ | Burma | －Major C．P．Gunter． |
| 253 | 165 | $20 \frac{7}{8}$ | $26 \frac{3}{4}$ | ．．． | Siam | H．C．V．Hunter． |
| $25 \frac{3}{4}$ | $17 \frac{3}{8}$ | 13 | 24 | $\cdots$ | Burma | －Major C．S．Cumberland． |
| 25 | 15 | 223 | 28 | 323 | Java | ．Hon．Walter Rothschild． |
| 2412 | 16 | $21 \frac{1}{2}$ | $28 \frac{1}{2}$ | 33 | Do． | ．Capt．L．P．Haviland． |
| 24， | $14 \frac{3}{4}$ | 22 | 28 | $32 \frac{1}{4}$ | Do． | M．Maxwell． |
| 24 | 16 | 25 | 30 | $33 \frac{1}{1}$ | ？ | E．V．Ellis． |
| 23妥 | 14 | $21 \frac{1}{2}$ | 1 I | 2612 | Java | ．British Museum． |
| 23 | $16 \frac{3}{1}$ | 30 | $29 \frac{3}{4}$ | ．．． | Do． | C．W．A．Buma． |
| ¢ 23 | $12 \frac{1}{2}$ | 164 | 25 | $\ldots$ | Upper Burma | R．McD．Hawker． |
| ¢ $22 \frac{1}{2}$ | $13^{\frac{1}{2}}$ | $15 \frac{1}{2}$ | 23 | $\cdots$ | Java | C．W．A．Buma． |
| 22 | $14 \frac{1}{1}$ | $11 \frac{1}{2}$ | $20 \frac{1}{4}$ | $24 \frac{1}{2}$ | Borneo | －II．P．Perry． |

## OWNER＇S MEASUREMENTS．

| 331 | 17 | $26 \frac{7}{5}$ | 35 |  | Upper Burma | Lieut．－Col．H．S．Wood． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $30 \frac{1}{2}$ | 15 星 | 273 | 36 | $\ldots$ | Do． | －S．E．F．Jenkins． |
| 30 | 17 | ．．． | $\ldots$ | $\ldots$ | Java | Indian Museum． |
| 30 | $15 \frac{1}{2}$ | 20 | $3 S_{\frac{1}{2}}$ | $\ldots$ | Burma | －Bombay Natural History Society． |
| 29 | $15^{\frac{1}{2}}$ | 24 | 33 | $\ldots$ | Do． | ．J．P．Cook． |
| $28 \frac{1}{2}$ | $17 \frac{1}{2}$ | $30 \frac{1}{2}$ | 36 | $\ldots$ | Do． | Lieut．－Col．G．H．Evans． |
| $28 \frac{1}{2}$ | 15 | $26 \frac{1}{2}$ | 363 | $\cdots$ | Do． | －11．Van Son． |
| 27⿺𠃊⿳亠丷厂犬 | 18 | $29 \frac{1}{2}$ | ．．． | 403 | Do． | －J．E．F．Marshall． |
| $27 \frac{1}{2}$ | 15 | $23 \frac{1}{2}$ | $32 \frac{5}{5}$ | 378 | Do． | ．Capt．C．H．Elliot． |
| $27 \frac{1}{4}$ | 143 | 24年 | 33 $\frac{1}{4}$ | $37 \frac{1}{18}$ | Do． | －Capt．W．F．Brayne． |
| 24 | $16 \frac{1}{2}$ | 24 | 283 | ．．． | Borneo | －P．C．Brackenbury． |



Skull and Horns of Lake Chad Ox. Presented to the British Museum by Capt. A. C. Aubin.

## DOMESTICATED CATTLE (Bos taurus and B. indicus).

The ordinary domesticated cattle of Europe, such as the Spanish fighting bull, the Kerry, Pembroke, Highland, and Jersey breeds, are the descendants of the primitive wild ox, or aurochs (a name frequently misapplied to the bison) of Europe and North Africa (Bos taurus primigenius), now completely extinct in the wild state, although it survived in Poland till the sixteenth century. On the other hand, some of the large light-coloured cattle of Southern Europe, such as the draught-oxen of Northern Spain, and the cattle of Italy, Greece, and Hungary, appear to be derived from the zebu, although some have been crossed with North European cattle. Their horns are unlike those of the aurochs. The zebu or humped cattle of India and the Galla and other large-horned cattle of Africa evidently represent a distinct species (Bos indicus), probably descended from the bantin. To the same species belong the Ankoli cattle of Uganda and the ancient Egyptian long-horned breed, as well as the trek oxen of the Cape, in all of which the hump is obsolete.

| Length on outside curve. | Circumference. | Tip to Tip. | Widest inside. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 814 | $18 \frac{1}{4}$ | $103 \frac{1}{2}$ | $\cdots$ | Ngamiland | The late W. C. Oswell. |
| -? | 17 | 100 | 124 | Do. | - A. Ohlsson. |
|  |  |  | Owne | asurements. |  |


| Length on outside curve． | Circum． ference． | Tip to Tip． | Widest inside． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 57 | I 7 | 72 | $\ldots$ | South Africa | W．A．Simpson Hinchliffe． |
| 57 | $19^{\frac{1}{2}}$ | S2 | $\ldots$ | Bechuanaland | Sir Edmund G．Loder，Bart． |
| 5612 | $17 \frac{1}{2}$ | $76 \frac{1}{4}$ | $\ldots$ | South Africa． | R．A．Cooper． |
| 56 | $\ldots$ | 101 | $\ldots$ | Ngamiland | British Museum． |
| 52 ${ }^{2}$ | $25^{\frac{1}{2}}$ | 40 | $\ldots$ | Bahr－el－Ghazal | British Museum（Capt．F．W． Woodward）． |
| 50 | 18 | 93 | $\ldots$ | Natal | British Museum（Col．H．W． Feilden）． |
| $48 \frac{7}{8}$ | 16 ${ }^{\frac{3}{4}}$ | 67 | $\ldots$ | German <br> E．Africa | Berlin Museum． |
| 47 | 158 | $21 \frac{1}{8}$ | ．． | Gallaland | British Museum（Sir H．Salt）． |
| $42 \frac{1}{8}$ | $23 \frac{5}{8}$ | $22 \frac{1}{8}$ | $\ldots$ | Borneo <br> （N．W．Africa）． | British Museum（Capt．Clapper ton，R．N．，and Col．Denham）． |
| 41 ${ }^{\frac{3}{4}}$ | 14 | $52 \frac{3}{4}$ | $\ldots$ | Madagascar ． | Bethnal Green Museum． |
| $41 \frac{1}{2}$ | 27 | $45^{\frac{1}{2}}$ | ． | N．Nigeria | British Museum（Capt．A．C． Aubin）．（See illustration， page 447．） |
| 412 | $14 \frac{1}{2}$ | $\cdots$ | $\cdots$ | Ankoli ． | British Museum． |
| $40 \frac{1}{4}$ | $12 \frac{1}{4}$ | $60 \frac{7}{3}$ | $\ldots$ | Vienna（Polish Bull） | Do． |
| 391 $\frac{1}{2}$ | 15 | 51 星 | $\ldots$ | Uganda | C．Craig． |
| $-385$ | 125 | $53{ }^{\frac{7}{5}}$ | ．．． | Hungary | Dr．Albert von Stephani． |
| $38 \frac{1}{2}$ | $10 \frac{1}{2}$ | $54 \frac{3}{4}$ | $\ldots$ | Italy ． | Bethnal Green Museum． |
| $37 \frac{3}{1}$ | 12 | 60 | $\ldots$ | Cape of Good Hope | British Museum． |
| $31 \frac{1}{2}$ | $10 \frac{1}{4}$ | $23 \frac{3}{1}$ |  | Gallaland | A．E．Butter． |
| 31 | 18 | $32 \frac{1}{2}$ | $\cdots$ | Nigeria | P．M．Dwyer． |
| $30 \frac{1}{8}$ | $12 \frac{3}{6}$ | 35 | $\ldots$ | Spain ． | British Museum． |
| 293 | $11 \frac{1}{8}$ | 287 | ． | Gambia | British Museum（13th Earl of Derby）． |
| $24^{\frac{1}{2}}$ | $8{ }^{3}$ | 153 | $\ldots$ | Mysore | British Museum． |
| $17 \frac{1}{2}$ | $10 \frac{3}{8}$ | $30 \frac{1}{2}$ | $\cdots$ | Buenos Aires （Niata Breed） | British Museum（G．Claraz）． |
| －Owner＇s measurements． |  |  |  |  |  |

The following specimens belong to British white park－cattle，which， although now half wild，are the descendants of domesticated breeds， probably nearly allied to the Pembroke ：－

| Length on outside curve． | Circum－ ference． | Tip to Tip． | Widest inside． | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $18 \frac{1}{2}$ | 912 | $36 \frac{1}{2}$ | $\ldots$ | Charțley l＇ark | IIon．Walter Rothschild． |
| $18 \frac{1}{2}$ | 7 | 34 | $\ldots$ | Do． | Major James Grant． |
| $18 \frac{1}{2}$ | 10 等 | 20 | $21 \frac{1}{8}$ | Chillingham Park | British Museum（Earl Tankerville）． |
| 9 $18 \frac{1}{4}$ | 7 | 10 ${ }_{8}$ | 153 | Do． | Do． |
| $15 \frac{3}{}$ | 98 | $17 \%$ | I8 $\frac{1}{8}$ | Do． | British Museum（Duke Hamilton）． |
| 15 | $7 \frac{1}{2}$ | 20量 | $\ldots$ | Chartley Park | Capt．G．W．Hill，R．N． |

## The HIPPOPOTAMUS (Hippopotamus amphibius).

| Gumari, Abyssinian. | Robi, Galla. | Jir, Somali. |
| :--- | :--- | :--- |
| Ikubu, Basuto. | Dorina, Hausa. | Kiboko, Swahili. |
| Zee-koe, Boer. | Macoz, Masai. | Imvubu, Swazi. |
| Mourzu, Chilala. | Tumunto, M'Kua. | Moubu, Waganda. |
| Dul, Danakil. | Giriuti, Sudanese. | Chivhubwe, Chila. |

Such a familiar animal as the uncouth and unwieldy hippopotamus -the largest member of the swine group-requires but little in the way of description here. It is distinguished from the pigs and warthogs by the broad and rounded muzzle-so unlike the disc-shaped snout of the latter-and consequently typifies a family by itself. The tusks and molars are likewise of a totally different and distinctive type; while the feet have four sub-equal toes with symmetrical, rounded nails. In all its organisation the hippopotamus is beautifully adapted for a semi-aquatic life; the eyes and nostrils forming the highest points of the head, and thus allowing it to come up and breathe with the least possible exposure of its body. The weight of a fullgrown bull hippo is at least three tons, and the total length about 14 ft . Height at shoulder, about 3 ft . 10 ins. Hippos are chiefly hunted for the sake of their hides, which are manufactured into sjamboks, or raw-hide whips. Their tusks also have a certain commercial value, although not so great as formerly, when they were employed for artificial teeth.

Distribution.-Formerly this animal frequented most of the rivers of Africa south of the Sahara, but it has long since been exterminated from the lower reaches of the Nile, and is daily becoming scarcer in the South African rivers. In the Zambesi, where it is less easily attacked than in the smaller rivers of Mashonaland, it is still abundant, as it also is in the Chobi and neighbouring rivers, as well as in Lake Ngami ; and even in the lower reaches of the Orange River a few are still to be met with. North of the Zambesi these animals occur in great numbers.

## Lower Curved Tusks, or Canines.

Length round $\begin{aligned} & \text { Circum- } \\ & \text { outside curve. } \\ & \text { ference. }\end{aligned}$

Locality.
E. Africa
B. E. Africa

## Owner.

| $64 \frac{1}{2}$ | $7 \frac{1}{4}$ | $\ldots$ | E. Africa | . | . Sir F. J. Jackson. |
| ---: | :---: | :--- | :--- | :--- | :--- |
| ${ }^{1} 54 \frac{1}{2}$ | $6 \frac{2}{4}$ | $\ldots$ | B. E. Africa . . . Dr. G. A. Macdonald. |  |  |

Length round Circum－
outside curve．ference． outside curve．ference．
$41 \frac{1}{2} \quad 8 \frac{1}{4}$

| ${ }^{1} 41$ | 8 |
| :--- | :--- |
| ${ }^{2} 37 \frac{1}{2}$ | $8 \ddagger$ |

35.9
34 妾 9 妾

33
32
31星
31䍃
315
31
31 10

303 至 $\quad 9$ 寻
$30 \frac{1}{2} \quad 7 \frac{3}{1}$
$30 \quad 9$
$30 \quad 9$
$3^{\circ}$
28 皇 $\quad 8 \frac{1}{4}$
${ }^{3} 22$
$9 \frac{1}{2}$

Weight．
Locality
S．E．Africa ．．．Hon．Walter Rothschild．
Tana River，East Africa ．J．Benett Stanford．
Shiré River ．．．Capt．A．T．Hunt，R．N．
Sudan ．．．．Capt．J．A．Pollock．
N．IW．Rhodesia
K．C．North．
Lualaba，Central Africa
S．L．Hinde．
B．C．Africa
F．W．Bowman．
The late Sir Clement Hill．
Sir Edmund G．Loder，Bart．
E．L．Fletcher．
N．E．Rhodesia
G．M．E．Leyer．
Abyssinia
D．P．MacGillivray．
Sierra Leone
Major G．S．McLaughlin．
Shiré River
Zambesia
E．W．Tompson．
British Central Africa
R．M．Irwin．
Gold Coast
H．J．Hobbs．
N．Nigeria

F．B．Shafto．

OWNER＇S MEASUREMENTS．

| ${ }^{1} 5 \mathrm{I}$ | 9 |
| :---: | :---: |
| ${ }^{2} 38$ | $\ldots$ |
| $30 \frac{1}{2}$ | 8 |

$29 \frac{1}{2}$

## Lower Straight Tusks，or Incisors．

| $21 \frac{1}{2}$ | $7 \frac{3}{4}$ |
| :--- | :--- |
| $20 \frac{3}{3}$ | $6 \frac{3}{3}$ |
| $19 \frac{1}{2}$ | $7 \frac{1}{2}$ |
| 19 | $7 \frac{1}{3}$ |
| $18 \frac{1}{2}$ | $6 \frac{1}{2}$ |
| $18 \frac{1}{2}$ | $7 \frac{1}{2}$ |

1 Malformed．

J．Lamont．
Major P．W．Forbes．
H．M．von Archer．
Capt．C．F．Watson．
D．P．MacGillivray．
D．Pr
．．．Abyssinia
Lower Zambesi
Sudan
Nigeria
N．W．Rhodesia
2 Malformed and protruding from jaw． Sir Ednuund G．Loder，Bart．

Capt．J．A．Pollock．
．．．

Major I．A．Burdon．
K．C．North．
${ }^{3}$ Protruding from gum．


Young Pigmy Hippopotamus.

## PIGMY HIPPOPOTAMUS (Hippopotamus [Chœropotamus] liberiensis).

The pigmy hippopotamus of Liberia and the adjacent parts of the West Coast, measures only about 6 feet in length, and has habits approaching those of a pig. It also differs from the typical species by having, as a rule, only one pair of incisor teeth between the tusks, in place of two pairs, as well as in the relative size of the head and the conformation of the limbs.

Measurements of a specimen shot near Salon, on the Mauwa River, about 2 miles from the Liberian frontier :-

Length from nose to tip of tail . $78 \frac{1}{2}$ ins.
Height at withers . . . . 37 ins.
Girth behind shoulders . . . 56 ins.
Weight about . . . . 600 lbs .
Curved tusks measured $3 \frac{5}{8}$ and $3 \frac{3}{8}$ ins. (projecting from skull) ; girth . . . $3 \frac{3}{8} \mathrm{ins}$.

Skull measurements of a Liberian specimen in the Tring Museum :-

Length
$13 \frac{1}{8}$ ins.
Width
Weight

Owner.

[^14]

Head of Wild Boar.

The WILD BOAR (Sus scrofa).
The European wild boar is a large coarse-haired species usually with an under-coat of woolly fur, no warts on the face, and standing from about 33 to 36 inches at the shoulder. It often lacks the crest or mane of long black bristles running from the nape down the back in its Indian cousin. Hungarian and Russian wild swine represent a race ( $S$. scrofa attila) distinguished by its large size ; and several other local races have been named.

A Spanish boar killed by H.R.H. the Duc d'Orléans weighed 302 lbs .
Distribution.-Europe, North Africa, and South-Western and Central Asia.

## Tusks.




1 Weight, 275 lbs . clean.

## INDIAN WILD BOAR (Sus cristatus).

This species is allied to the typical wild boar, from which it is distinguished by the strong development of the dorsal crest and the rather more complex character of the last lower molar tooth. Other and more distinct species, such as $S$. vittatus, $S$. verrucosus, and the long-snouted S.barbatus, inhabit the Malay countries.


## OWNER'S MEASUREMENTS.

| Length on outside curve. | Weight. | Locality. |  |  |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 143 | $\ldots$ | Behar, Purneah . |  | . | - | Capt. L. Cheape. |
| $\begin{gathered} 14 \frac{3}{4} \\ \text { (malformed) } \end{gathered}$ | $\ldots$ | Purneah |  | - |  | H. R. P. Carter, recorded in Field, 19th January I895. (See illustration.) |
| $14 \frac{3}{8}$ | $\ldots$ | Hills above Jamu | . | . | . | Col. Sir Neville Chamberlain. |
| $10 \frac{5}{8}$ | $\ldots$ | North Kanara | . | . | - | Bombay Natural History Society. |
| $10 \frac{1}{2}$ | $\ldots$ | Burma | . | - | . | Mrs. O. F. Wheeler-Cuffe. |
| $10 \frac{1}{2}$ | $\ldots$ |  | ? |  |  | Meerut Tent Club. |
| 10 | $\ldots$ | Ceylon | . | - | - | H. Storey. |
| $9{ }^{\frac{3}{4}}$ | ... |  | ? |  |  | Meerut Tent Club. |

The following specimen belongs to one of the above-mentioned Malay species.
Length on outside curve.
Owner.


Abnormal Lower Tusk of Wild Boar.

The BUSH-PIG (Potamochœrus chœropotamus).

Bosik-vark, Cape Dutch. Ingulubi, Swazi and Zulu.

The bush-pigs, or river-hogs, of Africa and Madagascar form a peculiar group of swine characterised by having only 42 , in place of 44, teeth, small tusks, and the presence in old boars of two pairs of ridge-like prominences on the sides of the face, the lower one being on the sheath of the tusk. The ears are surmounted with tufts of long hair. The various species are best distinguished by the characters of their skulls, colour forming an uncertain guide. The Cape bush - pig, or bosch-vark, in which the upper prominences on the skulls of old boars are convex and raised above the line of the nose, is generally grey, although scarcely any two specimens exhibit the same colours, some being brownish black variegated with white, and others almost entirely light reddish brown or rufous, without any white markings. In British Central Africa they are invariably reddish, and form a distinct race, P. c. nyasa. Height at shoulder, about 3 I inches; weight, 35 lbs. Lower tusks average 6 to 7 inches long.

Distribution.-South and South-East Africa.

| Length. |  | Exposed | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| Upper. | Lower. | from gum. |  |  |
| $3 \frac{1}{2}$ | $6 \frac{1}{2}$ | $\cdots$ | N.E. Rhodesia | Hon. Walter Rothschild. |
| $\ldots$ | $\ldots$ | $4 \frac{3}{5}$ | P.E. Africa | F. Vaughan Kirby. |
| Height at shoulder. |  | Weight. |  |  |
| -234 |  | 35 lbs . | Shiré River, British Central Africa | Dr. Percy Rendall. |
|  |  |  | - Owner's measurements. |  |

## The RED RIVER-HOG (Potamochœrus porcus).

In this species the prominences on the skulls of adult boars are flat-topped, and do not reach above the line of the nose ; the colour is always some shade of rufous, either shining brownish red with a tinge of yellow, or dark reddish yellow with black on the forehead, ears, and limbs, and the mane of the back, part of the margins of the ears, the tips of the long tufts of hairs with which they are surmounted, and streaks above and below the eyes white. Weight, 250-260 lbs., Nigeria (Major J. B. Cockburn).


Head of Forest-Hog. Shot by Lieut.-Col. J. W. Yardley.

## The FOREST-HOG (Hylochœrus meinertzhageni).

A huge black pig serving in some respects to connect the bush-pigs with the wart-hogs, although markedly distinct from both. The boars have a large fungus-like warty growth below each eye. Height at shoulder, 30 ins.; weight, 265 lbs . clean (Capt. F. L. Archer-Houblon). Distribution.-Kenia, the Nandi Forest, and Abyssinia ; represented by a local race in the Eastern Cameruns, and a third in the Ituri Forest.

## Upper Tusks.




Tusks of Wart-Hog in American National Collection.

## The WART-HOG (Phacochœrus æthiopicus).

Bango or Ngurnwi, Swahili.
Hallüf, Sudani.
Ikulubi, Basuto.
Indaigazana, Swazi and Zulu. Karkari, Somali.

Ngolobwi, Barotsi and Ngami.
Njizi or Injiri, Chilala and Chibisa.
Vlak-vark, Boer.
Gado and Darunga, Hausa.
Ngron, M'Kua.
Shaukoli, Chila.
For downright ugliness the African wart-hog is hard to beat, and as it is well armed and possesses a bad temper, it is in all respects an undesirable acquaintance. The name is derived from the presence of two pairs of wart-like protuberances on the sides of the face between the eyes and the tusks; the head itself being characterised by the disproportionate length and flatness of the face. Unlike typical pigs, the stout upper tusks are longer than the lower pair; the inferior surfaces of their basal halves being worn to smooth facets by the points of the latter. Another peculiarity of the upper tusks is that they have no enamel, except at the extreme tips, which are soon worn off by use. The last molar teeth of each jaw, which, together with the tusks, are often the only teeth remaining in very old animals, are large and tall-crowned, consisting of a number of closely-packed cylindrical columns of enamel, which, when worn, present a characteristic pattern.

This type of tooth is quite unlike that of ordinary pigs, in which the last molars are low-crowned and simple. Except along the neck and back, where it carries a mane of bristly hair, the skin is nearly naked; and the young differ from those of ordinary pigs in being neither striped nor spotted. Height at shoulder, 30 inches. Weight (Capt. R. Meinertzhagen), 2 Io lbs.

Distribution.-The wart-hog is typically an inhabitant of South and South-East Africa. Pigs of the same genus extend, however, right through East and Central Africa to Abyssinia; those from the latter country forming a local race ( $P$. athiopicus africanus). Wart-hogs, possibly from their habit of going to ground when pursued, are but seldom hunted with the spear; "pig-sticking" being, in fact, a sport practically unknown in Africa. The lower tusks seldom exceed 6 inches on the front curve.

|  |  |  | Upper Tusks. |  |
| :---: | :---: | :---: | :---: | :---: |
| Outside spread. | Length on outside curve. | Length exposed from gum. | Locality. | Owner. |
| $\ldots$ | $22 \frac{1}{8}$ | 21 | Uganda . | Rev. A. B. Fisher. |
| $\ldots$ | 22 | $\ldots$ | ? | J. N. Coute. |
| $\ldots$ | $\ldots$ | 16 | South Africa | W. A. Simpson Hinchliffe. |
| 34 | $\ldots$ | 155 | Do. | Sir Edmund G. Loder, Bart. |
| ... | $\ldots$ | $15 \frac{1}{2}$ | British Central Africa | A. J. Swann. |
| $\ldots$ |  | $14{ }^{\frac{1}{2}}$ | N.E. Rhodesia | H. Cookson. |
| $\ldots$ | $17 \frac{3}{1}$ | $15^{\frac{1}{2}}$ | East Africa | R. S. Meikle. |
| $\ldots$ | 17 星 | ... | Portuguese Nyasa | C. F. Tristram. |
| $\ldots$ | $16 \frac{1}{2}$ | $12 \frac{1}{2}$ | East Africa. | Capt. the Hon. O. H. Stanley. |
| $\ldots$ | $16 \frac{1}{2}$ | ... | Do. | Capt. V. C. de Crespigny. |
| $\ldots$ | $15 \frac{1}{2}$ | $15 \frac{5}{5}$ | N. Nigeria . | . Capt. C. F. Watson. |
| $\ldots$ | 153 | 15 | East Africa | A. J. A. Douglas. |
| $\ldots$ | $15 \frac{1}{4}$ | 13 | Somaliland. | Major K. L. W. Mackenzie. |
| $\ldots$ | $15 \frac{1}{8}$ | ... | N.E. Rhodesia | F. H. Melland. |
| $\ldots$ | ... | 133 | S. Rhodesia | C. W. Adams. |
| $\ldots$ | .-. | 135 | East Africa. | Mrs. J. E. R. Oldfield. |
| $\ldots$ | 15 | $13^{\frac{1}{2}}$ | British Central Africa | R. II. Storey. |
| $\ldots$ | $14 \frac{3}{}$ |  | Do. | John Yule. |
| $\ldots$ | ... | 123 | Do. | Capt. C. J. Murray. |
| $\ldots$ | $14 \frac{3}{5}$ | 12 | Do. | Dr. J. E. S. Old. |
| ... | ... | $12 \frac{1}{4}$ | Sudan | Lord Desborough. |
| $\ldots$ | 14 | $11 \frac{1}{4}$ | Do. | Capt. A. C. Jeffcoat. |
| ... | $13 \frac{7}{8}$ | 115 | N. Nigeria . | Capt. W. H. Wilkin. |
| $\ldots$ | $13 \frac{1}{16}$ | ... | Somaliland. | Major B. R. M. Glossop. |
| $\ldots$ | $\ldots$ | $13 \frac{1}{8}$ | East Africa | Walter Jones. |
| $\ldots$ | $\ldots$ | 13 | South-East Africa | F. C. Selous. |
| $\ldots$ | $\ldots$ | 12! ${ }^{\frac{1}{2}}$ | East Africa | Major H. W. Stevens. |
| $\ldots$ | .. | $12 \frac{1}{4}$ | Do. | Percy C. Madeira. |
| $\ldots$ | $\ldots$ | 12 | N.W. Rhodesia | J. Ripley. |
| $\ldots$ | $\ldots$ | 12 | East Africa | C. W. Turner. |
| ... | $\ldots$ | 115 | ? | J. Kingdon. |
| $\ldots$ | $\ldots$ | $11 \frac{1}{2}$ | N.E. Khodesia | P M. Stewart. |

Outside
spread.

Length on Length exposed outside curve. from gum.

Locality.
$11 \frac{7}{4}$
II
II
II
$10 \frac{3}{1}$

II $\frac{1}{2}$ East Africa . . Gorham Brooks.
Do. . . . B. Dominick.
N.E. Rhodesia . . Sir Philip Brocklehurst, Bart. ? R. B. Lorler.
East Africa
F. Santos Saurez.

Do. . . . Major H. B. Dalgety.

OWNER'S MEASUREMENTS.

| $37 \frac{7}{5}$ | 20 | $16 \frac{1}{2}$ | South Africa | American National Collection. (See illustration, p. 457.) |
| :---: | :---: | :---: | :---: | :---: |
|  | $\left.\begin{array}{l} 27 \\ 26 \end{array}\right\}$ | $\ldots$ | Annesley Bay | Capt. Ralph Berners, R.N. |
| $\ldots$ | 25 | $\ldots$ | British East Africa | C. S. Mann. |
| $\ldots$ | ... | $16 \frac{1}{2}$ | S. Nigeria . | E. A. Martin. |
| $\ldots$ | . | $11 \frac{1}{2}$ | Angola | W. C. Neilson. |

## Lower Tusks.

|  |  |
| ---: | ---: |
| $\ldots$ | II $\frac{1}{2}$ |
| $-\ldots$ |  |

Somaliland
Do.

Major K. L. W. Mackenzie.
J. D. Inverarity.

- Owner's measurements.

Owner.
-


Modelled in the Roroland Ward Studios.
Head of Wart-Hog.


Head of Babirusa.

## The BABIRUSA (Babirusa celebensis).

Pig-deer (to translate the Malay name) are not the least notable of several remarkable animals restricted to Celebes and Boru; the peculiar form and position of the upper tusks of the boars rendering them almost comparable to horns. Unlike those of other pigs, in which they curve upwards from the sides of the lips, the upper tusks pierce the skin of the upper part of the snout, and, as they are not worn by the lower pair, attain extraordinary dimensions. Both pairs are quite devoid of enamel, the lower ones growing from the sides of the jaw in the ordinary manner. The cheek-teeth are somewhat less numerous than in ordinary pigs. In other parts of their organisation babirusas are, however, very like the latter, although the nearly naked skin of $B$. celebensis is of a coarse and rugged nature, being almost comparable to the bark of a tree. The height at the middle of the back, the highest point of the animal, is about 42 inches. Unlike the rest of its tribe, the female babirusa produces only a pair of young at a birth, which are of the same uniformly slaty hue as their parent. Babirusa are confined to the islands of Celebes and Boru, where they afford good sport to the natives, who drive them into nets and then spear them. The Boru species ( $B$. alfurus) is clothed with greyish hair, and also differ in the character of the skull and tusks from the Celebes $B$. celehensis.

Dr. Guillemard, in the Cruise of the "Marchesa," recorded the following weights and dimensions:-

Weight, male, 128 lbs ; female, 85 lbs .
Height at shoulder, $27 \frac{1}{2}$ ins. ; female, $25 \frac{1}{2}$ ins.

## Tusks.

| Length. |  | Owner. |
| :---: | :---: | :---: |
| Upper. | Lower. |  |
| 163 | $13 \frac{1}{2}$ | Rowland Ward. |
| $14 \frac{3}{4}$ | 12 | M. Maxwell. |
|  | OWNER'S | MEASUREMENTS. |
| 17 | $\cdots$ | H. Van Son. |
| $14^{\frac{1}{2}}$ |  | Dr. F. H. H. Guillemard. |
| $13 \frac{1}{4}$ | 15 | Imperial Museum, Vienna. |
| $1{ }^{1}$ | 8 8 | Dr. Albert von Stephani. |



Record Horn of Great Indian Rhinoceros. Shot by the late T. Briscoe.

## The GREAT INDIAN RHINOCEROS (Rhinoceros unicornis).

In addition to being the giant among its Asiatic kindred and possessing only a single horn, this species is specially characterised by the form of the folds in its hide, and the large tubercles on the foreand hind-quarters, which look as though the skin had been fastened to the body by means of rivets. Folds before and behind the shoulder mark off one large triangular shield on each side, while another fold before each thigh separates a large rump-shield; the saddle-shaped body-shield being defined by the fold behind the shoulder and the one in front of the thigh, both of which extend across the back. Very characteristic, too, are the great folds which form heavy rings of skin round the neck. Although the tubercles are largest on the fore- and hind-quarters, they also occur on other parts of the body. Height at shoulder, from 5 feet 8 inches to over 6 feet; girth behind shoulder, IO5 inches. Weight of living animal, Ioro 1bs. (New York Zool. Soc.).

Distribution-The Assam plain and the Tarailand of Nepal and some of the adjacent territories. Formerly this rhinoceros was found over the greater part of the Indian peninsula, as attested by fossil remains. There is evidence of the occurrence of a more or less nearly related rhinoceros, apparently with two horns, in the Singpu district of Upper Burma.

| Length on front curve. | Circumference. | Weight. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| 24 | $24 \frac{3}{13}$ | $\ldots$ | Assam | British Museum (the late T. Briscoe). |
| $19 \frac{1}{8}$ | $22 \frac{3}{5}$ | $\ldots$ | Assam (?) . | Ipswich Museum. |
| 183 | 237 | 4 lbs .9 oz . | Assam | D. H. Felce. |
| 918 | 16 | $\ldots$ | Do. | The late M. II. Logan. |
| 163 | $\ldots$ | $\ldots$ | Belsire, Assam . | W. C. Sherwill. |
| ¢ 161 | $\ldots$ | $\ldots$ | Cooch Behar | H.H. the Maharaja of Cooch Behar. |
| ¢ 16 | $\ldots$ | $3 \frac{1}{3} \mathrm{lbs}$. | Nowgong, Assam | L. Fabre Tonnerre. |
| 15 | 223 | ... | Nepal | Dr. T. G. Longstaff. |
| $14 \pm$ | 21 | $\ldots$ | Assam | Dr. W. P. Y. Bainbrigge. |
| $\bigcirc 14$ | 227 | $4 \frac{1}{2} \mathrm{lbs}$. | Nowgong, Assam | L. Fabre Tonnerre. |
| $13^{\frac{1}{2}}$ | 22 | $\ldots$ | Nepal | His Majesty The King. |
| 13 | 20 | $\ldots$ | Do. | Capt. M. L. Pears. |
| 13 | 201 | $\ldots$ | Assam | G. A. Dolby. |
| 13 | 203 | $\ldots$ | Do. | W. A. Doxat. |
| 123 | 23 | $\ldots$ | Do. | II. B. Firman. |
| $12 \frac{1}{2}$ | 215 | $\ldots$ | Do. | H. C. Holland. |
| $12 \frac{1}{2}$ | 21 | $\ldots$ | ? | J. W. Grieve. |
| 12 | $21 \frac{1}{2}$ | $\ldots$ | Cooch Behar | A. Ezra. |
| 12 | $21^{\frac{3}{4}}$ | ... | Nepal | Major Lord Charles M. Nairne. |
| 113 | 193 | $\ldots$ | Do. | H.S.H. the Duke of Teck. |

OWNER'S MEASUREMENTS.

| $21 \frac{1}{2}$ | $24 \frac{3}{1}$ | $\ldots$ | Nepal | Lord Curzon of Kedleston. |
| :---: | :---: | :---: | :---: | :---: |
| 138 | $\ldots$ | $\ldots$ | Cooch Behar | H.H. the Maharaja of Cooch Behar. |
| ${ }^{1} 13$ | $\ldots$ | $\ldots$ | Do. | Do. |
| 13 | $\ldots$ | $\ldots$ | ? | Indian Museum, Calcutta. |
| $12 \frac{1}{2}$ | $15 \frac{1}{2}$ | $\ldots$ | Cooch Behar | Col. J. J. Harrison. |



Javan Rhinoceros. Shot by Mr. M. Maxwell.

## The JAVAN RHINOCEROS (Rhinoceros sondaicus).

A less gigantic and smaller-headed species than the last, with the skin marked by a kind of mosaic pattern, and the fold in front of the shoulder continued right across the body like the two hindmost folds. The neck also lacks the large ring-like masses of folded skin. Horn never very large, and generally almost or completely wanting in the female. A female has been measured which stood $5 \frac{1}{2}$ feet at the shoulder, and it is probable that the male is not much inferior in height to the Indian species, although of lighter build.

Distribution.-The Sanderbans and other parts of Eastern Bengal, to the Tarai, Sikhim, Assam, and thence through Burma and the Malay Peninsula to Sumatra, Java, and Borneo.



Front Horn of Sumatran Rhinoceros. Shot by Mr. G. F. W. Curtis.

## The SUMATRAN RHINOCEROS (Rhinoceros [Ceratorhinus] ${ }^{1}$ sumatrensis).

The smallest of the Asiatic rhinoceroses, and the only one with two horns; differing, however, from the African members of the genus by the presence of folds in the skin and of teeth in the front of the jaws. Only the fold behind the shoulders is continued across the back, and the brown or black skin is rough, granular, and more or less hairy. Height at shoulder, from about 4 feet to $4 \frac{1}{2}$ feet ; weight, about 2000 lbs.

Distribution.-From Assam (where the species is very rare) to Siam, the Malay Peninsula, Sumatra, and Borneo. The Assam animal is a distinct local race ( $R$. sumatrensis lasiotis).

| Length on outside curve. |  | Circumference. |  | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Front. | Rear. | Front. | Rear. |  |  |
| $32 \frac{1}{8}$ | $\ldots$ | $17 \frac{3}{5}$ | $\ldots$ | ? | British Museum. |
| $27 \frac{1}{8}$ | $\cdots$ | $17 \frac{7}{8}$ | ... | ? | Do. |
| 15 | $7 \frac{1}{2}$ | $17 \frac{1}{2}$ | 17 | Malay Peninsula | C. B. Smales. |
| I I | $3 \frac{1}{2}$ | $15 \frac{1}{4}$ | I $1 \frac{1}{1}$ | ? | Sir T. S. Tancred, Bart. |
| 7 | $2 \frac{1}{2}$ | 14 | 10 | ? | Capt. P. Hudson. |
| 5 | $2 \frac{3}{4}$ | 13 | I I | Burma | Capt. W. F. Brayne. |

[^15] rhinoceroses.


Mr. S. L. Hinde's Horns of Black Rhinoceros.

The BLACK RHINOCEROS (Rhinoceros [Diceros] bicornis).

Aurarissi, Abyssinian.
Abu Gesn-Khartyl, Sudani.
Chipamberi, Lower Zambesi.
Chipémberi, Chilala.
Fava, Swahili.
Gurhu, Danakil.
Muin, Masai.
Kifuvi or Marili, Hausa.

Megi, M'Kua.
Sipejona, Swazi and Matonga.
Upejana, Matabili and Zulu.
Upelepi, Basuto.
Wărtses, Galla.
Wil, Somali.
Zwart Rlinnaster, Boer.
Shempola, Chila.

The African rhinoceroses are two-horned animals, distinguished from their Asiatic relatives by the absence or slight development of the folds of skin which form such a characteristic feature of the latter, and also by the lack of front teeth in both the upper and lower jaws. The hide, too, is almost completely naked, although there are some bristly hairs on the margins of the ears and the tip of the tail.

Perhaps the most distinctive external feature of the black rhinoceros, as the present species is commonly called, is to be found in the prehensile tip to the upper lip, which is rounded and not very wide in front. Other points of distinction are, however, shown by the form of the horns and ears and the position of the eyes ; while in bodily size
this animal is also considerably inferior to the next. The black rhinoceros is likewise well characterised by the comparative shortness of its skull, and the form and structure of the cheek-teeth, which are adapted for a diet of twigs and leaves. Average height at shoulder, 5 feet. Weight (Capt. R. Meinertzhagen), i ton I cwt. I qr. 8 lbs.

Black rhinoceroses sometimes have more than the usual two horns. Gordon Cumming, for instance, records having killed a three-horned


Head of Black Rhinoceros.
specimen ; and several others have been recorded from East Africa, including a five-horned specimen.

Distribution.-From Abyssinia and Somaliland through East and Central Africa, in suitable localities, to the Cape. Now rare to the south of the Zambesi, but probably more abundant in the districts between the interior of Somaliland and Lake Rudolf than anywhere else. Although more alert and active than the white rhinoceros, and thus a more dangerous animal, this species is by no means difficult to kill with modern weapons ; and in the old days hunters frequently shot half-a-dozen in a single evening as they
came to drink at a pool．Of the local races at present named，the E．African $R$ ．bicomis holmzwoodi is distinguished by the long and compressed front horn；while the Somali $R$ ．b．somaliensis is a relatively small form characterised by the proportions of the skull．

> o Living animal, 602 lbs. (New York Zool. Soc.).
> o ", ", Io8o ", ", ",

| Length on outside curve． |  | Circumference． |  | Locality． | Owner． |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Front } \\ & \text { horn. } \end{aligned}$ | Rear horn | Front horn． | Rear horn. |  |  |
| $53^{\frac{1}{2}}$ | $\ldots$ | 18 年 | $\ldots$ | East Africa | Dr．C．H．Orman． |
| 47 | $22 \frac{1}{4}$ | 22 | 20 | Do． | S．L．Hinde． |
| 44 | $\ldots$ | $\ldots$ | $\ldots$ | Do． | The late F．Holmwood． |
| ${ }^{1} 43 \frac{1}{2}$ | ．．． | $21 \frac{3}{4}$ | $\ldots$ | Congo－Uganda Boundary | Hon．Walter Rothschild． |
| 43 | $\ldots$ | $21 \frac{1}{2}$ | ．．． | ？ | The late A．Beit． |
| $41 \frac{1}{2}$ | ıо | $20 \frac{1}{2}$ | $16 \frac{1}{2}$ | Zululand | The late Lieut．－Col．the Hon． W．Coke． |
| 40 | $14^{3}$ | $18 \frac{1}{2}$ | 201 | Mt．Kenia，British East Africa | The late A．H．Neumann． |
| 39 | 193 | $19 \frac{3}{1}$ | 17 | East Africa | E．B．Horne． |
| $38{ }^{3}$ | $\ldots$ | 21 | ．．． | ？ | Hon．Walter Rothschild． |
| $38_{2}^{1}$ | $\ldots$ | 19 | ．．． | Masailand． | Sir John Kirk． |
| ¢ $35 \frac{3}{\text { a }}$ | －• | 174 | ．．． | Do． | Capt．G．H．Riddell． |
| 35 | $11{ }^{13}$ | 21 | 20 | East Africa | Capt．L．W．Sadlier－Jackson． |
| 33吾 | 16 | 20 | $19 \frac{1}{2}$ | Do． | T．P．Kempson． |
| ¢ $33 \frac{1}{2}$ | $\ldots$ | $17 \frac{1}{2}$ | ．．． | Matabililand | W．Van Ness． |
| 33 | 22 | $19 \frac{1}{2}$ | $20 \frac{1}{2}$ | East Africa | A．J．A．Douglas． |
| $32 \frac{1}{2}$ | 16 | 22 | 19 | Do． | Capt．R．Meinertzhagen． |
| 317 | 12 | $16 \frac{1}{2}$ | 16 | Do． | G．St．J．Orde Browne． |
| 31 | ．．． | 18 | $\ldots$ | Do． | R．P．Carroli． |
| 931 | $13 \frac{1}{2}$ | $18 \frac{1}{4}$ | 18 | Do． | W．Neilson． |
| 31 | $19 \frac{1}{2}$ | 16 | $16 \frac{1}{8}$ | Do． | H．C．V．Hunter． |
| $30 \frac{1}{2}$ | $16{ }^{\text {a }}$ | 218 | $20^{\frac{1}{2}}$ | Do． | R．W．McKergow． |
| ${ }^{2} 30$ | $21 \frac{1}{2}$ | $22 \frac{1}{2}$ | $23 \frac{1}{2}$ | Do． | Lieut．－Col．the Hon．A．Greville． |
| 30 | $7{ }^{\text {妥 }}$ | 21 | $19 \frac{1}{2}$ | Do． | K．V．P＇ainter．： |
| $29 \frac{1}{2}$ | $14 \frac{1}{2}$ | ．．． | ．．． | Somaliland | A．H．Straker． |



| Length on outside curve. |  | Circumference. |  | Locality. |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Front horn. | Rear horn. | Front horn. | Rear horn. |  | Owner. |
| $17 \frac{3}{4}$ | S | $16 \frac{3}{1}$ | I $5 \frac{3}{1}$ | Nigeria | Major J. B. Cockburn. |
| 16 | $9 \frac{3}{1}$ | ${ }^{1} 7$ | I $5 \frac{3}{4}$ | Do. | - P. E. Bradney. |
| $14^{\frac{3}{4}}$ | 9 | 174 | 14 | Benue, Nigeria | . . Capt. E. J. Wolseley. |
| 13 | $6 \frac{3}{4}$ | $17 \frac{1}{4}$ | 161 ${ }^{2}$ | Abyssinia . | . O. Neumann. |

## OWNER'S MEASUREMENTS.




Head of Northern White Rhinoceros.


Skull and horns of White Rhinoceros from Lado in the possession of Sir Edmund G. Loder, Bart.


Front Horns of Female White Rhinoceros.
From specimens in the Collection of the late Roualeyn Gordon Cumming, in the possession of Col. W. Gordon Cumming.

## The WHITE or BURCHELL'S RHINOCEROS (Rhinoceros [Diceros] simus).

Unn Girin, Sudani. Vit Rhinaster, Cape Dutch.

Next to the Indian elephant this is the largest existing land mammal. Its huge bulk, the bluntly truncate muzzle, which has no prehensile tip, the great length of the skull, and the enormous front horn, with its expanded base and flat front surface, form the most striking external characteristics of this species. The cheek-teeth are of a different type of structure from those of the preceding species, being, in fact, adapted for chewing grass. In walking, the animal carries its head low, so that in examples in which the front horn bends forward, its tip becomes worn by being pushed along the ground. It is stated that the colour of the skin is rather lighter than that of the black species.

Distribution.-South and South-East Africa, in suitable localities, as far north as the Zambesi ; and again in Equatorial Africa at Lado, just north of the equator. Exterminated early in the last century to the south of the Orange River, and now represented in South Africa at the most by a few survivors in North-East Mashonaland, and possibly by others in the reedy swamps at the junction of the Black and White Umvolosi rivers. Between the Zambesi and Orange rivers the species was abundant about half a century ago; Andersson alone having killed sixty in the course of a few months. Its existence in Central Equatorial Africa was indicated by Sir Samuel Baker on the evidence of horns, and subsequently made certain in the neighbourhood of Lado by Major Gibbons. The northern race (R.s. cottoni) is distinguished by the proportions of the skull, and apparently by the sculpture of the skin.

> A.-SOUTHERN or TYPICAL RACE.


| Length on outside curve. |  | Circumference. |  |  | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Front horn. | Rear horn. | Front horn. | Rear horn. | Locality. |  |
| $39 \frac{1}{8}$ | $\ldots$ | 23 | $\ldots$ | ? East Africa | Lord Delamere. |
| ¢ 385 | $\ldots$ | 24零 | $\ldots$ | South Africa | The late V. C. Oswell. |
| 389 | $\ldots$ | $22 \frac{1}{4}$ | $\ldots$ | Do. | - J. B. Taylor. |
| $37 \frac{3}{8}$ | $17 \frac{7}{8}$ | $27 \frac{1}{8}$ | $\ldots$ | Mashonaland | - F. C. Selous. |
| 36 | ... | $28 \frac{1}{2}$ | $\ldots$ | Do. | - C. D. Rudd. |
| ${ }^{1} 35{ }^{\frac{1}{3}}$ | 75 | 26 | 21 | Mount Domo, shonaland | Ma- South African Museum (late Cecil Rhodes). |
| $33 \frac{1}{2}$ | $\ldots$ | 23 | $\ldots$ | ? | Sir Abe Bailey. |
| 33 | $13 \frac{1}{8}$ | $23^{\frac{1}{4}}$ | $\ldots$ | Mashonaland | - F. C. Selous. |
| $31 \frac{1}{4}$ | $8 \frac{1}{4}$ | $26 \frac{3}{4}$ | 26 | Zululand | - J. C. Phillips. |
| 31 | $\cdots$ | 22 | $\ldots$ | Mashonaland | - J. G. Griffiths. |
| ${ }^{1}$ ¢ $929 \frac{3}{4}$ | $5 \frac{1}{2}$ | 23 | $20 \frac{1}{2}$ | Zululand. | - Pretoria Museum (Julius Jeppe). |
| ${ }^{1} 22 \frac{1}{2}$ | $7 \frac{1}{2}$ | $26 \frac{1}{4}$ | ... | Mashonaland | Hon. Walter Rothschild. |
| ${ }^{1} 20 \frac{3}{4}$ | 7 | 283 | $\ldots$ | Do. | - British Museum. |
| ${ }^{1} 20$ | 6 | $25 \frac{1}{2}$ | $18 \frac{1}{2}$ | Zululand. | - H.R.H. the Duc d'Orléans. |

OWNER'S MEASUREMENTS.

| 59 | $\ldots$ | $22 \frac{1}{2}$ | $\ldots$ | South Africa | . | Col. W. Gordon Cumming. |  |
| :--- | :--- | :--- | :--- | :---: | :--- | :--- | :--- |
| $52 \frac{1}{3}$ | $\ldots$ | $2 \mathbf{1} \frac{1}{2}$ | $\ldots$ | Do. | . | . | Do. |
| $4 \mathbf{1}$ | $\ldots$ | $\ldots$ | $\ldots$ | Do. | . | . J. W. Fitzherbert. |  |

B.-NORTHERN RACE (R. simus cottoni).



Under Surface of Skull of Indian Elephant.

The ASIATIC or INDIAN ELEPHANT (Elephas maximus).
In general a decidedly smaller animal, the Indian elephant differs from its African relative not only in external form, but also in the structure of its molar teeth, which are composed of a greater number of much thinner vertical plates. The females, as a rule, have only very small tusks, not projecting beyond the jaw ; and in some cases those of the males are equally poorly developed. Five nails are usually present on the fore-feet, and four on the hind pair. Externally, the most characteristic distinction is the comparatively small size of the ears; next to which comes the presence of a finger-like process on the front edge only of the tip of the trunk; the African species having one in front and a second behind. The skin is nearly smooth; and the
bristles on the tail are confined to the front and back edges for some distance above the tip. Other noticeable points are the comparative flatness of the forehead, and the regular convex form of the back, as well as the perfect flexibility of the trunk, which may be compared in structure to an india-rubber tube. In the African elephant the trunk may be compared to a telescope consisting of segments of different calibre. Although males do not generally exceed 9, and females 8 feet in height, specimens have been killed measuring over io feet, while one is stated to have reached ir feet, and a skeleton in the Indian Museum, Calcutta, indicates a still larger individual.

Distribution.-The forest-districts of India, Ceylon, Assam, Burma, Malay Peninsula, Siam, Cochin China, Sumatra, and Borneo. There is some doubt as to which is the typical form of the species. It has been considered that the Ceylon elephant holds this position, but the specimens originally named were probably tuskers introduced from the mainland. The Indian race may therefore be taken as the type. In the Ceylon race (E. maximus zeylanicus) the males have very small tusks, and the females are tuskless. The Sumatran race (E. m. sumatrensis) is characterised by the coarser structure of the molar teeth, and the Malay E. m. hirsutus by the shape of the ear.

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\delta Indian elephant, living, 68oo lbs. (New York Zool. Soc.).
```

Height (Owner's Measurements).


| Length out side curve. | Tusks. |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Greatest circumference. | Weight. | Locality. | Owner. |
| ft. ins. | ins. | lbs. |  |  |
| -9 101 ${ }^{1}$ | 151 | ...) |  |  |
| -9 0 | $15^{3}$ | ... $\int$ | ? | Ros |

Length out- Greatest cirside curve. cumference.
\(\left.\begin{array}{ccc}ft. \& ins. \& ins. <br>
-8 \& 9 \mathrm{R} \& 17 \frac{1}{4} <br>
-8 \& 2 \mathrm{~L} \& ··· <br>
-8 \& 9 <br>

-8 \& 6\end{array}\right\} \quad\)| $\ldots$ |
| :--- |

$\left.\begin{array}{ccc}8 & 0 & 16 \frac{7}{3} \\ { }^{1} 7 & 9 & 17 \\ -7 & 6 & 15 \frac{1}{2} \\ -7 & 0 & 14 \frac{1}{2}\end{array}\right\}$
$\left.\begin{array}{ccc}-7 & 4 \frac{1}{4} & 18 \frac{1}{4} \\ 27 & 3 \frac{3}{3} & 17 \frac{1}{2} \\ 7 & 3 \frac{1}{4} & 17 \frac{1}{8} \\ 6 & 11 & 15 \frac{1}{2} \\ 6 & 6 & 15 \frac{1}{2}\end{array}\right\}$
$610 \quad 17 \frac{1}{2}$

| -6 | 8 | $18 \frac{3}{4}$ |
| ---: | :--- | ---: |
| -6 | 5 | $18 \frac{3}{4}$ |
| 6 | $7 \frac{1}{2}$ | $14 \frac{3}{5}$ |
| -6 | 7 | $12 \frac{1}{2}$ |
| 3 | $11 \frac{3}{4}$ | $12 \frac{1}{4}$ |


| -6 | 6 | $\ldots$ |
| ---: | :--- | :--- | :--- |
| -6 | 4 | $\ldots$ |
| -6 | 4 | $\ldots$ |
| -6 | $3 \frac{1}{2}$ | $\ldots$ |
| 6 | 2 | $16 \frac{1}{3}$ |

5 11年 $16 \frac{1}{2}$

| -6 | 1 | $17 \frac{3}{4}$ |
| :---: | :---: | :---: |
| -5 | $11 \frac{3}{2}$ | $17 \frac{1}{2}$ |


| 6 | 1 | $16 \frac{1}{2}$ |
| :--- | ---: | :--- |
| 5 | 10 | $16 \frac{1}{4}$ |

Weight.
lbs. 8I
80.2 . . The late Earl of Lytton.
... Burma . . . Government House, Rangoon.

90 'S. India . . Sir Victor Brooke's Collection.
... Burma . . . Royal Palace, Mandalay.
... Sumatra . . G. F. W. Curtis.

85 Assam
$\left.\begin{array}{c}102 \\ 971\end{array}\right\}$
Burma
Marquis of Waterford.

106 Do.
R. Gordon Smith.'

655 India . . . Bethnal Green Museum (J. D. Goldingham).
$\left.\begin{array}{l}84 \\ 83\end{array}\right\}$ Burma . . . H. Shaw Dunn.
521 $\frac{1}{2}$ Mysore . . . Viscount Powerscourt.
$46 \frac{1}{2}$ Yala, S. Provinces, Lieut.-Col. R. J. Marker.
29年 Ceylon
$\left.73^{\frac{1}{2}}\right\}$ Burma . . . A. E. S. Minett.
$71 \frac{1}{2}$ )
... Assam . . . G. H. Moore.
73 $\frac{1}{4}$ Madura District . British Museum.
$\left.5^{5} 6 \frac{1}{2}\right\}^{8}$ North Coimbatore . Rev. H. C. B. Stone.
$56 \frac{1}{2}$
$53 \frac{1}{2} \int$
481
$42 \int^{4}$ Burma . . . E. M. Alexander.

[^16]

Feet (after preservation).

Circumference Width at bottom, at base. back to front.

Locality.
Owner.

| $\left.\begin{array}{l} 63 \frac{1}{2} \\ 62 \frac{1}{2} \end{array}\right\}$ | $\ldots$ | Pegu, Burma | Capt. W. F. Brayne. |
| :---: | :---: | :---: | :---: |
| $62 \frac{1}{2}$ | ... | South Arcot District | J. Fortune. |
| 61 | 20 | Travancore | Col. D. M. Lumsden. |
| 60 | 18 | Mysore | Viscount Powerscourt. |
| 59 | 19 | ? | Lieut. R. Home, R.N. |
| $58 \frac{1}{2}$ | 18 | Travancore | Capt. H. L. Cottingham. |
| $58 \frac{1}{2}$ | 18 | Assam | A. H. Cuming. |
| 58 | 19 | Do. | Major F. E. Stapleton-Bretherton. |
| 58 | 18 | Travancore | Hon. E. Stonor. |
| $57^{\frac{3}{4}}$ | 19 | Assam | H. C. Holland. |
| $57 \frac{3}{4}$ | 18 | ? | L. V. Bagshawe. |
| $57 \frac{1}{2}$ | $18 \frac{1}{2}$ | Assam | D. D. F. Hosack. |
| 56 | 17 | Do. | G. M. Norrie. |
| 56 | $17 \frac{1}{4}$ | ? | Capt. G. P. Evans. |
| ${ }^{1} 55$ | 17 | Garhwal | B. B. Osmaston. |
| ${ }^{2} 55$ | $20 \frac{3}{4}$ | ? | Lieut. R. Home, R.N. |

## OWNER'S MEASUREMENTS.

Circumference Width at bottom, at base. back to front.
$67 \frac{1}{2}$ 른
$63 \frac{1}{2}$
$61 \frac{1}{2}$
$60 \frac{1}{2}$
${ }^{1} 57 \frac{1}{2}$
$57 \frac{1}{2}$
56

56

Locality
?
N. Burma

Coorg

Ceylon
S. India

Ceylon
Do.

Owner.

## From living elephant, by Major-Gen.

 G. W. Hanson.H. Shaw Dunn.

- Capt. S. H. Charrington.

Major-Gen. A. A. A. Kinloch.
R. Gordon Smith.

Col. E. T. Taylor.
E. J. Broolie.

- Sir Peter Walker, Bart.

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\({ }^{1}\) Measurements, 54 ins. \(\times{ }_{17}\) ins. when dried.
```



Head of African Elephant.

The AFRICAN ELEPHANT (Elephas [Loxodon] africanus).


Zahon, Abyssinian.
Some of the distinctive features of the African elephant are indicated under the heading of the Indian species.

The African elephant, although still abundant in many regions of Central Africa, in the southern part of the continent is rapidly approaching extinction. A remarkable exception to this process of extermination is, however, to be found in the south and east of Cape Colony, where, since the year 1830 , wild elephants have been systematically preserved by Government. Strong troops of these protected elephants still roam the dense and impenetrable jungles of the Addo Bush and the Knysna and Zitzikamma forests. Farther inland the ivory-hunters have for a generation past been so actively employed that, despite the vast numbers of these great mammals which forty or fifty years ago thronged the interior from the Orange

River northwards, but few herds are now left south of the Zambesi. The species has been divided into a number of local races, mainly distinguished by the form and size of the ears and tusks.

BODILY SIZE.-OWVNER'S MEASUREMENTS.


With reference to the height of elephants, the late Mr. A. H. Neumann, in Elephant Hunting in East Equatorial Africa, stated that "I am an unbeliever in 14 ft . elephants or anything like it. Possibly (though I doubt even that) there may be a 12 ft . one in existence, but I have had some experience (and probably more opportunities of judging than most of those who pose as authorities), and I have never killed one that could be absolutely guaranteed to be over I I ft. 3 ins. in height (to be quite on the safe side, for as a fact I made it an inch more). have killed two of that height in my time, and not another within several inches of this."


African Elephant Tusk in the American National Collection.






The following specimens probably belong to the Dwarf Congo race (E. africanus pumilio):-

| Length (out side curve) | Greatest circumference. | Weight. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| ft . ins. | ins. | lbs. | Semliki | G. Blaine. |
| 56 | 13 年 | 27 ${ }^{\frac{1}{2}}$ |  |  |
| 54 | 133 | 272 ${ }^{\frac{1}{2}}$ |  |  |
| 38 | 12 | 17 ) |  |  |
| $37 \frac{1}{2}$ | $12 \frac{1}{4}$ | 17 | C |  |
| 92 II | $8 \frac{1}{4}$ | $7{ }^{\frac{3}{4}}$ | Umfumbro, L. Congo | . |
| ¢ 211 | $8 \frac{1}{2}$ | 8 |  |  |

Feet (after preservation).

Circumference Width at bottom,
at base.
back to front.
Locality.
Owner.


## MAMMOTH or EXTINCT SIBERIAN ELEPHANT (Elephas primigenius).

Nearly allied to the Indian elephant, but the plates of the teeth still narrower and more numerous, the tusks spirally twisted, the ears smaller, and the skin clothed in woolly fur with long bristles intermixed. The height is generally inferior to that of the Indian species.

Remains of this species occur in the superficial deposits of Europe and Northern Asia. In the frozen soil of Siberia the skin, flesh, and hair are frequently preserved, and the ivory is often suitable for the purposes of the turner.

| Length (outside curve). | Greatest circumference. | Weight. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| ft. ins. | ins. | lbs. |  |  |
| $12 \mathrm{IO}_{\frac{1}{2}}$ | 31 12 | ... | ? | Stuttgart Museum. |
| 128 | ... | $\ldots$ | Siberia | Hon. Walter Rothschild. |
| 126 | 23 | $\ldots$ | ? | British Museum. |
| 120 | 19 | $\ldots$ | ? | Hon. Walter Rothschild. |
| 119 | 35 | $\begin{gathered} 330 \\ \text { (estimated) } \end{gathered}$ | ? | Milan Museum. |
| 115 | 173 | ... | ? | Hon. Walter Rothschild. |
| 110 | $20 \frac{7}{8}$ | 173 | Siberia | Sir Edmund G. Loder, B |



Modelled in the Rowland Hard Studios.
African Lion (fore part).

The LION (Felis leo).

| Ambassa, Abyssinian. | Leeuzw, Cape Dutch. |
| :--- | :--- |
| Asad, Arabic. | Libbaka, Danakil. |
| Imbubi, Ibubesi, Inyonyama, | Nkango or Nkalamo, Chilala and |
| Matonga, and Marhanganga, | Chibisa. |
| Swazi and Zulu. | Shumba, Chila. |
| Karamo, M’Kua. | Simba, Swahili. |
| Lendjandnek, Galla. | Tau, Basuto and Bechuana. |
| Libba, Somali. | Tauw, Barotsi and Ngami. |
|  | Zaki, Hausa. |

Any description of such a familiar animal as the lion (the only cat in which the male is furnished with a mane on the head and shoulders, and a tuft of long hair to the tip of the tail) would obviously be superfluous here. One of the points of interest attaching to the species is its wide distribution. Several local races are now recognised. Somali lions are smaller and greyer than those from either the Cape or Algeria, although their manes are often very fine, and the East African
(F. l. masaicus) is distinguished by the persistence in the adult, especially the female, of the chocolate spots of the cubs. The Indian lion ( $F$. leo guijratensis), distinguished by its small, straight, and tawny mane and pale tawny colour, is another race. Heights of 3 feet $3 \frac{1}{2}$ and 3 feet 8 inches at the shoulder have been recorded in African specimens (the larger measurement by Mr. Selous), and 3 feet 6 inches in an Indian example (by Gen. W. Rice). Mr. Selous killed an African lion weighing 500 lbs ; and between 400 and 500 lbs . may be taken as the average weight. Wild lions seldom develop such enormous manes as menagerie examples.

A lion's skull may be easily recognised when placed beside that of a tiger by the fact that in the former the terminations of the sutures dividing the frontal from the nasal and maxillary (jaw) bones are situated nearly in the same transverse line, while in the latter the nasal bones extend much farther back than the maxillary. Moreover, the lower jaw of a lion will stand much flatter on a table than that of a tiger.

Distribution.-In modern times Africa from Algeria to the Cape, Mesopotamia on the west flanks of the Zagros range, Persia south of Shiraz, and India in the districts of Kathiawar, Sind, the Central Provinces, and Bundelcund. Now rare in India, where it is confined to the Gir Forest in Kathiawar.

OWNER'S MEASUREMENTS.

| Total length before skinning. | Length from nose to root of tail. | Skin measurement from tip of nose to tip of tail. | $\begin{aligned} & \text { Estimated } \\ & \text { height } \\ & \text { at } \\ & \text { shoulder. } \end{aligned}$ | Mane. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ft. ins. | ft. ins. | ft . ins. | ft. ,ins. |  |  |  |
| $10 \quad 5$ (A) | $\ldots$ | $\begin{aligned} & 10 \text { 10 } \frac{1}{2} \\ & (\text { raw }) \end{aligned}$ | 37 | Black | S.E. Africa | F. Vaughan Kirby. |
| 105 | $\ldots$ | ... | $\ldots$ | Fine | East Africa | Dr. W. S. Rainsford. |
| IO 4 | 76 | 103 <br> (dressed) | $\ldots$ | Fair | Gir Forest, India | Lord Lamington. |
| 104 | $\ldots$ | II 2 | $\ldots$ | Good | East Africa | Capt. the Hon. G. H. Douglas-Pennant. |
| $10 \quad 2 \frac{1}{2}$ | ... | $\ldots$ | ... | Fair | N.E. Rhodesia. | R. D. Waterhouse. |
| 102 | $\ldots$ | $10 \quad 2 \frac{1}{2}$ | $\ldots$ | Do. | N. W. Rhodesia | Major K. Gordon. |
| 102 | 73 | ... | 36 | Do. | Blue Nile . | Capt. C. C. Maud. |
| 10 I | . ${ }$ |  | $\cdots$ | Fine | East Africa | Capt. E. Sartorius. |

OWNER'S MEASUREMENTS-iontinucd.


## Skulls.

| Length from back to front. ${ }^{1}$ | Width across the zygomatic arches. | Weight cleaned. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $16 \frac{1}{2}(\mathrm{~A})$ | 10 | $\ldots$ | South-East Africa | F. Vaughan Kirby. |
| $\begin{aligned} & \text { I6 } \\ & \text { (end broken) } \end{aligned}$ | $10_{4}^{1}$ | 5 lbs. | East Africa . | E. Gedge. |
| $15 \frac{9}{16}$ | 10 | 6 lbs .8 oz. | Do. | Hon. C. G. Murray. |
| I $5 \frac{1}{2}$ (D) | $10 \frac{1}{2}$ | 5 lbs .3 oz . | Do. | The late Rear-Admiral R. A. J. Montgomerie, R.N. |
| I $5 \frac{1}{2}$ | $9 \frac{1}{4}$ | $\ldots$ | Pungwe | Hon. T. Thynne. |
| $15 \frac{1}{2}$ | $9 \pm$ | $\ldots$ | S. Rhodesia | C. W. Adams. |
| 15 $5^{\frac{3}{16}}$ | $9 \frac{1}{4}$ | $\ldots$ | E. Africa | H. H. Williams. |
| 15 | 10 | $\ldots$ | Mashonaland | Basil H. Woodd. |
| 15 | 912 | $\ldots$ | Somaliland . | H.R.H. the Duc d'Orléans. |
| 15 | 10 | ... | Do. | Gen. Sir Arthur Paget. |
| 15 (c) | 10 | 5 lbs .8 oz . | South-East Africa | F. C. Selous. |
| 15 | 10\% | 5 lbs .6 oz . | East Africa . | Capt. A. E. F. Fawcus. |
| $14 \frac{7}{8}$ | 9 | $\ldots$ | Do. | G. L. Harrison. |
| $14{ }^{\frac{7}{8}}$ | $9 \frac{1}{4}$ | $5 \mathrm{lbs}$.8 oz . | Do. | Sir Thos. R. Dewar. |
| $14{ }^{\frac{7}{5}}$ | $9{ }^{7} 6$ | 5 lbs. | N.W. Rhodesia | J. H. Venning. |
| $14 \frac{3}{4}$ | 95 | $\ldots$ | Do. | J. Bracken. |
| $14 \frac{3}{4}$ | 9 | $\ldots$ | South-East Africa | H. M. von Archer. |
| $14^{\frac{3}{4}}$ | 9 | $\ldots$ | Matabililand | Capt. Sir K. Fraser, Bart. |
| $144^{\frac{11}{6}}$ | $10{ }_{16}$ | 5 lbs. | East Africa . | C. C. Branch. |
| $14 \frac{1}{1} \frac{1}{6}$ ( L ) | $9 \frac{9}{16}$ | 5 lbs .3 oz . | Do. | Capt. M. Kincaid-Smith. |
| $14 \frac{3}{4}$ | $9^{\frac{7}{8}}$ | 4 lbs .8 oz . | S.E. Africa | E. P. Frost. |
| 145 | $\ldots$ | $\ldots$ | Nigeria | N. J. Dodd. |
| $14 \frac{9}{16}$ | $10 \frac{13}{16}$ | 4 lbs .12 oz . | East Africa. | Major P. H. G. Powell-Cotton. |
| $14 \frac{1}{2}$ | $9^{\frac{3}{4}}$ | 4 lbs. | South Africa | Sir Edmund G. Loder, Bart. |
| $14 \frac{1}{2}$ | $9{ }^{\frac{1}{2}}$ | $\ldots$ | Do. | Sir Abe Bailey. |
| 142 | 10 | $\ldots$ | East Africa . | Norman B. Smith. |
| 14 ${ }^{\frac{1}{2}}$ | 10 | 5 lbs . | Do. | H.R.H. the Duke of Connaught. |
| $14 \frac{3}{8}$ | 93 | $\ldots$ | Rhodesia | W. Robinson. |
| $14 \frac{1}{1}$ | $9 \frac{1}{4}$ | 4 lb .14 oz . | East Africa . | Hon. W. Guinness. |
| ¢ $14 \frac{1}{8}$ | $8 \frac{3}{4}$ | $\ldots$ | South-East Africa | F. Vaughan Kirby. |

## OWNER'S MEASUREMENTS.

| 17 | $11_{1}^{1} \frac{1}{16}$ |  | Delagoa Bay | Berlin Museum. |
| :---: | :---: | :---: | :---: | :---: |
| 16 | $10 \frac{1}{2}$ | $\ldots$ | ? | P. C. Keytel. |
| $15 \frac{7}{8}$ | 94 | 6 lbs . | South Africa | J. Lamont. |
| 151 (H) | $9 \frac{3}{4}$ | $\ldots$ | Mushukulumbwe. | Major A. St. H. Gibbons. |
| 141 ${ }^{\frac{1}{2}}$ (K) | $9{ }^{\frac{1}{4}}$ | $\ldots$ | Somaliland | A. E. Leatham. |

1 The measurements are taken from the summit of the occiput to the front of the upper jaw:


Head of Tiger.

The TIGER (Felis tigris).
Sher or Bagh, Hindustani.
A much less noisy animal than the lion, the great striped cat of Asia is also a more variable species, of which several local races are recognised. First is the typical Bengal tiger, a large, long-limbed, lithe, and short-haired creature. A smaller and rougher-haired race ( $F$. tigris septentrionalis, likewise known as $F$. t. virgata) inhabits the Caspian provinces of Persia, and also extends into the Caucasus. The Manchurian tiger ( $F$. t. mongolica) is characterised by its large size, heavy build, short limbs, and the great length and thickness of the winter coat, which may be less fully striped than in Indian specimens. The Javan tiger ( $F$. t. sondaica) differs, among other features, by the amount of white on the face. The Maharaja of Cooch Behar measured a tiger standing 3 ft . $10 \frac{1}{2}$ ins. at the shoulder.

Distribution.-From the Caucasus through Northern Persia, India, Assam, Burma, the Malay Peninsula, Sumatra, Java, and China, to Manchuria, Amurland, and Korea. In India ranging from an elevation of some 7000 feet in the Himalaya to Cape Comorin, but unknown in Ceylon.
OWNER'S MEASUREMENTS.

気方






Manchurian Tiger-Skin.

## Skulls.

| Length from back to front. ${ }^{1}$ | Breadth across the zygomatic arches. | Weight cleaned. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: |
| $-15 \frac{3}{4}$ | - | lbs. oz. | Cooch Behar | H.H. the Maharaja of Cooch Behar. |
| $-15^{\frac{3}{4}}$ | $11 \frac{1}{8}$ | .. | ? | Col. A. Pollock. |
| $15 \frac{1}{8}$ | 104 | $\ldots$ | Cooch Behar | Lord Stavordale. |
| -15 (A) | $10 \frac{1}{3}$ | ... | Bengal | Col. Evans Gordon. |
| $14 \frac{7}{8}(\mathrm{~F})$ | 10 | $\ldots$ | Duars | Major S. H. Pollen. |
| $14 \frac{1}{2}$ (G) | 103 | $\ldots$ | Deccan | Major W. J. R. Wingfield. |
| -14 ${ }^{\frac{1}{2}}$ | 10 | $\ldots$ | Tarai | Bombay Natural History Society. |
| $14 \frac{1}{2}$ | $10 \frac{1}{8}$ | $\ldots$ | Central Provinces | Major W. H. Hunter. |
| $-14 \frac{1}{2}$ (C) | $10 \frac{1}{4}$ | $\cdots$ | Bijnor District, Unit Provinces | The late A. M. Markham. |
| $14 \frac{1}{4}$ | 95 | 412 | Duars | Sir Edmund G. Loder, Bart. |
| 141 (H) | $10 \frac{1}{2}$ | 52 | Central Provinces | Major M. D. Goring-Jones. |
| $14 \frac{1}{4}$ | 103 | $\ldots$ | Do. | Lieut.-Col. E. A. D'Arcy Thomas. |
| 1417 (D) | $9^{\frac{1}{2}}$ | ... | Kanara Jungles | W. Holland. |
| 141 (E) | $9 \frac{1}{2}$ | $\ldots$ | Tarai | R. Nolan. |
| $14{ }^{\frac{1}{8}}$ | $9{ }^{3}$ | 48 | Rewah | H.H. the Maharajah of Rewah. |
| $13 \frac{3}{4}$ | 93 | 410 | N.E. Bengal | A. M. Murdoch. |
| $-13 \frac{3}{4}$ ( B ) | $9{ }^{\frac{1}{4}}$ | $\ldots$ | North Kanara | Lieut. Col. L. L. Fenton. |
| 133 | 93 | 410 | Mirzapur . | P. B. Vander Byl. |
| $13 \frac{3}{4}$ | $9 \frac{11}{16}$ | 46 | ? | Col. H. W. Gordon. |
| $13 \frac{1}{2}$ | 10 | 50 | Persia | Lieut.-Col. R. L. Kennion. |
| ¢ $13 \frac{1}{4}$ | $9{ }^{\frac{3}{16}}$ | ... | Kalchi | H. B. Learoyd. |

## Skins.

Length of skin dressed.

| ft. | ins. |
| :--- | :--- |
| I3 | 6 |
| I2 | 4 |
| I2 | 0 |
| II | $3 \frac{1}{2}$ |
| IO | 8 |

Locality.
Mongolia . . . . A. Bignold.
Do
Do.
Do.
Persia

Owner.
H.H. the Sultan of Johore.
H.R.H. the Duc d'Orléans.
. Col. W. Hall Walker.
Lieut.-Col. R. L. Kennion.

## The LEOPARD (Felis pardus).

Chita, Hindustani.
Damissa, Hausa.
Harvard, M'Kua.
Ingzwi, Zulu, Swazi, Matabili, and Matonga.
Inkwi, Bechuana and Basuto.

Nimr, Sudani.
Noo, Waganda.
Nyalugzei, Manganza.
Shabel, Somali.
Siveri, Alomwi.
Tijger, Cape Dutch.

The leopard has an even larger range than the lion, and is probably the most widely distributed of all the cats. Sportsmen in India recognise a larger "panther" and a smaller "leopard," although naturalists fail to distinguish them as separate forms. The typical representative of the species is the larger Indian leopard. African leopards often have the spots on the body of smaller size, and many of them without light centres, like those on the head. The West African race is $F$. pardus leopardus, and large-spotted East African leopards have been named $F$. p. suahelica and $F$. p. ruwenzorii. The Somali F.p. nanopardus is a very small light-coloured race. In Persia, Baluchistan, the mountains of Sind, and probably Kashmir, is found a race of the leopard (F.p.panthera or tulliana), characterised by its pale colour, long fur, and thick tail. The Malay leopard ( $F . p$.variegata) is a largespotted race; as is also the Korean and Chinese $F$. p. orientalis. Very distinct is the Amur and Manchurian F. p. villosa, an animal of heavy build, with a pale ground-colour to the fur, which is very long and thick, and the spots in the form of large complete rings. In the forest districts of Asia black leopards are not uncommon, and they also occasionally occur in Abyssinia, the home of the large F. p. nimr. Some Siamese leopards show small spots within the dark rosettes. Height at shoulder, from about 2 feet (India) to 2 feet 4 inches.(Africa). A large leopard killed by Lieut.-Col. L. L. Fenton in the Gir Forest, Kathiawar, measured 7 feet $8 \frac{1}{2}$ inches in length; the length of the tail being $35 \frac{1}{2}$ inches, the girth of the neck $21 \frac{1}{2}$ inches, of the forearm $11 \frac{1}{2}$ inches, and of the body behind the shoulder $35 \frac{1}{2}$ inches; weight, 160 lbs .

Distribution.-Africa, the Caucasus, Asia Minor, and Asia generally, with the exception of Northern Siberia, the Tibetan plateau, and Japan.

## OWNER'S MEASUREMENTS-INDIAN SPECIMENS.



Total length
dressed. $\quad$ Weight.
Locality.
Owner. dressed.
ft. ins. lbs.

| ft. ins. | ft. ins. lbs. |  |  |  |
| :---: | ---: | :--- | :--- | :--- |
| 8 | 6 | $\ldots$ | $\ldots$ | Kashmir . . . Major A. G. Arbuthnot. |

8
S. India
F. Gompertz.

84
... Cooch Behar
H.H. the Maharaja of Cooch Behar.
Do.
Do.
$8 \quad 2 \frac{1}{3}$
...
$8 \quad 1 \frac{1}{2}$
...
Central Provinces
Capt. G. IV. Hemans.
80
I 54
$8 \quad 0 \quad 8 \quad 8 \frac{1}{2}$
... India
H.H. the Maharaja of Cooch Behar.

7 II
...
Mandla . . . O. Kauffmann.
7 10 $8 \quad 4^{\frac{3}{1}}$
... Ganges Kadir
See below. ${ }^{1}$
7 10
...
Mhow . . . Major F. W. H. Walshe.
$7 \quad 10$

| 7 | $9^{\frac{1}{2}}$ | 8 | 6 |  |
| :--- | :--- | :--- | :--- | :--- |
| 7 | 9 | $\ldots$ |  |  |.

## OUVNER'S MEASUREMENTS-AFRICAN SPECIMENS.

| Length before skinned. |  | Height at shoulder. | Weight. |
| :---: | :---: | :---: | :---: |
| $f \mathrm{ft}$. | ins. | ft . ins. | lbs. |
| 8 | 7 | ... | ... |
|  | I $\frac{1}{2}$ | ... | ... |
| 7 | $10 \frac{1}{2}$ | $27 \frac{1}{2}$ | $\ldots$ |
| 97 | 9 | 2 32 | $\ldots$ |
| 7 | 9 | . | $\ldots$ |
| 7 | $7 \frac{1}{2}$ | 26 | $\ldots$ |
| 7 | 6 | ... | ... |
| 7 | 4 | $\cdots$ | ... |
| 7 | $3 \frac{1}{2}$ | $\cdots$ | $\ldots$ |
| 7 | $3 \frac{1}{4}$ | ... | $136 \frac{1}{2}$ |
| 7 | 3 | $\cdots$ | $\ldots$ |
| 7 | 2 | $\ldots$ | $\ldots$ |
| 7 | 0 | ... | 110 |
| 6 | $10 \frac{1}{2}$ | $24 \frac{1}{2}$ | ... |
| 6 | 10 | $\ldots$ | $\ldots$ |
| 6 | 10 | $\ldots$ | 140 |
| 6 | 3 | $\ldots$ | ... |
| 6 | - | $\ldots$ | $\ldots$ |
| 85 | $1 \mathrm{O}_{\frac{1}{2}}$ | 2 I | 55 |
| 5 | 7 | $\stackrel{I}{\text { I girth } 2 \mathrm{I}_{\frac{1}{2}} \text { in }}$ | .) |

Locality.
Owner skinned.

| East Africa |  | K. V. Painter. |
| :---: | :---: | :---: |
| Niwimbi, Portuguese J. Sealy-Bell. Nyasaland |  |  |
| Sudan . | . - | - Marquis Pizzardi. |
| Matabililand | . . | Rhodesia Museum. |
| Sudan | . . | - Gustav von Dippe. |
| East Africa | . . | Percy C. Madeira. |
| Do. | . . | . Lady Grisel Hamilton. |
| Do. | . . | L. F. Eames. |
| Somaliland | . | Count J. Potocki. |
| N.IV. Rhodesia . . C. H. S. Bellis. |  |  |
| Wadelai, E. | C. Africa | - Maj.-Gen. W. P. Pulteney. |
| Somaliland | - | Count Scheibler. |
| Sudan | . | . W. B. Cotton. |
| Gondokoro | . | . Dr. A. MacCarthy Morrogh. |
| Somaliland | . . | Count Scheibler. |
| Nyasaland | - . | A. White. |
| Somaliland | . . | Norman B. Smith. |
| Do. | - | - Count E. Hoyos. |
| East Africa |  | . Capt. R. Meinertzhagen. |
| Nigeria | - . | . Maj.-Gen. T. D. Pilcher. |

The following specimens were shot and measured by Mr. F. Vaughan Kirby; the first being from the Nguanetsi River, and the second from the Matamiri Bush, S.E.A. :-

| Length, tip to tip in a straight line. | Length over all"sportsman's" measurement. | Estimated shoulder height. | Girth of neck. | Girth behind shoulder. | Girth of forearm. | Length of skull. | Zygomatic width. | Cleaned weight. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ft . ins. | ft. ins. | ft . ins. | ins. |  | ins. | ins. | ins | lbs. oz. |
|  | $7 \quad 2$ | 7 | 22 | 352 |  |  |  |  |
| 69 | 72 | 27 | 20 | $33 \frac{1}{6}$ | 111 | 9 | 5 |  |

## Skulls.

| Total length. ins | Width. ins. | Weight. lbs. oz. |
| :---: | :---: | :---: |
| 114 | $7 \frac{1}{8}$ | I 12 |
| $10 \frac{5}{8}$ | $6 \frac{3}{18}$ | ... |
| -101 | 65 | $\ldots$ |
| $10 \frac{1}{4}$ | ... | $\ldots$ |
| $-10{ }^{\frac{3}{6}}$ | 64 | ... |
| 10 | $6 \frac{1}{2}$ | I 6 |
| $99^{\frac{8}{6}}$ | $6 \frac{1}{8}$ | ... |
| 9 | 5118 | I 3 |

Locality.
Gabun . . . . Sir Edmund G. Loder, Bart.
N. Nigeria . . . B. C. Parr.

Bijnor District, United The late A. M. Markham. Provinces
White Nile . . . A. L. Butler.
Gir Forest, Kathiawar . Lieut.-Col. L. L. Fenton.
Belgaum, India
East Africa
Somaliland

Owner. Sir Edmund G. Loder, Bart. L. F. Eames.
J. H. Thomson.

## The SNOW-LEOPARD or OUNCE (Felis uncia).

## Shieh Pao, of Chinese.

Although the Persian leopard is in some degree intermediate in respect to colour and the length of the coat, the ounce differs from the leopard by the ground-colour of the long and dense fur being dirty white, with the spots on the back, sides, and tail in the form of large, irregular, ill-defined and interrupted rings, and by the great thickness of the tail, which scarcely tapers, and is about three-quarters the length of the head and body. Height at shoulder, about 2 feet 4 inches.

Distribution.-The high ranges of Central Asia, including Gilgit, Hunza, Turkestan, Trans-Baikalia, Ladak, Tibet, Amurland, and Western China, extending in the north-west to the Altai, and in the west, it is said, to Persia. In Prince Demidoff's Hunting Trips in the Caucasus a snow-leopard is figured as coming from that range, but the animal found there is $F$. pardus panthera. The snow-leopard generally dwells at elevations of over 8000 feet, but descends in Gilgit during winter to 6000 feet.


- Owner's measurements.


## The CLOUDED LEOPARD (Felis nebulosa).

Kwei ko-pao, Chinese.
The arimau-dahan, as this species is called by the Malays, is the size of a small leopard, with a very long and thickly furred tail, and large upper tusks. The ground-colour of the fur varies from greyish brown to fulvous, upon which are large dark blotches, frequently bordered in part with black. In old specimens the blotches often disappear, leaving only the black borders.

Distribution.-From the Sikhim and Bhutan Himalaya, through Assam, Burma, Siam, and the Malay Peninsula, to Sumatra, Java, and Borneo. Represented by a smaller race ( $F$. nebulosa brachyurus), with somewhat different markings and a shorter tail, in Formosa.

Skins.

| Length dressed. |  |
| :---: | :---: |
| $\mathrm{ft}$. | ins. |
| -6 | 6 |
| 6 | 5 |
| -6 | 4 |
| 6 | 3 |
| 5 | in |
| 5 | 9 |
| 5 | $7 \frac{1}{2}$ |

Weight.
lbs.
$\ldots$
$\ldots$
$44 \frac{1}{2}$
$\ldots$
$\ldots$
$\ldots$
$\ldots$

Locality.

Assam . . . The late B. H. Hodgson.
Yun-nan . . M. Mitchell.
The late R. A. Sterndale.
Sir Guy Fleetwood Wilson.
British Museum.
Major B. R. M. Glossop.
P. Russel.

- Owner's measurements.

Skulls.

Basal length from back to front. 6.2 ins.

Breadth.
$4 \cdot 75$

Locality.
Assam . . . The late B. H. Hodgson.

## The JAGUAR (Felis onca).

This cat may be regarded as the American representative of the leopard, which it fully equals, even if it does not exceed, in size. The colour and markings are generally similar to those of the latter, but the dark rings are larger and arranged more definitely in groups, each ring usually enclosing one or more dark central spots, and the enclosed light area being of the same tint as the general ground-colour of the fur, which is typically of a rich tan. Usually seven or eight more or less distinct longitudinal rows of rosettes may be noticed on each side of the body. The tail is shorter than a leopard's.
Distribution.-America, from Louisiana, Texas, and Northern Mexico to about the Rio Negro on the northern confines of Patagonia in lat. $40^{\circ} \mathrm{S}$.

| Length before skinned. ft. ins. | Jength dressed. <br> ft. ins. | Locality. | Owner. |
| :---: | :---: | :---: | :---: |
| -9 3 | 93 | Brazil | Count Henry Coudenhove. |
| -8 3 ${ }^{13}$ | ... | Do. | Do. |
| -6 II | 79 | Paraguay | Col. J. J. Harrison. |

## The PUMA (Felis concolor).

With the exception of the small and long-tailed jaguarondi and eyra, the puma (pronounced pooma) is the only uniformly coloured cat found in America, where its range extends from British Columbia and Maine in the north to the Strait of Magellan in the south. The size is inferior to that of the jaguar, the height at the shoulder being about 2 feet, and the weight 150 lbs . The general colour of the fur is tawny, tending, like that of the white-tailed deer, to reddish in summer and to greyish in winter, with the middle of the back darker, and a whitish patch on the back of the otherwise black
ears. But with such an enormous geographical range, it is inevitable there should be much local variation ; and a number of races are now recognised, most of which are distinguished by size or the redder or greyer tint of the fur. A Patagonian race has pale ears.

| Length before skinned. ft . ins. -8 6 | Weight. <br> lbs. <br> about 150 | Locality. ? | Owner. A. Pendarves Vivian. |
| :---: | :---: | :---: | :---: |
| -7 65 | $\ldots$ | Brazil | Count Henry Coudenhove. |
| -7 5 | $\ldots$ | Gallegos River, Patagonia | W. Moncreiffe. |
| $\begin{array}{ll}-7 & \end{array}$ | $\ldots$ | Fraser River, British Columbia . | The late J. Fannin. |
| -7 0 | ... | Wyoming . | J. L. Scarlett. |

- Owner's measurements.


## LYNXES (Felis [Lynx] lynx, etc.).

The lynxes form a well-marked group connected with the more typical members of the cat tribe by the jungle-cat ( $F$. chaus), and distinguished by the tuft of long hairs at the summit of the ears, and the absence of the first upper cheek-tooth. From the others the caracal (F. caracal), of Africa and India, is broadly distinguished by its long tail and uniform rufous colour. The short-tailed lynxes are, however, a group in which it is very difficult to determine whether the variations indicate distinct species or local races. In the typical European lynx (F. lynx) the tail is very short, the throat has a ruff of long hair, and the coat is spotted with dark brown, the Tibet lynx (F. lynx isabellina) is a pale race, and the Canadian lynx ( $F$. lynx canadensis), which ranges as far south as California, is another race ; while the Caucasian and Persian lynx is now classed as a distinct species, F. cervaria. The red lynx (F. rufx), which is also widely extended in America, and has numerous local races, is a third species. From differences in the form of the skull, the Spanish lynx ( $F$. pardina), which is a fully spotted animal, is also classed as a distinct species. It ranges over a large portion of Southern Europe, including Turkey, Greece, Sicily, Sardinia, and Spain and Portugal. The ordinary lynx stands from i 6 to is inches at the shoulder.

## A.-EEUROPEAN LYNX (Felis lynx).

| Length before skinned. | Estimated height at shoulder. | ${ }^{\text {Locality }}$. | Owner. |
| :---: | :---: | :---: | :---: |
| -49ł ins. | $\ldots$ | Andalusia | Abel Chapman. |
| -46 , | $\ldots$ | Near St. Petersburg | Count Bobrinskoy. |
| $-42^{\circ}{ }^{\prime \prime}$, | $\ldots$ | Eastern Carpathians | Prince Henry of Liechtenstein. |
| -42 ," | 23 | Do. | Count Henry Coudenhove. |

## B.-CANADIAN LYNX ( $\mathbf{F}$. lynx canadensis).

Length hefore skinned.
-38 ins.

Height at shoulder.

25

Weight. (about)

60 lbs. Wyoming . . . Major G. Dalrymple White.
Locality.
Owner.

- Owner's measurements.


## C. - RED LYNX (Felis rufa).

Length before skinned.

Height at shoulder.

## Weight.

$\ldots$
40 lbs.
(about)

Locality.
Wyoming
Nova Scotia . . Major G. Dalrymple White.

Owner.
D.-CARACAL (Felis caracal).

Locality.
Owner.
Flat skin. $-46 \frac{1}{2}$ ins.

Nr. Grahamstown, S. Africa

| -33 ins. | 17 | $\ldots$ | Wyoming . | . | Capt. M. McNeill. |
| :--- | :---: | :---: | :---: | :---: | :--- |
| -32, | 22 | 40 lbs. <br> (about) | Nova Scotia | . Major G. Dalrymple White. |  |

- Owner's measurements.


## The HUNTING-LEOPARD or CHITA (Cynælurus jubatus).

Although this animal is commonly called chita (cheetah) by AngloIndian sportsmen, that name is at least as often applied in India to the leopard. From all the true cats and lynxes the hunting-leopard differs by the claws being capable of only partial withdrawal into their sheaths, so that their tips are always exposed. The body also is more slender, and the limbs are proportionately longer. The black spots on the skin are small and without light centres, like those on the head of the leopard. Length, 7 feet or less ; height at shoulder, 30 to 39 inches. A specimen speared by Lieut.-Col. L. L. Fenton in Kathiawar measured 6 feet $\frac{1}{4}$ inch in length, the tail being 2 feet $2 \frac{1}{4}$ inches.

In Africa the chita is the "Ihlose" of the Zulus and Swazis. It is distributed sparsely throughout S.E. Africa. Hunting-leopards usually hunt in couples, and fairly stalk their game, securing it with a swift rush at the last. Mr. F. Vaughan Kirby wrote that "I have seen a party of six hunting together and another of eight. Though I have often tried, I have never yet succeeded in running into one on horseback; they are incredibly swift of foot. They invariably kill their prey by strangulation." Many local races have been named.-

Distribution.-Africa and South-Western Asia, extending from Persia to Western Turkestan and the countries east of the Caspian, and eastwards into India; unknown in the latter country on the Malabar coast and to the north of the Ganges, as it also is in Ceylon.


The following are the dimensions of a specimen shot in the Eastern Transvaal by Mr. F. Vaughan Kirby :-

[^17]
## The SPOTTED HY ÆNA (Hyæna [Crocuta] crocuta).

| Uaraba, Somali. | Marfain, Sudani. |
| :--- | :--- |
| Yangula, Danakil. | Ugandu, Mpisi. |
| Jib, Abyssinian. | Setongzani, Barotsi. |
| Kuva, Hausa. | Piri, Ngami. |
| Kochupa, M'Kua. | Chimbwi, Chilala and Chibisa. |

The hyænas form a small family of Carnivora allied in some respects to the cats, but distinguished by the structure of the skull, the more numerous teeth (which are, however, to a considerable extent cat-like), and the four-toed feet, with non-retractile claws. The spotted hyæna, of which there are several races, is the largest of the three species, and takes its name from the large dark blotches on its tawny coat. Its carnassial teeth are more cat-like than those of the other species.

Distribution.-Africa, south of the Sahara.

| Length before skinned. | Length of tail. | Extreme length over all. | Estimated standing height. | Girth behind shoulders. | Weight. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{gathered} \text { ft. } \\ \text { ins. } \\ -5 \end{gathered}$ | ft . ins. | ft . ins. | ft. ins. | $\begin{aligned} & \text { ins. } \\ & 29 \end{aligned}$ | $\begin{aligned} & \text { lbs. } \\ & \text { I2 I } \end{aligned}$ | East Africa | Capt. R. Meinertz hagen. |
| $-4 \quad 9{ }^{\frac{1}{2}}$ | 1 I | 63 | 30 | $39 \frac{1}{2}$ | $\ldots$ | $\ldots$ | F. Vaughan Kirby. |
| -4 8 | ... | ... | 26 | ... | ... | Somaliland | J. H. H. Dodds. |



## The STRIPED HY厌NA (Hyæna striata).

Distribution.-India, Arabia, Syria, etc., and North and East Africa.

| Length before <br> skinned. <br> ft. |
| :---: |
| -4 |$\quad 4 \frac{1}{2}$.


| Length of |
| :---: |
| tail. |

ft. ins.
$\ldots$
I $\quad 5$

| Standing <br> height. |
| :---: |
| $\mathrm{ft}$.$\quad ins.$ |
| 2 |$\quad 2 \frac{1}{2}$.

Locality.: Owner.

Somaliland . . J. H. H. Dodds.
India . . . The late Dr. T. C. Jerdon.


Skull of Kamchatkan Bear.

## BEARS (Ursidæ).

Bears are so unlike other animals and so like one another that no one has the slightest difficulty in recognising a member of the group when he sees it. They constitute a family of Carnivora--the Ursideand are spread over the greater part of the globe, with the exception of Africa to the south of the Sahara desert, and the Australasian islands. As some of their leading characteristics, mention may be made of their large bodily size, clumsy build, shaggy fur, generally uniform coloration, the very short tail, and the application of the whole sole of the foot to the ground in walking. The skull and teeth are likewise very peculiar and distinctive, although these need not be taken into consideration in this place.

In consequence of the marked similarity to one another of most members of the group, it is a matter of extreme difficulty to come to a definite conclusion as to the number of species of bears. The typical member of the group is the familiar brown bear (Ursus arctus) of Europe, in which the colour is generally a darker or lighter shade of brown, but occasionally tends to greyish. The Syrian bear (U. arctus syriacus), in which this greyish tinge predominates, may be regarded as a local variety, and the same is the case with the snow-bear of Kashmir ( $U$. arctus isabellimus), in which the colour is generally a light creamy brown. European specimens probably seldom exceed 8 feet, but the East Siberian and Kamchatkan bears ( $U$. arctus piscator) grow to 9 feet. Even more gigantic is the Kodiak bear (U. arctus middendorffi) of Kodiak Island, Alaska; while the Yezo bear ( $U$. arctus yesoensis) of Japan is another large race, with much the external appearance of a grizzly. The Alaskan bear ( U. arctus dalli), from the
mainland of Alaska, is also a huge animal, slightly smaller than the one from Kodiak Island, with more resemblance to an ordinary brown bear than to a grizzly. The grisly, or grizzly, of the Rocky Mountains is a smaller bear, with longer, straighter, and whiter claws, and is generally regarded as representing a second species ( $U$. horribilis). A race of this species is the Barren-Ground bear (U. h. richardsoni); and the species may be represented in Asia by the Tien Shan U. leucony:: Another member of the group is the Atlas bear ( $U$. arctus crowtheri), of North-Western Africa, still imperfectly known. The extinct cave-bear ( $U$. spelceus) is a large species allied to the brown bear.

The little blue bear ( $U$. pruinosus) of Tibet, with more or less of white on the head and shoulders, seems to form a distinct species. The same is the case with the American black bear (U. americanus), which exhibits distinctive features in the skull and teeth, and is generally black, although it may be grey, or even white ( $U$. a. kidderi). The Himalayan black bear ( $U$. torquatus), which may be recognised by the conspicuous white gorget on the breast, is a relative of the last-named species. In Japan it is represented by the Japanese black bear ( $U$. japonicus). One of the smallest species of the genus is the very distinct Malay bear ( $U$. malayanus), which ranges into Sze-chuan ; and allied to this is the spectacled bear (U. ornatus) of the Peruvian and Bolivian Andes, distinguished by the light-coloured rings generally surrounding the cyes from which it derives its name.

The most distinct of all the species included in the genus Ursus is the Polar bear ( $U$. maritimus), so distinct, indeed, that many naturalists consider it ought to form a genus by itself. Externally its chief characteristics are its white coat, and the presence of a certain amount of hair on the soles of the feet; both these peculiarities being evidently adaptations to the Arctic habitat of the animal. Very old Polar bears exhibit a tendency to the development of a brownish tinge in the fur. Last of all comes the Indian sloth-bear (Melursus ursinus), which is so different from the other kinds as to represent a genus by itself. It is too well known an animal to need description, some of its characteristics being the long and bare snout, the ragged, wiry hair, extensile tongue, small cheek-teeth, and the diminished number of front teeth.
(a) Skulls.

| Basal length from back to front. | $\begin{aligned} & \text { Width } \\ & \text { across the } \\ & \text { zygomatic } \end{aligned}$ $\begin{gathered} \text { 2ygomant } \\ \text { arches. } \end{gathered}$ | Weight cleaned. | Race, or Species. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ins. | ins. | lbs. oz. |  |  |  |
| -2012 | $11 \frac{1}{4}$ | $\ldots$ | $\ldots$ | Alaska . | J. W. Anderson. |
| $18 \frac{3}{4}$ | $11^{\frac{3}{3}}$ | 120 | Cave bear | Europe. | Sir Edmund G. Loder, Bart. |
| -183 | 103 | ... | ? | Alaska . | F. T. Colby. |
| 18 | 11 | 10 o | Kamchatkan | Siberia. | Hon. Walter Rothschild. |
| $17 \frac{1}{2}$ | $10^{7}$ |  | Alaskan . | Alaska . | Capt. C. R. E. Radclyffe. |
| -174 | $10 \frac{3}{8}$ | ... | Do. | Do. | Rev. Dr. R. J. Nevin. |
| $17 \frac{1}{4}$ | ıо | 612 | $\begin{aligned} & \text { Kamohat- } \\ & \text { kan } \end{aligned}$ | Kamchatka | P. Niedieck. |
| 16 | $9{ }^{\frac{7}{8}}$ | 58 | Polar | Novaia Zemlia | J. Lamont. |
| $15{ }^{\frac{7}{8}}$ | $10 \frac{1}{2}$ | 513 | Do. | Polar Seas | Sir Edmund G. Loder, Bart. |
| $15 \frac{18}{18}$ | 95 | 58 | Do. | Greenland | C. A. Hamilton. |
| $15 \frac{3}{1}$ | $9 \frac{13}{18}$ | 514 | $\ldots$ | Kamchatka | Capt. C. R. E. Radclyffe. |
| $15^{\frac{1}{2}}$ | $10 \frac{3}{5}$ | 6 I | $\ldots$ | Alaska . | L. J. Cadbury. |
| 151 ${ }^{\frac{1}{2}}$ (D) | $9 \frac{1}{2}$ | 510 | Grizzly | Brit. Columbia | Sir Peter Walker, Bart. |
| $15 \frac{3}{8}$ | $9 \frac{1}{4}$ | 4 ı | Kamchatkan | Kamchatka | Capt. R. E. R. Benson, R.N. |
| $15 \frac{1}{8}$ | $9{ }^{7}{ }^{7}$ | 510 | Do. | Do. | W. S. Race. |
| $14{ }^{\frac{11}{10}}$ | 9 | ... | Brown | Do. | St. George Littledale. |
| -1458 | S $\frac{1}{8}$ | 42 | Grizzly | Montana | Sir Edmund G. Loder, Bart. |
| $14 \frac{1}{2}$ | 81 | 48 | Do. | Brit. Columbia | S. B. Bennett. |
| 1438 | 83 | 5 - | Do. | New Mexico. | Montague Stevens. |
| $14 \frac{1}{4}$ | 81 | 312 | Brown | Europe | Walter IVinans. |
| $13 \frac{5}{8}$ | $8{ }^{3}$ | $\ldots$ | Snow | Kashmir | Capt. B. H. Shaw-Stewart. |
| $-13 \frac{1}{8}$ | S |  | Do. | Do. | Sir Edmund G. Loder, Bart. |
| 127 | $8 \frac{3}{16}$ | 33 | Black | Nepal . | Lieut.-Gen. Kaiser Shumsher Jung, R.B. |
| -12 ${ }^{\frac{7}{8}}$ | 7 | ... | Sloth | Mysore | Capt. M. McNeill. |
| $12 \frac{1}{2}$ | $7 \frac{3}{5}$ | $\ldots$ | Do. | Cent. Prov. . | C. F. Egerton. |
| $12 \frac{1}{2}$ | 7 | ... | Grizzly | Wyoming | J. L. Scarlett. |
| $12 \frac{1}{2}$ ( $\mathrm{B}^{1}$ | 63 | $\ldots$ | Sloth | Cent. Prov. . | Surgeon-Major M. O'C. Drury. |
| $12 \frac{3}{8}$ | $7{ }^{5}$ | ... | Snow | Kashmir | A. Ezra. |
| 123 | $7 \frac{1}{2}$ | ... | Do. | Do. | Col. C. B. Wood. |
| $12 \%$ | $7{ }^{\text {竞 }}$ |  | Black | Do. | P. B. Vander Byl. |
| $12 \frac{1}{6}$ | 75 | ... | Grizzly | Wyoming | J. L. Scarlett. |
| 12 | 718 | ... | Sloth | Cent. Prov. . | C. F. Egerton. |
| $-11 \frac{7}{8}$ | 73 | $\ldots$ | Black | Newfoundland | Percy C. Madeira. |
| H12 (A) | $6{ }^{4}$ | ... | Brown | W. Caucasus | St. George Littledale. |

## OWNER'S MEASUREMENTS.



| Length before skinned. | Length of raw skin. | Estimated height at shoulder. | Girth. | Weight. | Race, or Species. | Locality. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ft. ins. ... | ft . ins. $7 \quad 0_{4}^{3}$ | ft. ins. ... | ft. ins. | $\begin{gathered} \text { lbs. } \\ \text { 6So } \\ \text { (about) } \end{gathered}$ | Brown | Lithuania | - Prince Radziwill. |
| $\ldots$ | 70 | ... | $\ldots$ | ... | Snow | Kashmir | . Major C. McI. Ritchie. |
| $\ldots$ | 7 o | 32 | $\ldots$ | $\ldots$ | Sloth | India | . Lieut.-Col. A. E. Ward. |
| $\ldots$ | 6 II | $\ldots$ | $\ldots$ | $\ldots$ | Black | Wyoming | . Col. J. J. Harrison. |
| $\ldots$ | 6 IO | 30 | $4 \quad 4^{\frac{1}{2}}$ <br> forearm | 423 | Sloth | Cooch Behar | H.H. the Maharaja of Cooch Behar. |
| $\ldots$ | 610 | 4 I | ... | ... | ? | Alaska | . R. P. Blake. |
| $\cdots$ | $6 \quad 9 \frac{1}{2}$ | $\ldots$ | 25 | $\ldots$ | Snow | Kashmir | S. V. Occleston. |
| $\cdots$ | 683 | $\cdots$ | $\ldots$ | $\ldots$ | Black | Garhwal | Capt. A. W. RobertsonGlasgow. |
| $\ldots$ | $68(\mathrm{~B})$ | ) | $\cdots$ | ... | Snow | Kashmir | A. Ezra. |
| ... | 68 | 40 | $\ldots$ | 625 | Kodiak | Kodiak I. | A. VV. Merriam. |
| 67 | $\ldots$ | $\ldots$ | $\ldots$ | $\cdots$ | Black | Kashmir | Lieut.-Col. L. L. Fenton. |
| ... | 67 | $\ldots$ | $\ldots$ | $\ldots$ | Do. | N. Brunswic | Sir Kenneth Crossley. |
| ... | 66 | $\ldots$ | $\ldots$ | 700 | Do. | Nepal | Lieut. - Gen. Kaiser Shumsher Jung, R.B. |
| $\ldots$ | 66 | ... | $\ldots$ | $\ldots$ | Grizzly . | Wyoming | Count E. Hoyos. |
| . ${ }$ | 65 | ... | ... | ... | Do. | Do. | J. L. Scarlett. |
| $\cdots$ | 64 | $\ldots$ | $\cdots$ | ... | Black | Kashmir | The Master of Belhaven. |
| $\ldots$ | 63 | $\ldots$ | $\ldots$ | ... | Grizzly . | Wyoming | J. L. Scarlett. |
| ... | $6 \quad 2 \frac{1}{2}$ | $\ldots$ | $\ldots$ | ... | Black | Brit. Columbia | Count E. Moyos. |
| $\ldots$ | 6 I $\frac{1}{2}$ | $\cdots$ | $\ldots$ | ... | Sloth | Mandla, Cent. Provinces | Capt. B. H. Boucher. |
| $\ldots$ | 6 I | $\ldots$ | $\ldots$ | ... | Cinnamon | Wyoming | Col. J. J. Harrison. |
| $\ldots$ | $6 \quad 0 \frac{1}{2}$ | ... | $\ldots$ | ... | Sloth | Hyderabad | Count E. Hoyos. |
| ... | 6 o | 30 | $\cdots$ | 280 | Do. | ? | The late G. P. Sanderson. |
| $\ldots$ | 6 0 | $\ldots$ | $\ldots$ | ... | Black | Newfoundland | Percy C. Madeira. |
| $\ldots$ | $510 \frac{1}{2}$ | 30 | 34 | ... | Snow | ? | Lieut.-Col. H. M. Biddulph. |
| $\ldots$ | 55 | 253 | $210 \frac{3}{4}$ | $\begin{gathered} 250 \\ \text { about } \end{gathered}$ | Black | Brit. Columbia | Count Scheibler. |
| ... $¢$ | ¢ 512 | $211 \frac{1}{4}$ | 44 | $\begin{aligned} & 600 \\ & \text { about } \end{aligned}$ | Grizzly | Do. | Do. |
| ... | 52 (A) |  | ... | ... | Brown | W. Caucasus . | St. George Littledale. |
| 52 | $\cdots$ | 34 | 28 | 242 | Do. | W. Kan-su | G. Fenwick.Owen. |
| $\ldots$ | 47 | $\cdots$ | $\ldots$ | $\ldots$ | Do. | Asia Minor | H. O. Whittall. |

N.B.-Some of the specimens entered as "Grizzly" may be the Barren-Ground bear.


Head of Walrus.

The WALRUS (Odobænus rosmarus).
The unwieldy seal-like animals commonly known by a corruption of the Scandinavian name valross (whale-horse) form in some respects a connecting link between the true seals and the eared seals, although differing from both in the huge upper tusks which depend from the muzzle of males and females alike, as also by the thick yellow bristles covering the muzzle itself. Like the true seals, walruses have lost all traces of external ears, but, unlike the former, and like the eared seals, their huge hind-flippers are turned forwards beneath the body when on land. The molar teeth have simple flattened crowns, unlike those of most seals. Although young and adolescent walruses have fairly thick coats of yellowish fur, in old individuals the tough hide becomes almost bare, except for the aforesaid bristles. Walruses are estimated to attain a weight of from 2250 to 3000 lbs .

Walruses are exclusively confined to the Arctic seas, where they spend much of their time on the ice. There are two kinds, which
may be regarded as races of a single species ; the one restricted to the North Atlantic, and the other to the North Pacific. The distribution of these animals is by no means of circumpolar extent, the Atlantic walrus (O. rosmarts) apparently not ranging on the Asiatic coast east of the mouth of the river Lena; while in America walruses do not appear to inhabit the vast extent of coast lying between the western shore of Hudson Bay and Alaska. The Pacific walrus ( O.r. obesus), which is the larger of the two, with longer tusks, always had a restricted range, and is now scarce. Formerly the Atlantic walrus occurred in countless thousands, but in accessible situations its numbers have been greatly reduced, owing to incessant persecution for the sake of its valuable oil and ivory. Between 1870 and I 880 at least $\mathrm{IOO}, 000$ of these animals are estimated to have been slain.

The largest walrus shot by Mr. W. Livingstone-Learmonth measured 12 feet 8 inches in length, and the tusks when extracted measured $25 \frac{1}{2}$ inches in length and $8 \frac{1}{2}$ in circumference at the largest part; but, as is the case with those of nearly all old bull walruses, they were much broken at the points.


## Tusks.

| Locality: | Owner. |
| :---: | :---: |
| ? | Sir Thos. Hesketh, Bart. |
| Kamchatka $?$ | British Museum (The late Major G. E. H. Barrett-Hamilton). Bethnal Green Museum. |
| ? | Sir Edmund G. Loder, Bart. |
| Pacific | Norwich Museum. |
| Point Barrow | British Museum (Col. H. W. Feilden). |
| Do. | American National Collection. |
| Alaska! | Prince Nicolas Ghika. |
| Kamchatka | Lieut. H. A. Gillett, R.N. |
| Arctic America | C. C. Branch. |
| Pacific | F. T. Colby: |
| Do. | British Museum (The late Major G. E. H. Barrett-Hamilton). |
| Baffin Bay . | W. Livingstone-Learmonth. |
| Bering Sea . | Lieut. C. II. G. Benson, R.N. |
| Spitzbergen | Sir Edmund G. Loder, Bart. |
| Do. | Sir Victor Brooke's Collection. |
| Do. | Arnold Pike. |
| Do. | A. Barclay Walker. |



Skull and Tusks of Wralrus in the collection of Sir Edmund G. Loder, Bart.

## The NARWHAL (Monodon monoceros).

The Arctic narwhal is the only cetacean furnished with tusks. These are present only in the male, and generally the left one alone is developed. Occasionally, however, both grow, as exemplified in a specimen in the British, and a second in the Cambridge Museum. A model of this whale is exhibited in the British Museum.

## Distribution.-Arctic Seas.

## Tusks.

|  | gth. |  | Circumference. | Weight. | Owner. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $f \mathrm{ft}$. | ins. |  |  | lbs. |  |
| 9 | $4 \frac{1}{2}$ |  | $7 \frac{1}{2}$ | ... | Major H. A. Steward. |
| 8 | $8_{4}^{1}$ |  | 85 | $\cdots$ | Bethnal Green Museum. |
| 8 | $7 \frac{8}{4}$ |  | 9 | 17 | H.R.H. the Duc de Montpensier. |
| -8 | 7 | 1 | ... | - ... | Royal Scottish Museum. |
| 8 | 7 |  | 81 | 15 | Sir Edmund G. Loder, Bart. |
| 8 | 7 |  | S | $\ldots$ | Carl Hagenbeck. |
| 8 | 3年 |  | 78 | $\ldots$ | Bethnal Green Museum. |
| -S | 2 |  | $\cdots$ | $\ldots$ | American Museum of Natural History. |
| 8 | $\bigcirc$ |  | $7 \frac{3}{4}$ | $\ldots$ | A. Barclay Walker. |
| 7 | II |  | $\ldots$ | $\cdots$ | J. II. Whitehouse. |

## HINTS

For recording the Length of Animals in the Field.
As the body lies on the ground, and where circumstances permit, proceed as follows :-

Length. Pull the nose and the tail so as to get them as nearly as possible in a straight line. Fix body with four pegs; one at end of the nose, one at end of tail, one at root of tail, and the fourth at the nape of the neck behind the ears.

Height at shoulder. Put the leg or paw in a standing position and place a peg at top of withers and measure carefully standing height (a) with extended paw, (b) with spread paw, as well as length of fore and hind legs from pegs at the stomach-line.

The entries in the game-book should be as follows :-
Length, straight from nose to tip of tail
.. along curve to root of tail
", of tail
,, of head to nape of neck
Girth, upper arm
,, forearm
", of body
of head
Height at hind-quarters
,, shoulder
Length of foreleg
hind-leg
Weight, cleaned
,, not cleaned
Cleaned skull, length
breadth
height
weight
In addition to these measurements, the sex, estimated age, locality, and condition of the animal, with any other features of interest, such as colour of the eyes and skin, length of the hoofs, condition of teeth, etc., should be recorded.
Greatest

width. \begin{tabular}{c}
Length to <br>
longest <br>
tine.

 

Circum. <br>
ference <br>
ahove <br>
burr.

$\quad$

Tip to <br>
Tip.

$\quad$

Breadth <br>
of palm.
\end{tabular}$\quad$ Points. $\quad$ Locality. $\quad$ Owner.

Length
on out- Circum- Tip to
side

curve. $\quad$| Widest |
| :---: |
| ference. Tip. |$\quad$ Points. $\quad$ Locality. $\quad$ Owner.

Length

| on |
| :---: |
| outside |
| curve. | | Circum- |
| :---: |
| ference. |$\quad$| Tip to |
| :---: |
| Tip. |$\quad$| Widest |
| :---: |
| inside. |$\quad$| Widest |
| :--- |
| outside. Points. |


| Length on <br> front curve. | Circum- <br> ference. | ITip to Tip. |
| :--- | :--- | :--- |

Greatest width.
Outside. Inside.
Tip to
Width of
Tip.
palm.
Locality.
Owner.

| Length, | Circum. <br> ference.$\quad$ Tip to Tip. | Locality. | Owner. |
| :---: | :---: | :---: | :---: |

## INDEX OF SPECIES AND RACES




PAGE PAGE
Cervits canadensis occidentalis ..... 44
sibiricus ..... 47
,, sonsaricus ..... 45
" typicus ..... 40
,, xantloopyous ..... 48
cashmirianzes ..... 32
culionensis ..... 72
duvauceli ..... 54
dybowskii ..... 52
elaphues ..... I
, atlanticus ..... 15
, corsicanuls
. barbarus ..... 31
, germanicus ..... I 5
, ,, hispanicus ..... I4
maral ..... 28
,, scoticus ..... 3
eldi ..... 58
cornipes ..... 58
, platyceros ..... 58
eustephanus ..... 46
hagenbecki ..... 47
hìpelaplus ..... 68
,. ,, moluccensis ..... 69
, ,, typicus ..... 69
hortulorum ..... 52
,, kopschi ..... 52
kuhli ..... 73
macneilli ..... 33
", ,, kansuensis ..... 33
mariannus ..... 67
,, nippon ..... viii
,, manchuricus ..... viii
", typicus ..... viii
porcinus ..... 72
,, ,, hecki ..... 72
schomburggzi ..... 57
, sica ..... 49
, ,, manchuricus ..... 50
, typicus ..... 50
, taizanues ..... 51
, thoroldi ..... 39
, zmicolor ..... 61
," ,, dejeani ..... 67
,, ,, equinuts ..... 65
", ,, nigricans ..... 67
pluilippinus ..... 67
,, ,, swinhoei ..... 66
,, ,, typicus ..... 62
wallichi ..... 37
,, ,, affuis ..... 37
yarcandensis ..... 35
Ceylon Buffalo ..... 428
,, Chital ..... 70
Chamois ..... 335
Chialtan Markhor ..... 363
Chilian Guemal ..... II I
Chinese Goral ..... 342
Chinkara ..... 246
Chiru ..... 233
Chita ..... 506
Chital ..... 70
Chousingha ..... 300
Clifton's Bighorn ..... 395
Clouded Leopard ..... 502
Cobus cob ..... 202
,, ,, leucotis ..... 206
,, ,, loderi ..... 208
,, ,, thomasi ..... 204
,, ,, vautghani ..... 206
,, defassa ..... 191
,, ,, crawshayi ..... 195
,, ,, matschiei ..... 192
,, ,, penricei ..... 195
", ,, typicus ..... 192
", ., ugandie ..... 194
," ," unctuoszs ..... 195
,, ellipsiprymnus ..... 188
,, leche ..... 196
,, maria ..... 200
,, robertsi ..... 199
,, smithemani ..... 199
,, vardonz ..... 209
Coke's Hartebeest ..... 125
Connochates gnut ..... I 56
,, tautrinus ..... 150
", ", albojubatus ..... I 54
,, ,, johnstoni ..... 151
", ," typicus. ..... 152
Continental Red Deer ..... I6
Corsican Red Deer ..... 2
Crowned Duiker ..... I6I
Cyncelurzts jubatus ..... 506
Cyprian Sheep ..... 4II
Dama Gazelle ..... 272
Dama gigantea ..... 77
,, mesopotamica ..... 76
,, vulgaris ..... 74
Damalisczes albifrons ..... 145
,, corrigum ..... 137
,, ,, jimela ..... 141
,, ,, jonesi ..... 139
,., ,, selousi ..... I 39
,, ,, tiang ..... I 39
,, ,, typicus ..... 137
," hunteri ..... I35
,, lunatus ..... 148
,, pygargus ..... 143
Damara Dik-dik ..... I73
Deer. See Red Deer, etc.
Defassa, Abyssinian ..... 192PAGE195195194195
Derbian Eland ..... 331
Dibatag ..... 224
Dik-dik Antelopes ..... 169
Dol ..... 303
Domesticated Cattle ..... 447
378
,, Goats,, Sheep416
Dorcas Gazelle ..... 250
Dorcotragus melanotis ..... 167
Duiker, Abyssinian ..... 160
.. Banded ..... 164
164 ..... 161
.. Bay .
.. Black
.. Black
162
,, Blue
158
158
.. Crowned . ..... 161
.. Harvey's. ..... 166
.. Leopold's ..... 166
,, Maxwell's ..... 163
.. Red-flanked ..... 166
.. Red or Natal ..... 163
., Sudani ..... 162
., Yellow-backed ..... 165
Duikerbok ..... 158
Dybowski's Sika ..... 52
Dwarf Buffalo ..... 424
,, Congo Elephant. ..... 486
East Siberian Eik ..... 100
Eastern Red Deer ..... 28
Tur. ..... 383
Edmi Gazelle ..... 248
Eland ..... 325
,, Lord Derby's ..... 331
, Sudani ..... 332
Elaphurus davidianus ..... 78
Eld's Deer ..... 58
Elephant, African ..... 479
,, Dwarf Congo ..... 486
,, Indian ..... 474
,, Siberian ..... 487
Elephas africanus. ..... 479
,, , pumilio ..... 486
,, maximus. ..... 474
.. ., sumatrensis ..... 475
,, ,, zeylanicus ..... 475
,, primigenius ..... 487
Elk or Moose ..... 96
,, American and Alaskan ..... 97
Elk, East Siberian
page
,, European ..... 99
English Park Red Deer ..... Io
Erythrean Gazelle ..... 252
European Bison ..... 432
,, Lynx ..... 505
,, Mouflon ..... 414
,, Roebuck ..... 92
Fallow Deer ..... 74
," ," Mesopotamian ..... 76
Felis caracal. ..... 505
," cervaria ..... 504
.. chazts ..... 504
.. concolor ..... 503
,. leo ..... 488
,, ,, gujratensis ..... 489
,, ," masaica ..... 488
, lynx ..... 504
.. ., canadensis ..... 505
., ,, isabellina ..... 504
,, nebullosa ..... 502
,, .. brachyurus ..... 502
,, onca ..... 503
.. pardina ..... 504
,, pardus. ..... 498
,, ,, leopardus ..... 498
,, ,, nanopardus ..... 498
., ,, nimer ..... 498
.. , orientalis ..... 498
,, ,, ruwensorii ..... 498
,, ,, suahelica ..... 498
., ., zuariegata ..... 498
", , villosa ..... 498
.. rufa ..... 505
,, tigris ..... 493
,, ," mongolica ..... 493
,, ,, septentrionalis ..... 493
,, ,, sordaica ..... 493
,, ," virgata ..... 493
,, zuncia ..... 501
Forest-Hog ..... 456
Formosan Sambar ..... 66
Sika ..... 51
Four-horned Antelope ..... 300
Fringe-eared Beisa ..... 293
Gambian Oribi ..... 178
Gaur ..... 439
Gayal ..... 444
Gazella albonotata . ..... 262
,, arabica ..... 249
," ,, evlangeri ..... 249
.. ,, rueppeli . ..... 249
,, bennetti ..... 246
Gazella cuvieri . . . . . 248
dama
272
.. .. mhorr . . . . 273
.. ., permista . . . . 273
.. .. meficollis . . . . 273
.. ., typica . . . . 273
.. dorcas . . . . 250
.. ,, isabella . . . . 252
., juscifrons . . . . . 245
,. sranti . . . . . 265
.. ., brighti . . . . 266
. .. lacutum . . . . 266
, , notata . . . . 266
.. ., petersi . . . . 268
., ,. robertsi . . . . 267
$\begin{array}{cccccc}\text {,, } \quad \text {, typica } & . & . & . & 265 \\ ., & \text { gutturosa . } & . & . & & 24 \mathrm{I}\end{array}$
$\begin{array}{cccccc}\text {,, } \quad \text { typica } & . & . & . & 265 \\ ., & \text { gutturosa . } & . & . & . & 24 \mathrm{I}\end{array}$
,,, altaica . . . 24 I
,. leptoceros . . . . . 257
.. ,. loderi. . . . 258
.. littoralis . . . . . 252
pelaelni . . . . . 255
,, picticaudata . . . . 238
,, praezalskii . . . . 240
., rufifrons .
,, ,, lavipes
,, ,, typica.
., seistanica.
,, sammerringi
,,, berberana
butteri
typica
,, speker
subgitturosa
., ,, sairensis . . 243
,. thomsoni . . . . . 263
,, tilonura . . . . . 259
;, yarcandensis . . . . 243
Gazelle, Addra . . . . . 273
., Altai
., Aoul
., Arabian
,, Atlas
.. Dama
,. Dorcas . . . . . 250
,, Edmi . . . . . 248
., Erythrean . . . . 252
,. Goa
,, Goitred
,, Grant's
,, Heuglin's
,. Indian . . . . . 246
,, Kennion's . . . . 245
,, Loder's . . . . . 257
,. Mhorr . . . . . 273

Gazelle, Mongala . . . . 262

Mongolian
241
,, Mongolian ..... 241
,, Pelzeln's ..... 255
,, Przewalski's ..... 240
,, Red-fronted ..... 260
,, Saikik ..... 243
,, Seistan ..... 244
,, Sœmmerring's ..... 269
,, Speke's ..... 253
,, Tana Grant's ..... 268
,, Thomson's ..... 263
,, Waller's ..... 278
Gemsbuck ..... 288
Gerenuk ..... 278
Giant Irish Deer ..... 77
Giraffa camelopardalis ..... 113
,, ,. angolensis ..... II4
,, ,, antiquorum ..... II4
,. .. capensis ..... II4
., .. congoensis ..... II4
,, .. cottoni ..... II4
,. ,. peralta ..... 114
., ,. rothschildi ..... 114
,, ., tippelskirchi ..... II4
typicus ..... 114
wardi ..... 114
.. reticulata ..... II3
Giraffe ..... 113
Gmelin's Sheep ..... 4II
Gnu ..... I56
Goa ..... 238
Goat, Domesticated ..... 378
,, Rocky Mountain ..... 349
,, Wild ..... 376
Goitred Gazelle ..... 242
Goral, Chinese ..... 342
,, Himalayan and Burmese ..... 340
Grant's Gazelle ..... 265
Greater Kudu ..... 316
Grey Bighorn ..... 392
,, Rhebok ..... 2 II
Grisly Bear ..... 509
Grysbok ..... 185
Guemal, Chilian ..... III
Peruvian ..... I IO
Haggard's Oribi ..... I78
Hairy-fronted Muntjac ..... S2
Hangul ..... 32
Haploceros montanus ..... 349
Hartebeest, Bubal ..... IIS
,, Cape ..... I3I
,, Coke's ..... 125
,. Hunter's ..... 135
Jackson's ..... 129
Hartebeest, Kongoni
PAGE ..... 125
,, Korrigum or Senegal ..... 137
,, Lelwel ..... 129
,, Lichtenstein's ..... 133
,, Neumann's ..... 128
, Tora ..... 121
Harvey's Duiker ..... 166119
Hemitragus hylocrius ..... 356
,, jayakeri ..... 355,, jemlaicus
Hemprich's Dik-dik ..... 173353
Heuglin's Gazelle ..... 259
Himalayan Goral . ..... 340
,, Serow ..... 344Tahr
353
Hippopotamus ..... 449
Hippopotamus amphribius ..... 449451
liberiensis ..... 451
Hippotragus equinus ..... 284
,", ," sakeri ..... 286 ..... 287
,, ,, langheldi ..... 287
,, ,. sharicus ..... 287
leucophraus ..... 285
niger ..... 280
,", ", roosevelti ..... 283
Hirola ..... 135
Hog-Deer ..... 72
Hunter's Hartebeest ..... 135
Hunting-Leopard ..... 506
Hyzena, Spotted ..... 507
,, Striped ..... 507
Hyena crocuta ..... 507
,, striata ..... 507
Hylochorns meinertshageni ..... 456
Ibex, Abyssinian ..... 372
,, Alpine ..... 370
,. Arabian ..... 375
,, Asiatic ..... 367
,, Caucasian ..... 381
,, Nilgiri ..... 356
,, Nubian ..... 373
,, Spanish ..... 379
Impala ..... 226
,, Angola ..... 230
Indian Antelope ..... 235
,, Bison ..... 439
,. Buffalo ..... 427
,, Elephant ..... 474
,. Gazelle ..... 246
,, Hunting-Leopard ..... 506
,, Leopard ..... 498
Indian Lion
,, Muntjac ..... 80
,, Rhinoceros ..... 462
,, Sambar ..... 62
,, Wild Boar ..... 453
Inyala. See Nyala "Irish Elk" ..... 77
Irish Red Deer ..... 8Page
Jackson's Hartebeest ..... 129
Jaguar ..... 503
Japanese Serow ..... 342
,, Sika ..... 50
Javan Rhinoceros ..... 464
,, Rusa ..... 69
Kamchatkan Bighorn ..... 394
Kashmir Barasingha ..... 32
Kastura ..... 112
Kennion's Gazelle ..... 245
Kilimanjaro Beisa ..... 293
Kirk's Dik-dik ..... 172
Klipspringer ..... 186
Kob, Buffon's ..... 202
,, Uganda ..... 204
, Vaughan's ..... 206
,, White-eared ..... 206
Kongoni ..... 125
Konzi ..... 133
Korin ..... 260
Korrigum ..... 137
Kudu ..... 316
,, Lesser ..... 321
Lechwe ..... 196
,, Black ..... 199
,, Mrs. Gray's ..... 200
Lelwel Hartebeest ..... 129
Leopard ..... 498
Leopold's Duiker ..... 166
Lesser Kudu ..... 321
Lichtenstein's Hartebeest ..... 133
Lion ..... 488
Lithocranius walleri ..... 278
Littledale's Argali ..... 402
Livingstone's Suni ..... 180
Loder's Gazelle ..... 257
,, Puku ..... 208
Lord Derby's Eland ..... 331
Luehdorf's Wapiti ..... 48
Luzon Sambar ..... 67
Lydenburg Reedbuck ..... 216
Lynx ..... 504
,, Canadian and Red ..... 505






## THE END

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## RECORDS OF BIG GAIIE.

DATE. LOCALITY.


## RECORDS OF BIG GAIVE.

DATE. LOCALTTY.



 MWin (mul in en
(1)





[^0]:    1 Above trez.
    2 Recorded by J. G. Millais.

[^1]:     by the advice of the late Count Arco-Zinneberg, the owner of the famous collection in the Wittelsbacher Platz at Munich. The hall in which Count Arco-Zinneberg's collection hangs contains upwards of 2500 heads of German red-deer and roe-deer of extraordinary weight and size, forming, with the one exception of the King of Saxony's collection at Moritzburg, near Dresden, perhaps the finest in the world. Count Arco became so well known as a collector that every fine specimen was brought to him for purchase. Count Erbach's collection at Erbach in the Odenwald is also one of the finest in Germany.

[^2]:    - Owner's measurements

[^3]:    112 stone clean．
    2 Weight， 143 lbs．as it fell．

[^4]:    - Owner's measurements.

[^5]:    ${ }^{6}$ Weight， 222 lbs．

[^6]:    ${ }^{1}$ In previous editions this name was applied to the white-tailed deer, a usage which has been recently shown to be inadmissible.

[^7]:    - Owner's measurements.

[^8]:    1 Inclusive of the large number of local forms named by Dr．Matschie．

[^9]:    - Owner's measurements

[^10]:    1 Commonly known as Cervicapra; a name which is unfortunately preoccupied.

[^11]:    1 In the Dinder Valley the type of head with in-curving horns described as Cervicaprar. donaldsoni intergrades with cottoni.

[^12]:    - Owner's measurements.

[^13]:    1 Presented by the late Ras Makuman, 1902.

[^14]:    $\left\{\begin{array}{l}\text { Skarcies River, } \\ \text { Karene District, } \\ \text { Sierra Leone }\end{array}\right\}$ Capt. E. J. Carter.

[^15]:    1 An earlier name is Dicerorhinus, but this is too like Diceros, the subgeneric (or generic) name of the African

[^16]:    1 Exposed from gum.

[^17]:    Total length in straight line. Do. over all. Tail. Vertical height. Girth of forearm. Do. shoulders. 6 ft .8 ins. $\quad 7 \mathrm{ft} .7 \mathrm{ins} .2 \mid \mathrm{ft} .9$ ins. $2 \mathrm{ft} .1 I_{\frac{1}{2}} \mathrm{ins} . \quad 8 \frac{1}{4} \mathrm{ins} . \quad 3 \mathrm{I}$ ins.

