

2. SYNOPSIS OF THE SPECIES OF DEER (CERVINA), WITH THE DESCRIPTION OF A NEW SPECIES IN THE GARDENS OF THE SOCIETY. BY J. E. GRAY, ESQ., F.R.S. ETC.

(Mammalia, Pl. XXII.—XXVIII.)

The Deer, spread over all parts of the Globe, are easily recognized by their deciduous horns, which are covered, when they are first developed, with a hairy skin.

It has been supposed that the Deer were not to be found in Africa, but the discovery of a species in Barbary has dispelled that idea; they are rare in that extensive quarter of the world, their place being supplied by Antelopes.

Since the publication of Cuvier's Essay on Deer, in which he described several species from the study of the horns alone, many zoologists have almost entirely depended on the horns for the character of the species, and Colonel Hamilton Smith has been induced to separate some species on the study of a single horn. But the facilities which menageries have afforded of studying these animals, and watching the variations which the horns of the species present, have shown that several most distinct but allied species, as the Stag of Canada and India, have horns so similar that it is impossible to distinguish them by their horns. On the other hand, it has been shown that animals of the same herd, or even from the same parents, and sometimes even the same specimen, under different circumstances, in succeeding years have produced horns so unlike one another in size and form, that they might have been considered, if their history was not known, as horns of very different species. These observations, and the examination of the different cargoes of foreign horn which are imported for the uses of the cutler, each cargo of which is generally collected in a single locality, and therefore most probably belong to a single species peculiar to the district,—have proved to me that the horns afford a much better character to separate the species into groups, than to distinguish the allied species from one another.

Colonel Hamilton Smith, in his Monograph of the Genus, separated them into subgenera according to the form of the horns.

In the Proceedings of the Zoological Society for 1836 I drew attention to the glands on the hind-legs as affording very good characters to arrange the subgenera proposed by De Blainville and Colonel Smith into natural groups, which in most particulars agreed with the geographical distribution of the species.

Dr. Sundevall, in his Essay on Pecora, has availed himself of the suggestions in my paper, and has also pointed out some other external characters, such as the form and extent of the muffle, which afford good marks of distinction in these animals,—such as I believe are much more important for the distinction of the genera and species than those derived from the form of the skull or the modifications of the teeth, or the form and size of the horns; as they are not, like those parts, so liable to alteration from age, local circumstances and



J. W. G. Cook

M. & H. Newman Imp^r

COASSUS NEMORIVAGUS, ♂.



J. Wolf Lith.

M. & N. Hanhart Imp.

CARIACUS PUNCTULATUS

other changes during the growth of the animal, and they can be seen in the females as well as the males, which is not the case with the horns, as they can only be observed in the male sex.

The Deer may be thus divided :

- A. The DEER OF THE SNOWY REGIONS have a very broad muzzle, entirely covered with hair ; the horns are expanded and palmated, and the fawns are not spotted.
 - a. The *Alcine Deer* have no basal anterior snag to the horns, and a small, bald muffle between the nostrils, as the genus *Alces*.
 - b. The *Rangerine Deer* have a large basal anterior snag to the horns, close on the crown or burr, and no muffle, as *Tarandus*.
- B. The DEER OF THE TEMPERATE OR WARM REGIONS have a tapering muzzle, ending in a bald muffle ; the fawn, and sometimes the adult, are spotted.
 - c. The *Elaphine Deer* have a distinct anterior basal snag to the horns, the muffle broad, and separated from the lip by a hairy band, and the tuft of hair on the outside of the hind-leg above the middle of the metatarsus, as *Cervus* and *Dama*.
 - d. The *Rusine Deer* have a distinct anterior basal snag to the horns, the muffle very high, and not separated from the edge of the lip, and the tuft of hair on the outside of the hind-leg above the middle of the metatarsus, as *Recevus*, *Panolia*, *Rusa*, *Axis*, *Hyelaphus*, and *Cervulus*.
 - e. The *Capreoline Deer* have no basal anterior snag to the horn, the first branch being some distance above the burr ; the suborbital crumen (and pit in the skull) generally small, as *Capreolus*, *Cariacus*, *Blastocerus*, *Furcifer*, and *Coassus*.

The *Alcine* and *Rangerine Deer* are confined to the Northern part of both continents ; the *Elaphine* and *Rusine Deer* to the Eastern World, the latter almost exclusively to the warmer part of Asia ; the *Capreoline Deer* are peculiar to America. The only exception to these rules are, the Wapiti Deer of the Elaphine group is found in Northern America, and the *Roebuck* and *Ahu* of the *Capreoline* group are found in Europe and North Asia.

A. The DEER OF THE SNOWY REGIONS have a very broad end to the nose, which is entirely covered with hair, a short tail and palmated horns ; the fawns are not spotted, but uniformly coloured like the adult ; the skull with a large nose-cavity, and with the intermaxillaries not reaching to the nasal.

a. The ALCINE DEER or ELKS have no basal snag, the first branch of the horn being considerably above the crown.

1. *ALCES*; *Alce*, H. Smith.

The muzzle is very broad, produced, and covered with hair, but there is a small, moist, naked spot in front of the nostrils; the neck is short and thick; the hair is thick and brittle; the throat is rather maned in both sexes; the hind-legs have the tuft of hair rather above the middle of the metatarsus; the males have palmate horns. The nose-cavity in the skull is very large, reaching behind to a line over the front of the grinders; the intermaxillaries are very long, but do not reach to the nasal; the nasals are very short. They live in woods in the northern parts of both continents.

1. *ALCES MALCHIS*. The ELK or MOOSE.

Dark brown; legs yellow.

Alces, Gesner; Plin.—*Cervus Alces*, Linn. S. N. i. 92; Pallas, Zool. R. A. i. 201; H. Smith; Richardson, Fauna Bor. Amer. 232.—*Alces Malchis*, Ogilby, P. Z. S. 1836, 135; Gray, Knows. Menag. 56.—*Moose Deer*, Dudley, Phil. Trans. n. 368. 165.—*Elk*, Laws, Carol. 123; Pennant, Syn.—*Elan*, Brisson, H. N. xii. t. 7. Supp. vii. t. 25; Cuvier, R. A.—*Orignal*, La Houtan, Voy. 72; Charlev. Nouv. France, iii. 126.—*American Black Elk*: (*C. alces* β.), H. Smith, G. A. K. v. 771.—*Loss*, Russians in Siberia.

Inhabits the Northern regions of America and Europe.

Several naturalists, especially Colonel Hamilton Smith, thought they had observed a difference in the horns of the Russian and American Elks; I have compared numerous specimens from both countries, but can discover no appreciable distinction between them.

The Elks, like most of the other Deer, and especially of the animals which inhabit the cold and mountain regions, present a very considerable difference in size, according to the scarcity or abundance of the food which the locality they inhabit affords, and the development of the horns appears to be greatly influenced by this cause; so that the horns of the animals inhabiting the more barren districts are much less developed than those found in more fertile situations, and I think I have observed this to be the case with both the Russian and the American horns: but on this head naturalists are like to be much misled, as the horns which are imported are generally chosen for their size and perfect development, and the small and less-developed specimens are only to be observed in the cargoes of horns which are imported for economic purposes.

These observations are equally applicable to the *Rein Deer*.

6. The RANGERINE DEER or REINS have a large and well-developed basal branch close on the crown of the horns.

2. *TARANDUS*; *Rangifer*, H. Smith.

The muzzle is entirely covered with hair; the tear-bag small, covered with a pencil of hairs; the fur brittle, in summer short, in winter longer, whiter, of the throat longer; the hoofs are broad, depressed, and bent in at the tip; the external metatarsal gland above

the middle of the leg; horns in both sexes elongate, subcylindric, with the basal branches and tip dilated and palmated; of the females smaller; skull with rather large nose-cavity, about half as long as the distance to the first grinder; the intermaxillary moderate, nearly reaching to the nasal; a small, very shallow, suborbital pit.

They live in the Arctic Regions in both hemispheres, migrating in flocks, and eating lichens.

1. TARANDUS RANGIFER. The CARIBOU or REIN DEER.

Dark brown in summer, grey in winter. Young: brown, yellow varied.

Tarandus, Plini.—*Rangifer*, Gesner.—*Cervus Tarandus*, Linn.; Pallas, Zool. Ross. A. i. 106; Cuvier, Mamm. Lith. t. ; Bennett, Gardens Z. S. 241. fig.; Richardson, Fauna Bor. Amer. 238.—*C. Tarandus sylvestris* (*Woodland Caribou*), Richardson, Fauna Bor. Amer. 250.—*C. rangifer*, Raii Syn. 88.—*C. platyrhynchos*, Vrolich, Rendier, t. 2 (1828).—*C. palmatus* and *C. mirabilis*, Jonston, Quad. t. 36, 37.—*Tarandus rangifer*, Gray, Knows. Menag. 57.—*Rein Deer*, Pennant.—*Caribou*, Sagard, Theodat. Canad. 751.—*Renne*, Buffon, H. N. xii. 79. t. 10–12. Supp. iii. t. 18*.—*Rhenne*, Cuvier, R. A.—*Caribou* or *Carrebœuf*, French Canadians.—*Oleen*, Russians in Siberia.

Var. Smaller; horns more slender, less palmated; hair short, smooth, close, brown, with throat and belly white in summer; hair very close, thick, waved, brittle and erect and white in winter.

Cervus Tarandus Americanus, H. Smith, G. A. K. v. 773.—*C. Tarandus v. Arctica* (*Barren-ground Caribou*), Richardson, Fauna Bor. Amer. 241. fig. 240, horns.—*Common Deer*, Hearne, Journ. 195. 200.

Inhabits Arctic parts of Europe and America.

Varies exceedingly in size. In the British Museum there are specimens varying from 20 to 28 inches high at the withers, and proportionally as large in the horns and all the other parts. The variety is confined to the barren grounds.

Dr. Richardson observes, "There are two well-marked and permanent varieties of *Caribou* that inhabit the fur countries; one of them (*Woodland Caribou*) confined to the woody and more southern districts, and the other (*Barren-ground Caribou*) retiring to the woods only in the winter, but passing the summer on the coasts of the Arctic seas, or on the barren grounds so often mentioned in this work."—*Fauna Bor. Amer.* 299.

The large Siberian variety are ridden on by the Tungusians. They also use them for draught, as the Laplanders do the smaller variety.

They have a large variety in Newfoundland, nearly as large as a heifer, having very large and heavy horns. There are some horns of this variety in the British Museum. M. Middendorf informed me that the horns of the large Siberian variety were as large as, and greatly resembled, the horns from Newfoundland (Nova Scotia) in the British Museum Collection.

Pallas observes, "Americæ forte continua gregatim verno tempore per glacies admigrant, paulo diversi a Siberiæ inquilinis et verosimilime Americani."—*Zool. Ross. Asiat.* i. 208.

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B. The DEER OF THE WARM OR TEMPERATE REGIONS have a tapering nose, ending in a naked, moist muffle; they generally have a well-developed tail, distinct crumen, and rather long false hoofs; their fawns are spotted, the spots generally disappearing in the adult, or only to be seen when the animals are in high condition; the fur is shorter and fulvous in the summer, becoming longer and greyer in the winter; the skulls have a moderate nose-cavity, and the intermaxillaries reaching to or nearly to the nasal bones.

c. The ELAPHINE DEER OR STAGS have a low, broad muffle, narrowed and rounded below, and nearly separated from the edge of the lip by a hairy band, which has only a narrow interruption in the middle, and rather elongated ears; they have rough horns, generally supported on a more or less long process of the frontal bones, furnished with a frontal basal branch or snag close on the burr or crown; the outer side of the hind-legs has a tuft of hair placed rather above the middle of the metatarsus, and another tuft on the inner side of the hock.

They are (except the *Wapiti*) exclusively confined to the woods of the Old or Eastern World.

3. CERVUS; *Elaphus*, H. Smith; *Cervus* and *Pseudocervus*, Hodgson.

Horns round, erect, with an anterior basal snag, a medial anterior snag, and the apex divided into one or more branches, according to the age of the animal; a well-developed crumen; narrow triangular, compressed hoofs; they are covered with brittle, opaque hairs; the rump is generally ornamented with a pale mark; skull with a large, deep, suborbital pit.

* The *True Stags* have one or two branches on the middle of the front of the beam.

† The *American kind* have rather broad semicircular hoofs, a very short tail, and the withers covered with softer hair in winter. *Strongyloceros*.

1. CERVUS CANADENSIS. The WAPITI.

Red-brown; rump with a very large pale disk extending far above the base of the tail, and with a black streak on each side of it; male with hair of throat elongated, black, with reddish tips.

Stag, Dale, Phil. Trans. n. 444, 384.—*Cerf de Canada*, Perr. Anim. ii. 55. t. 45?; Cuvier, R. A. i. 256.—*Cervus Canadensis*, Brisson; Gray, Knows. Menag. 58.—*Cervus Elaphus*, var. *Canadensis*, Erxl.—*Cervus Strongyloceros*, Schreb. t. 247; Richardson, Fauna Bor. Amer. 251.—*C. major*, Ord.—*C. Wapiti*, Leach, Journ. Phys. lxxxv. 66.—*American Elk*, Bewick, Quad.—*North-Western Stag*, *C. occidentalis*, H. Smith, G. A. K. iv. 101. t. f. 2, horn; Fischer, Syn. Mamm. 614, not Syn.—*Wapiti*, Warden, États Unis, v. 638; Wied, Voy. Amer. Sept. iii. 302.

Var. Smaller.

Red Deer (or *Canadian Stag*), Warden, États Unis, v. 637.—*Elk*, Lewis and Clerk.—*Stag*, Pennant, Arct. Zool. i. 27.—*Wewaskiss*, Hearne, Journ. 360.

Inhabits N. America.

In summer red-brown; ears, middle line of the back of the neck, and back of rump and front of legs blackish; rump-mark yellowish.

†† The species of the *Western World* have narrow, triangular hoofs, a moderate tail, and are covered with harsh hair. *Cervus*.

2. CERVUS ELAPHUS. The STAG.

Brown; rump with a pale spot extending rather above the upper surface of the base of the tail.

Cervus, Plin.; Gesner.—*Tragelaphus*, Gesner (old male).—*Cervus Elaphus*, Linn.; Gray, Knows. Menag. 58.—*C. vulgaris*, Linn.—*C. nobilis*, Klein.—*C. Germanicus*, Brisson.—*C. Elaphus* β. *Hippelaphus*, Fischer, Syn. (old male).—*Stag*, or *Red Deer*, Pennant.—*Cerf*, Buffon, H. N. vi. t. 9.—*Cerf commun*, Cuvier; F. Cuvier, Mamm. Lith. t. .

Inhabits Europe.

Mr. Blyth described a variety as the *Hungarian Stag* (Mus. Asiat. Soc. Beng. 1841, 750. t. 3. f. 11).

The Deer which Buffon (H. N. vi. 95. t. 11) describes under the name of the *Cerf de Corse*, has been regarded as a variety to be distinguished by the smallness of its size, but Buffon observes, that he believes the "size to depend on the scarcity of nourishment; for when moved to better pastures, in four years they became higher, larger and stouter than the Common Stags."

3. CERVUS BARBARUS. The BARBARY DEER.

Dark brown; obscurely white spotted, with a very indistinct, greenish brown, broad dorsal line, with a pale yellow spot extended considerably above the base of the tail; back of haunches white, with a dark stripe on each side.

Cervus Barbarus, Bennett, MSS. Catal. Gardens Zool. Soc.; Gray, Knows. Menag. 59; Frazer, Zoologia Typica, t. .—*Burk-Goat* (*Al-Wassai*), Moors (see Griffith, A. K. v. 775).

Inhabits Coast of Barbary; Tunis.

4. CERVUS WALLICHII. The BARA SINGA OF MORL.

Brown, with a very large white spot on the rump, extending on back of the haunches and far above the base of the tail; the horns with two basal and one or two apical branches.

Cervus Pygargus, Hardw. Linn. Trans.—*Cervus Wallichii*, Cuvier, Oss. Foss. iv. 50; F. Cuv. Mam. Lith. from Hardw. Icon.; Sundev. Pecora, 55; H. Smith, G. A. K. iv. 103. t. . (from Indian drawing); Gray, Knows. Menag. 60.—*Juareel Stag*, Blyth, Journ. Asiat. Soc. Bengal, 1841, 750. t. . f. 7, young horn; Hodgson, Icon. ined. t. 198, called *Gyana*.—*Pseudocervus Wallichii*, Hodgson, Journ.

Asiat. Soc. Bengal, x. 914, xi. 284.—?*Cervus Caspianus* or *Hangool*, Falconer, MSS.; Gray, Cat. Osteol. Sp. B. M. 147.—?*Cervus Cashmeriensis*, Gray, Cat. Osteol. Sp. B. M. 65.—*Kashmir Stag?*, Blyth, P. Z. S. 1840, 72; Journ. Asiat. Soc. Bengal, 1841, 750. t. . f. 8, 9.—*Persian Deer*, *Marùl* or *Gevezu* or *Gookoohee*, MacNeil, P. Z. S. 1840, 11; Blyth, Journ. Asiat. Soc. Bengal, 1841, 750. t. . f. 10.

Inhabits Cachir (*Hodgson*); Persia (*MacNeil*).

The skull of Dr. Falconer's *Cashmere Stag* is 15 inches long; the suborbital pit is oblong, triangular, and rather deep. The skull and horns are very like Mr. Hodgson's specimen of *Cervus affinis*, but they are considerably smaller.

Sir John MacNeil informs us they are called by the Persians *Marùl*, or *Gevezu*, or *Gookoohee*, and are frequently noticed in their literature. It is found in all the wooded mountain districts of Persia, but apparently does not occur in the central parts of the country. They rarely descend into the plains. During the summer they are found in the highest wooded parts of the mountains, and during the winter in the lower ravines, near their bases, where they are frequently tracked in the snow. The horns of the adult males closely resemble those of the Red Deer of this country; insomuch that I doubt whether an unscientific observer could distinguish them, except by the superior size of those of the *Marùl*.—P. Z. S. 1840, 11.

5. CERVUS AFFINIS. The SAUL FOREST STAG.

Pale brown; rump without any distinct pale mark?; skull 16 or 17 inches long; suborbital pit large, oblong, trigonal, rather deep.

Cervus affinis (*Mool Baratingha*, or *Royal Stag of the Morung*), Hodgson, Icon. ined. B. M. n. 197; Journ. Asiat. Soc. Bengal, x. 741, 914; Calcutta Journ. N. H. iv. 291; Sundev. Pecora, 131; Gray, Cat. Ost. Sp. B. M. 65; Knowsley Menag. 60.—*C. Elaphus*, Hodgson, Journ. Asiat. Soc. Bengal, iv. 648.—*C. Wallichii*, part, Gray, Cat. Hodgson's Coll. in B. M. 32.—*C. Wallichii*, var. Blyth, Journ. Asiat. Soc. Bengal, 1841, 747.

Inhabits India; Saul Forest.

Mr. Hodgson, in his figure of this animal, does not represent any pale spot on the rump: if this is correct, it must be a most distinct species, as Dr. Falconer informs me the *Cashmere Stag* has a large white rump.

6. CERVUS SIKA. The SIKA.

Dark brown; cheeks and throat rather paler; rump brown, without any pale spot; tail pale, white beneath; hair harsh; horns rather slender, with a basal and medial snag, and a subapical internal one.

Cervus Sika, Schlegel, Fauna Japon. t. 17; Sundev. Pecora, 55, 131; Gray, Knows. Menag. 60.—*C. Sitza*, Temm. Mus. Leyden.

Inhabits Japan. Mus. Leyden.

4. DAMA, H. Smith; *Platyceros*.

Horns, upper part expanded, smooth, and branched on the hinder edge; tail rather elongated; tear-bag well developed; hoofs narrow,

triangular, compressed; they are covered with thin, rather adpressed hairs, and have the hair of the nape reversed; the fur is spotted in summer; the skull with a short broad face, an oblong, rather shallow, infraorbital pit; intermaxillary broad, reaching to the short broad nasals.

1. DAMA VULGARIS. The FALLOW DEER.

Fulvous; white spotted, with the longitudinal streak on the lower part of the side, and the line across the haunches white.

Var. From nearly black to nearly pure white.

Platyceros, Plin.—*Cervus platyceros*, Raii Quad. 85.—*Cervus dama*, Linn.—*Dama vulgaris*, Gesner, Quad. 335. f. ; Gray, Cat. Osteol. Sp. B. M. 65; Knows. Menag. 60.—*Fallow Deer and Buck*, Pennant.—*Daim et Daime*, Buffon.—*Daim fauve*, F. Cuvier.—*Cervus coronatus*, H. Smith, G. A. K. iv. t. . f. 4, from monstrous horns.

Var. Blackish.

Cervus mauricus, F. Cuv. Bull. Soc. Phil. 1816.—*C. Dama maura*, Fischer.—*Daime noire*, F. Cuv. Mam. Lith.

Inhabits Persia. Domesticated in Europe.

This species is represented in the sculptures from Nineveh.

d. The **RUSINE DEER** or **SAMBOOS** have a large moist muffle, which is as high as broad, and extends to the edge of the upper lip; hind-leg with a large tuft of hair rather above the middle of the metatarsus, and with a pencil of hair on the inner side of the hock; a moderate tail, broad, short ears, and the fur consisting of hard, rather shining, thick, depressed hair; they have no white mark on the rump. The horns are cylindrical, generally rather longly peduncled, with a distinct anterior basal branch or snag close on the burr or crown, and are forked, and sometimes reforked, at the tip; they have no medial snag. The skulls have a large, very deep, suborbital pit. They are confined to South-Eastern Asia and its islands.

* In some the upper part of the horns is variously branched.

5. PANOLIA, Gray.

The horns round, curved backwards and outwards, with a large anterior basal snag close on the burr; the upper part bent in, forked, becoming rather expanded and branched on the inner or hinder edge; the fur formed of rather rigid, flattened hair; muffle large; skull with a narrow face, a large, oblong, very deep suborbital pit, and the nasals short, broad, and dilated behind; the frontal snag of the horns often has a tubercle or branch at the base.

1. PANOLIA EEDII. The SUNGNAI.

Panolia Eedii, Gray, Cat. Hodgson's Coll. B. M. 34; Knowsley Menag. 61.—*P. acuticornis*, Gray, Cat. Mam. B. M. 180.—*P. platyceros*, Gray, Cat. Mam. B. M. 180 (adult horn).—*Cervus lyratus*, Schinz, Syn. ii. 395.—?*Cervus Smithii*, Gray, Proc. Zool. Soc. 1837, 45.—*Cervus Eedii*, Calcutta Journ. N. H. ii. 413. t. 12.—*Cervus*

(*Rusa frontalis*, McClelland, Calcutta Journ. N. H. i. t. 12. f. 1, ii. 539, iii. t. 13; Sundevall, Pecora, 132.

Inhabits India.

General Hardwicke has a drawing of a Deer, the frontal snag of the horns very much elongated, and apparently forked: Colonel Hamilton Smith made an "improved" drawing from the sketch; and in the Proceedings of the Zoological Society for 1837 I mention the species under the name of *C. Smithii*, p. 48.

I am now doubtful if the sketch might not have been intended for this species or a new one allied to it.

6. RUCERVUS, Hodgson; *Rusa*, sp. H. Smith.

Horns cylindrical, with an anterior basal branch, and repeatedly forked at the tip; muffle large, high, continued to the edge of the upper lip below; they have a rather short, thick tail, a shortish face, a well-developed crumen, broad rounded ears, covered with hair, and narrow compressed hoofs. The fur is formed of rather soft adpressed hairs; they have no pale mark on the rump, and are indistinctly spotted. The skull has an elongate face, with a large nose-opening, and an oblong, rather shallow, suborbital pit.

1. RUCERVUS DUVAUCELLII. The BAHRAIYA.

Yellowish brown, without any rump-spot; back with an indistinct dark streak, with a row of white spots on each side; sides not spotted; hair black, with yellow tips; neck with rather longer hair; throat, chest and belly with longer, scattered, greyish white hairs; muzzle and front of leg dark; chin white. Fur in winter dark brown.

Cervus Duvaucellii, Cuvier, Oss. Foss. iv. t. 29. f. 6, 8.—*Rucervus Duvaucellii*, Gray, Cat. Hodgson's Coll. B. M. 33.—*Rucervus elaphoides*, Hodgson.—*R. Duvaucellii*, Gray, Knows. Menag. 61.—*Cervus Bahraiya*, Hodgson.—*C. enclodocerus*, Hodgson.—*C. Bahraiya*, Hodgson, P. Z. S. 1836, 46.—*C. Euryceros*, Knowsley Menag. t. 40, 41.—*Bahraiya*, Hodgson.

Inhabits India.

* The *True Rusas* have the upper part of the horns simply forked.

7. RUSA, H. Smith; *Cervus Hippelaphi***, Sundevall.

They are covered with hard, rigid, very thick hairs; they are not, or only obscurely, spotted; the horns are placed on a moderately long peduncle, have an anterior frontal snag close on the crown, and are simply forked at the tip.

† The *Larger kinds* have the hair of the neck elongated, forming a kind of mane, at least in the males.

1. RUSA ARISTOTELIS. The SAMBOO.

Tail not floccose, brown, rather darker at the end; blackish brown, with the feet, the region of the vent, and a spot over the eyes fulvous. Male maned. Young obscurely white spotted (*Hodgson*).

Gona Rusa, Daniel, Ceylon, t. .—*Cervus Aristotelis*, Cuvier, Oss. Foss. iv. 502. t. 39. f. 10; F. Cuv. Mam. Lith. t. ; Sundev. Pecora, 55.—*Cervus Hippelaphus*, *C. Aristotelis*, and *C. heteroceros*, Hodgson, Icon. ined.—*Rusa Aristotelis*, H. Smith; Gray, Cat. Hodgson's Coll. B. M. 67; Osteol. Spec. B. M. 67; Knows. Menag. 62.—*Cervus unicolor*, H. Smith, G. A. K. v. 780.—*Cervus Bengalis*, Schinz, Syn. Mam. ii. 390.—*Daim noir de Bengal*, Duvaucell, Asiat. Res. xv. 157.—*Cerf noir de Bengal*, F. Cuvier, Menag. Lith. t. .—*Cervus equinus* (*Samboo Deer*), Bennett, Tower Menag. 185, fig.—*Elk*, Indian Sportsmen; Sykes, Proc. Zool. Soc.—Var. *Cervus heteroceros*, Hodgson, J. A. S. Beng. 1841, 722. t. .

Var. ? *Biche de Malacca*, F. Cuv. Mam. Lith. t. female.—*Cervus Malaccensis*, Fischer, Syn.

Inhabits India; Ceylon.

The skull is about 17 inches long, and has a very deep, oblong, subtriangular, suborbital pit.

The specimen from Ceylon, in the Zoological Gardens, differs from the common Samboos from India in having shorter and thicker horns.

Nearly black in October; the front of the muzzle rounded, the nose black, forming a band across the chin; front of chin (only) white; tail all black; face paler than back, and more grised, but uniformly coloured, without any black streak over the eyes or up the side of the nose; vent flesh-coloured. Much larger.

2. RUSA DIMORPHE. The SPOTTED RUSA.

Red-brown; back with distinct series of small white spots; sides indistinctly white spotted; limbs paler; neck and belly blackish; chin white; the horns (deformed?). Young bright fawn-red, white spotted.

Cervus Dimorphe, Hodgson, Journ. Asiat. Soc. Bengal, 1844, t. ; Ann. & Mag. Nat. Hist. xiv. 74; Sundevall, Pecora, 132.—*Rusa Dimorpha* (*Hodgson's Rusa*), Hodgson in Gray, Cat. Hodgson's Coll. in B. M. 33; Gray, Knows. Menag. 62.

Inhabits Saul Forest; Morang.

3. RUSA EQUINUS. The RUSA or SMALLER SAMBOO.

Brown, not spotted; tail rounded, floccose, black at the tip; hair (summer) elongate, rigid, thick, waved. Young very obscurely spotted; hair rigid and rough.

Rusa, Raffles, Linn. Trans. xiii. 263.—*Cervus equinus*, Cuvier, Oss. Foss. iv. 44. t. 5. f. 30, 37, 38, 42; H. Smith, G. A. K. iv. 112. t. ; Sundevall, Pecora, 55; S. Müller, Nederl. Verh.—*Eland* or *Elk* of the Dutch Sportsmen.—*Rusa Equinus*, Gray, Knows. Menag. 62. t. 43.

Inhabits Sumatra; Borneo.

4. RUSA HIPPELAPHUS. The MIJANGAN BANJOE.

Greyish brown; tail not floccose, brownish at the tip; anal region not pale; cheeks and upper part of the neck of the males maned; hair (summer) short, rigid, close-pressed, not waved. Young: hair smooth.

Rusa ubi, *R. saput* and *R. Tunjuc*, Raffles, Linn. Trans. xiii. 260.—*Cervus hippelaphus*, Cuvier, Oss. Foss. iv. t. 5. f. 31, 34 & 42; F. Cuvier, Mam. Lithog. t. ; Raffles, Mem. 645.—*Cervus Tunjuc*, Vigors, in Raffles' Memoir, 645.—*Cervus Rusa*, S. Müller, Nederl. Verh. 45. t. 43.—*Great Muntjac*, Waterhouse, Cat. Mus. Zool. Soc. 1839, 39.—*Cerf noir de Bengal*, F. Cuvier, Mam. Lithog. t. 2, in summer.—*Cervus Leschenaultii*, Cuvier, Oss. Foss. v. , from horns only.—*Rusa Hippelaphus*, Gray, Knows. Menag. 62.
Var. Smaller. Eydoux, Guérin, Mag. Zool. 1836, 26.—*Cervus Moluccensis*, Quoy.—*Cervus Rusa Moluccensis*, S. Müller, Nederl. Verh. t. 45; Mus. Leyden, 1845.—*Cervus Rusa Timorensis*, Mus. Leyden, 1845.

Inhabits Java.

In all its states it was very distinct from the Samboo of Continental India. The horns are similar to those of *R. Equinus*, but the body and horns are smaller, and the hair of the young is smoother.

** The *Smaller Rusas* have no mane; the peduncles of the horns are rather elongated, and covered with hair.

5. RUSA PERONII. THE SMALLER RUSA.

Brown, paler beneath; hair rigid, thick, ringed; muzzle dark; tail brown, floccose; anal disk white; the hind part of the feet hairy; the horns are thick and heavy.

Cervus Peronii, Cuvier, Oss. Foss. iv. 46. t. 5. f. 41, 45; Sundev. Pecora, 56.—*Rusa Peronii*, Gray, Knows. Menag. 63.—*Cervus Kuhlii*, S. Müller, Nederl. Verh. 45. t. 44; Sundev. Pecora, 56.—*Rusa Kuhlii*, Gray, List. Osteol. Spec. B. M. 68.

Inhabits Timor, Luboc, Bavian and Ternate. Specimen in Brit. Mus.

6. RUSA PHILIPPINUS. PHILIPPINE RUSA.

Forehead brown; end of nose and eyebrows brownish; feet behind naked; hair rigid, not waved.

Cerf de Philippine, Desm. Mamm. 442.—*Cervus Philippinus*, H. Smith, G. A. K. iv. 147. t. 164. f. 5. head, v. 803; Fischer, Syn. 622; Sundev. Pecora, 56.—*Rusa Philippinus*, Gray, Knows. Menag. 63.

Var.? Tail black, dependant; front of face dark.

Cervus Marianus, Cuvier, Oss. Foss. iv. 45. t. 5. f. 30, 37, 38, 46; H. Smith, G. A. K. iv. 115. t. 168 (from Mus. Paris); Fischer, Syn. 453; Sundev. Pecora, 57.

Inhabits Philippines.

This species has the horn on an elongated peduncle, like the *Muntjacs*, but it is easily distinguished from them by the absence of the ridge and of the grooves on the face.

7. RUSA LEPIDA. THE LITTLE RUSA.

"Reddish brown; back and sides varied with pale, spotted hair; vent disk small, white, black edged above; tail longly hairy, white, above black; face brown, with a roundish white spot in front of the

usual oval black spot ; horns smooth, slender, nearly straight, elongate, the basal snag bent down on the forehead."—*Sundevall*.

Cervus (Hippelaphus) lepida, Sundev. Pecora, 57.—*Rusa lepida*, Gray, Knows. Menag. 63.

Inhabits Java. Mus. Frankfort. Scarcely as large as a Roebuck.

8. *AXIS*, H. Smith ; *Hippelaphus* ***, Sundev.

Covered with moderately thick, polished hairs ; fulvous and beautifully white spotted at all seasons ; the face is elongate, narrow, and the ears large, rather elongate and acute, with a rather elongate tail, and nearly equally long, slender legs ; the horns are placed on moderately long peduncles ; the skull is elongate, narrow, with an oblong, rather small, deep suborbital pit.

1. *AXIS MACULATA*. The *AXIS* or *CHILTRA*.

Fulvous, with a black dorsal streak, edged with a series of white spots ; sides with many white spots in an oblique curved line, and with a short white streak obliquely across the haunches.

Young fawn, spotted exactly like the adult.

Axis, Plin. ? ; Buffon, H. N. xi. t. 38, 39 ; Cuvier, Menag. Mus. t. ; Oss. Foss. iv. 38. t. 5. f. 24, 29.—*Cervus Axis*, Erxl. ; Schreb. t. 250 ; Bennett, Gard. Zool. Soc. 253 ; Sundev. Pecora, 57.—*Axis maculata*, Gray, Cat. Mamm. B. M. 178.—*A. major*, Hodgson, Journ. Asiat. Soc. Bengal, x. 914.—*A. minor*, Hodgson, Journ. Asiat. Soc. Bengal, x. 914.—*A. medius*, Hodgson, Icon. ined.—*Cervus pseudaxis*, Gervais, Voy. Bonite, 64. t. 12 ; Institute, 1841, 419 ; Sundev. Pecora, 57.—*C. Axis Ceylonensis*, H. Smith.

Var. Blackish. *Cervus nudipalpebra*, Ogilby, P. Z. S. 1831, 136 ; Sundev. Pecora, 57. 131.

Inhabits India.

The horns of this species vary greatly in size. Pennant describes two Deer under the names of 1. *Greater Axis*, Pennant, Syn. 52 ; Quad. 106 = *Cervus Axis* γ , Gmelin ; 2. *Middle-sized Axis*, Pennant, Quad. 106 = *Cervus Axis* β , Gmelin, from the horns alone : these are probably only large-horned examples of the common species ; 3. *C. pseudaxis*, which has been regarded as a species of *Rusa*, is only a small-horned variety.

9. *HYELAPHUS*, Sundev. ; *Axis*, sp. H. Smith.

Covered with moderately thick, polished hair ; fulvous, and spotted in the summer ; with a rather elongated tail, and rather short legs, the front being rather the shortest ; the face is short, broad, and arched in front ; the ears short and rounded ; the horns are placed on moderately long peduncles.

1. *HYELAPHUS PORCINUS*. The *LUGNA PARA* or *SHGORIAH*.

Brown or yellowish brown, with an indistinct darker dorsal streak, and with obscure whitish spots, but without any white streak on the sides or haunches ; in the winter brown and spotless ; front of face

and legs darker; line down the front and the inside of the thighs white.

Porcine Deer, Pennant, Syn. 42. t. 8. f. 2.—*Cerf Cochon*, Buffon, Supp. iii. 122. t. 18 (in summer).—*Cervus porcinus*, Zimmerm.; Schreb. t. 251; F. Cuvier, Mamm. Lithog. t. .—*Hyelaphus porcinus*, Sundev. Pecora, 58; Gray, Knows. Menag. 64. t. 42; Cat. Ost. B. M. 67.—*Axis porcinus*, Hodgson, Journ. Asiat. Soc. Bengal, x. 914; Gray, Cat. Hodgson's Coll. B. M. 33.—*Cervus niger*, Hamilton, Icon. ined.; Blainv. Bull. Soc. Philom. 1816, 76; Fischer, Syn. 454; Sundev. Pecora, 60. 132.

Inhabits India.

Easily known from the *Axis* by being lower on its legs, and there is no distinct black dorsal streak, nor white streak on haunches; the tail bushy, and often carried erect: the males and females in summer are reddish brown, with numerous white spots, the middle of the back rather darker; in winter the whole fur becomes blackish brown, and the spots disappear: the horns are generally short, with only short snags or branches, but they are sometimes as large as those of the *Axis Deer*.

10. CERVULUS, Blainv. 1816; *Muntjacus*, Gray, 1821;
Stylocerus, H. Smith; *Prox*, Ogilby, Sundev.

Horns on elongated pedicels, supported by longitudinal ridges on the face, which have a naked, moist groove on their side; the canine teeth are exerted; the tear-bags are large and deep; the tail elongate and tufted; the hoofs triangular, and partly united in front by a web; the false hoofs are small and transverse; they are covered with thin shining hair, and are not spotted; they have no tuft of hair on the hind-legs; skull with a very large, deep, nearly hemispherical suborbital pit.

1. CERVULUS VAGINALIS. The KIJANG or MUNTJAC.

Dark reddish brown; narrow streak on the front edge of the thigh white.

Kijang, Marsden, Sumatra, 94.—*Cervus Muntjac*, Zimm. Schreb. t. 254; Horsfield, Java, vi. t. 1; Raffles, Mem. 645.—*Prox Muntjac*, Sundev. Pecora, 61.—*Cervus vaginalis*, Bodd, Elenc. i. 136.—*C. subcornutus*, Blainv. Schreb. t. 254 B. f. 2.—*Muntjacus vaginalis*, Gray, Cat. Mamm. B. M. 173.—*Cervus aureus*, H. Smith, G. A. K. iv. 148. t. . v. 805.—*Ribbed-face Deer*, Penn.—*Chevreuil des Indes*, Allam, Buff. Supp. v. 41. t. 17, vi. 195. t. 26; Cuvier, Oss. Foss. iv. t. 5. f. 48, t. 3. f. 49, 54.—*Cervulus vaginalis*, Gray, Knows. Menag. 65.

Inhabits Sumatra; Java.

This chiefly differs from the following in being darker-coloured.

2. CERVULUS MOSCHATUS. The KEGAN or KAKER.

Bright reddish yellow; streak on front of thigh and under part of the tail white; chin and gullet whitish; hair not ringed.

Var. With a triangular white spot on each side of the chest.

Musk Deer of Nepal, Ouseley, Orient. Collect. ii. t. .—*Cervulus*

moschatus, Blainv. Bull. Soc. Phil. 1816, 77; Schreb. t. 254 B. f. 1; H. Smith, G. A. K. iv. 149. t. . v. 806.—*Cervus moschus*, Desm. Mamm. 441.—*C. Ratwa*, Hodgson, Journ. Asiat. Soc. Bengal, i. 146. t. head; P. Z. S. 1834, 99; Royle, Flora Cashm. t. 5. f. 2.—*Styllocerus Ratwah*, Hodgson, Journ. Asiat. Soc. Bengal, x. 914.—*Muntiacus vaginalis*, part, Gray, Cat. Hodgson's Coll. B. M. 31.—*Prox Ratwa*, Sundev. Pecora, 62.—*P. albipes*, Wagner, Suppl.; Sundev. Pecora, 62.—*P. stylocerus*, Wagner, Suppl.; Sundev. Pecora, 62, 64.—*Cervus melas*, Ogilby.—*Prox melas*, Sundev. Pecora, 62.—*Cervulus moschatus*, Gray, Knows. Menag. 65.

Inhabits India, Nepal.

3. CERVULUS REEVESII. The CHINESE MUNTJAC.

Greyish brown; hair short, paler ringed.

Cervus Reevesii, Ogilby, P. Z. S. 1838, 105.—*Prox Reevesii*, Wagner, Sundev. Pecora, 62.—*Cervulus Reevesii*, Gray, Knows. Men. 65. Inhabits China.

Mr. Ogilby observes, this species has a longer head and tail than the Common Indian Muntjac, also less red and more blue in the general shades of colouring, and is readily distinguished by the want of the white over the hoofs, which is so apparent in its congeners. The fawn is spotted.

The Earl of Derby has these three kinds at Knowsley; but they breed together, and it has hence become impossible to discriminate the mules from the original species.

e. The CAPREOLINE DEER or ROES have rugose, very shortly peduncled horns, without any basal snag or branch; the first branch arising some distance above the crown or burr; the upper part is more or less branched; the muffle is broad and naked; the suborbital gland and the pit in the skull are very small and shallow, except in *C. Pudu*. Some species have a distinct tuft of hair on the outer side of the metatarsus, and more have the pencil of hair on the inner side of the hock, and others are without either; indeed in some specimens of the same species the tuft of hair on the hinder legs is very visible, in others very indistinctly or not at all seen.

11. CAPREOLUS, H. Smith; *Capræa*, Ogilby.

Horns nearly erect, small, cylindrical, slightly branched, with a very short peduncle; they have no tail, but a large, white anal disk, a very indistinct tear-bag, and narrow triangular hoofs; the tuft on the hind-legs rather above the middle of the metatarsus; they are covered with thick brittle hair in winter, and thinner and more flexible hair in the summer; the adults are not spotted, and have a black spot at the angle of the mouth; the skull has a very small, shallow suborbital pit. Found in Europe and North Asia.

1. CAPREOLUS CAPRÆA. The ROEBUCK.

Inside of the ears fulvous; summer, red brown; winter, olive, pale punctated; horns short.

Capræa, Plin.; Gesner.—*Capreolus*, Brisson.—*Cervus capreolus*,

Linn.; Pallas, Zool. Ross. A. i. 219.—*Capreolus Capræa*, Gray, Cat. Osteol. B. M. 64.—*Capreolus Europæus*, Sundev. Pecora, 61.—*Roe Buck*, Penn.—*Chevreuil* and *Chevrette*, Buffon, H. N. vi. 198.

Inhabits Europe. A larger variety is said to have formerly inhabited the Tyrol.

2. CAPREOLUS PYGARGUS. The AHU.

Interior of the ears fulvous; fur pale yellowish; horns elongate.

Cervus pygargus, Pallas, Reise, i. 97, 198, 433. ii. 159; Spic. xii. 7 (not Hardwicke); Schreb. Saugth. v. t. 253.—*C. capreolus* β , Pallas, Zool. Ross. Asiat. i. 219.—*Cervus Ahu*, Gmelin, Reis. iii. 496. t. 56; Griffith, A. K. iv. 122. t. —*Capreolus pygargus*, Sundev. Pecora, 61.—*Tailless Deer*, Pennant, Quad. i. 121.—*Tailless Roe*, Shaw.

Inhabits Central Asia. Collection of the British Museum.

12. FURCIFER, part. Wagner, Sundev.; *Mazama*, part. Gray, H. Smith; *Hippocamelus*, Leuckart, 1816; *Cervequus*, Lesson; *Capreolus*? Gray.

Horns erect, forked, without any basal snag; ears narrow, acute; a short tail; covered with thick, brittle, waved hairs; there is a distinct pencil of hairs on the inside of the hock, but none on the outer sides of the metatarsus. Confined to South America. Differs from *Capreolus* in the want of the outer tuft on the leg.

1. FURCIFER ANTISIENSIS. The TARUSH or TARUGA.

Yellow grey; hairs rigid, quilled, brown, with a yellow subterminal ring; edge of muffle and throat white; face with a brown longitudinal streak, and a lyrate band between the eyes; the hoofs rather broad, worn in front.

Cervus Antisiensis, D'Orbigny, Voy. Amer. Merid. t. f. ; Dict. Univ. H. N. iii. 328; Tschudi, Faun. Peru, t. 18; Sundev. Pecora, 60.

Inhabits East coast of S. America; Bolivian Alps.

2. FURCIFER HUAMEL. The GEMUL.

Fur dark, closely yellow punctated; inside of the ears white.

Equus bisulcus, Molina, Chili, 520; Fischer, Syn. Mamm. 430.—*Auchenia Huamel*, H. Smith, G. A. K. v. 764.—*Cervus Chilensis*, Gay et Gervais, Ann. Sci. Nat. 1846, 91.—*Cloven-footed Horse*, Shaw, Zool. ii. 441.—*Guemul*, Chilians.—*Gemuel* seu *Huemul*, Vidaure, Chili, iv. 87.—*Camelus equinus*, Triverianus, Mus. Biol. ii. 179.—*Hippocamelus dubius*, Leuckart de Equo bisulco, 24. 1816.—*Cervequus andicus*, Lesson, Nov. Tab. R. A. 173.—*Cervus (Capreolus) leucotis*, Gray, P. Z. S. 1849, 64. t. 12.—*Capreolus*? *Huamel*, Gray, Knows. Menag. 66.

Inhabits mountains on East coast of South America. Patagonia.

The female Gemul in the British Museum and in Lord Derby's Museum at Knowsley is considerably larger, and has the legs thicker, than the Siberian *Ahu*, which is much larger than the European *Roe Buck*.

MM. Gay and Gervais, who have compared the two species, consider them distinct.

13. **BLASTOCERUS**, Wagner, Sundev.; *Mazama*, sp. H. Smith;
Furcifer, part. Wagner and Sundevall.

Horns straight, erect, three-branched, without any basal snag; a very short tail, and rather large ears; are covered with very thin soft hair; they have a distinct pencil of hairs on the inside of the hock, but none on the outside of the metatarsus. Confined to Tropical America, east and west coasts.

1. **BLASTOCERUS PALUDOSUS**. The GUAZU-PUCO.

Fulvous; orbit, sides of muzzle, belly and under side of tail white; face-marks and feet blackish.

Cervus paludosus, Desm. Mamm. 443; H. Smith, iv. 134. t. . v. 796; Fischer, Syn. 444, 616; Licht. Darst. t. 17; Sundev. Peccora, 59.—*C. palustris*, Desmoul. Dict. Class. H. N. iii. 379.—*Cervus dichotomus* (*Guatzupucu*), Illiger, Abhand. Akad. d. W. 1804-1811, 117; Pr. Max. Neuw. Isis, 1821, 650. t. 6.—*Blastocercus paludosus*, Gray, Knows. Menag. 68.

Var.? *Mazama furcata*, Gray, Cat. Osteol. B. M. 64.

Inhabits the Brazils.

2. **BLASTOCERUS CAMPESTRIS**. The MAZAME or GUAZUTI.

Fulvous brown; the hairs of the lower part of the nape and front of the back reversed; the hoofs narrow. Young: middle of back not spotted; sides with small white spots, the upper series forming a regular line.

Mazame, Hernandez, Mex.; Buffon, H. N. xii. 317.—*Veado branco*, *Veado campo*, Anchieta, Notic. i. 127.—*Cervus bezoarticus*, Linn. S. N. ed. 10. 67.—*C. campestris*, F. Cuvier, Dict. Sci. Nat. vii. 484?; Cuvier, Oss. Foss. iv. 51. t. 3. f. 46, 47.—*C. campestris*, Licht. Darst. t. 19; Pr. Max. Abbild. t. .; Darwin, Zool. Beagle, 29. fig. horns; H. Smith, G. A. K. iv. 136. t. . v. 797.—*C. leucogaster*, Goldfuss, Schreb. Saugth. 1127.—*Mazama campestris*, H. Smith; Gray, Cat. Osteol. B. M. 64.—*Biche de Savanne*, Buffon, Supp. iii. 126.—*Gouazouti*, Azara, Essai, i. 77.—*Furcifer campestris*, Gray, Knows. Menag. 68.

Inhabits S. America; N. Patagonia. Collection of British Museum.

The figure of *C. campestris* in F. Cuvier, Mamm. Lithog., is evidently a *Cariacus*, and not of this genus. The horns from Brazils figured by Cuvier (Oss. Foss. iv. t. 3. f. 48) appear to belong to quite a different species. It may be the variety of the Roebuck, figured in Griffith, A. K. iv. t. 164. f. 6.

14. **CARIACUS**, Gray; *Mazama*, Sundev.; *Mazama*, part. H. Smith.

Horns cylindrical, arched, with a central, internal snag, the tip bent forwards, and with the lower branches on the hinder edge; they are covered with soft thin hair, have a moderate tail furnished with long hair on the under side, a white anal disk, rather elongated, large, rounded ears; they generally have a tuft of white hair on the outer side of the hind-leg, rather below the middle of the metacarpus,

but it is sometimes not to be seen ; the skull has a very small, shallow, suborbital pit, and the nasal bone is broad and subtriangular behind ; the tail is elongate, slender, pale, with the lower part dark, and reaching nearly to the hocks in summer ; much shorter and broader, and all dark olive in the winter. Confined to North America.

* *Hoofs narrow, elongate ; tail hairy beneath.*

1. CARIACUS VIRGINIANUS. The AMERICAN DEER.

Bright fulvous in summer, greyer in winter ; tail fulvous above, the tip black, beneath white ; carried erect when running ; nose brown ; side of mouth white, with an oblique black band from the nostrils ; hoofs narrow, elongate.

Dama Virginiana, Raii Syn. 86.—*Fallow Deer*, Lawson, Carol. 23 ; Catesby, Carol. App. 28.—*Cervus Dama Americanus*, Erxl. Syst. 312.—*Cervus Mexicanus*, Licht. Darstell. t. 20.—*Cervus Strongyloceros*, part, Schreb. Saugth. 1074, not figure.—*Cervus campestris* (*Mazame*), F. Cuv. Mam. Lithog. t. .—*Cervus Virginianus*, Gmelin, S. N. i. 179 ; Desm. Mamm. 442 ; F. Cuvier, Mam. Lithog. t. 205.—*C. Mangivorus*, Schrank, Ann. Wetter. i. 327, 1819, from Buffon.—*C. (Mazama) Virginiana*, Bennett, Gard. Z. S. 205 ; Fischer, Syn. 449 ; Peale, U. S. Explor. Exped. 39 ; Sundeval, Pecora, 58.—*Cervus leucurus*, *Long-tailed Deer*, Douglas, Zool. Journ. xv. 330 ; Richardson, Faun. Bor. Amer. i. 258.—*C. Mazama leucurus*, Sundeval, Pecora, 59.—*Cariacus Virginianus*, *C. leucurus*, and *C. Mexicanus*, Gray, Cat. Osteol. B. M. 63, 64.—*Virginian Deer*, Penn. Syn. 51. t. 9. f. 2 ; Quad. i. 104. t. 11. f. 1.—*Cerf de La Louisiane*, Cuvier, R. A. i. 256 ; Oss. Foss. iv. 33. t. 5. f. 1–5.—*Chevreuil*, Charlev. Nouv. Fran. iii. 152.—*Cariacou*, Buffon, H. N. xiii. 347. t. 44.—*Cariacus Virginianus*, Gray, Knows. Menag. 66. t. 46, winter coat.

Inhabits N. America.

Mr. Peale observes,—“ We believe that the same species of Deer inhabits all the timbered or partially timbered country between the Coast of the Atlantic and Pacific Oceans. They vary in size, as all the animals of this genus do, in different feeding-grounds, but they are specifically the same.” The Mexican Deer (Penn. Syn. 54. t. 9. f. 3, and Quad. i. 20), *Cervus Mexicanus* (Gmelin, S. N. i. 179 ; H. Smith, G. A. K. v. 729, iv. 130. t. ; Cuvier, Oss. Foss. iv. t. 5. f. 23), *Cervus ramosicornis* (Blainville), are all described from horns, which only appear to be much-developed horns of this species which have belonged to some well-fed animals.

The horns described and figured as *C. clavatus* (H. Smith, G. A. K. iv. 132. t.), appear to be only varieties of the common form.

1. The *Cervus Mexicanus* (Lichten. Darst. t. 20 ; Sundeval, Pecora, 59),
2. The *Cervus nemoralis* (H. Smith, G. A. K. iv. 157. t. ; Sundeval, Pecora, 59),
3. The *Cervus gymnotis* (Wiegmann, Isis, 1833 ; Sundeval, Pecora, 59),

all from Mexico, appear to be varieties of this species. *C. Mexicanus*

is said to have a brown tail and indistinct chin-band. The nakedness of the ears, which is peculiar to *C. gymnotis*, is often to be observed in these animals when in change of fur. *C. spinosus*, Gay and Gervais, is only known from a single horn from Cayenne.

2. CARIACUS LEWISII. The BLACK-TAILED DEER.

The tail black above towards the extremity, yellowish white beneath, covered with hair at all seasons, not carried erect when running; fulvous (in summer); hair very soft, not ringed; forehead and upper part of face before the eyes blackish; inside of the legs and belly white; chin-band distinct, black; front hoofs narrow, elongate. Horns like *C. Virginianus*, but generally more slender, and commonly without the first antler.

Black-tailed Deer, Anglo-American in Oregon.—*Black-tailed Fallow Deer*, Lewis and Clerk, *Travels to the Pacific*, ii. 26, 125 (London edit. 1807).—*Cervus macrotis* β . *Colombiana*, Richardson, *Fauna Bor. Amer.* i. 257.—*Long-tailed Deer* (*Cervus macrourus*), H. Smith, *G. A. K.* iv. 134, v. 795, part; Fischer, *Syn.* 615.—*Cervus Lewisii*, J. Peale, *U. S. Explor. Exped.* 39. t. 9, ined. fig. at p. 43, fore-foot; Gray, *Knows. Menag.* 67. t. 44, in summer, t. 45, in winter fur.

Inhabits N.W. Coast of N. America.

3. CARIACUS PUNCTULATUS. The CALIFORNIAN ROE.

(Mammalia, Pl. XXVIII.)

Dark reddish brown (in summer), minutely punctulated by the yellow tips of the hair; chin-mark distinct; ears elongated, nakedish; base of the ears, orbits, round the muzzle, under side of tail, and the upper part of the inside of the leg, white; forehead, line down the face, and narrow streak on upper part of the nape black; legs brown; a very narrow, indistinct streak on the middle line of the rump yellowish; tail like back, with a blackish tip.

Inhabits California.

There is a female of this species in the Zoological Gardens. It is much smaller than the Black-tailed Deer, and darker than *C. Virginianus*, and it differs in the hair being dark, with a distinct yellow sub-terminal band.

****** *The front hoof broad cordate; tail not hairy beneath.*

4. CARIACUS MACROTIS. The MULE DEER.

Brownish fulvous; chin without any or only an indistinct band; tail pale ferruginous, with a black tuft at the end, and without any hair beneath; ears very large; hoofs of the fore-feet broad cordate, nearly as broad as long, flattened and concave beneath; horns larger and more spreading than in *C. Virginianus*.

Mule Deer, Anglo-Americans of the Rocky Mountains.—? *Mule or Black-tailed Deer*, Le Raye; Lewis and Clerk, *Travels*; Wied, *Voy. Amer. Merid.* iii. 273, and *Vig. A. B.*—*Cervus macrotis*, Say, *Long, Exped. Rocky Mount.* ii. 88; H. Smith, *G. A. K.* v. 794; Fischer,

Syn. 444, 615 ; Sundeval, Pecora, 59 ; Richardson, Faun. Bor. Amer. 254. t. 20 ; Peale, U. S. Expl. Exped. 41. t. 10 (ined.), fig. at p. 43, fore-feet ; Gray, Knows. Menag. 67.—*C. auritus*, Desm. Dict. Class. H. N. iii. 379.

Inhabits N.W. America ; Arakansa.

We have several skulls of this genus in the British Museum, which offer very distinct characters, but unfortunately, not having the skins belonging to them, we cannot identify with certainty the species to which they belong.

These skulls vary considerably in width and comparative length of the face, and in the extent and depth of the suborbital pit ; in some, which are probably the skulls of the *Black-tailed Deer* as they come from the north-west coast, the pit is very large and deep ; and thirdly, in the extent of the intermaxillary lines. In some they scarcely reach to the nasal ; in others they reach to it and are united to it by a rather broad suture ; and in others they do not nearly reach to it, but stop abruptly, ending in a notch in the front upper edge of the maxillary.

There is imported by the North Western American Fur Company the flat skin of two Deer which probably belong to this genus, and appear distinct from the preceding : 1. The *Orenoka Deer* (of the Company's list). It came from Central America, is of a large size, of a bright red-brown colour, with the hair of the back short and rather adpressed, the chin and under part of the body white, the tail blackish ; 2. The *Yucatan Deer*, about the size of the *American Deer* (*C. Virginianus*), but very distinct from the skin of that species in the same store ; the fur is short red brown with blackish tips.

15. COASSUS, Gray ; *Subulo*, H. Smith, Sundeval.

Horns simple, rudimentary, shelving back ; ears rather short, broad, rounded ; tail short ; the facial line rather convex ; the fur short, of the forehead (in both sexes) elongate, forming a rhombic tuft between the horns and face ; legs without any tuft on the outside of the metatarsus, but with a pencil on the inside of the hocks. Confined to Tropical or South America.

* *Ears nakedish ; skull with a very small, shallow, suborbital pit ; supraorbital foramens in a groove.* East coast of America.
Coassus.

1. COASSUS NEMORIVAGUS. The CUGUACU-APARA.

(Mammalia, Pl. XXII. XXIII. XXVII. f. 1, 3, 5.)

Pale brown ; the hair dull-coloured, brown, with a yellow subterminal band which wears off ; a paler streak over the eyes. Young : brown, white spotted ; spots of sides unequal ; nape dark. Skull elongate, suborbital pit broad, subtrigonal shallow ; grinders moderate, infra-orbital ridge very distinct, sharp-edged. The intermaxillaries do not reach to the nasal but fit into a notch in the maxilla.

Cervus nemorivagus, F. Cuvier, Dict. Sci. Nat. vii. 485 ; Cuvier, Oss. Foss. iv. 54. t. 5. f. 50 ; Fischer, Syn. 446, 618 ; H. Smith, G. A. K. iv. 142. t. ; Sundev. Pecora, 60 ; Licht. Darstel. t. 21.—



J. Wolf Lith.

Hanhart Imp^r

CASSUS NEMORIVAGUS. ♀



J. Wolf Lith

M & H Hanhart, Imp'

COASSUS RUFUS.



J. Wolf Lith.

M. A. H. Hanhart Lith.

1, 3, 5. COASSUS NEMORIVAGUS.

2. COASSUS RUPUS.

4. COASSUS SUPERCILIARIS.

6. COASSUS AURITUS.

Coassus nemorivagus, Gray, Cat. Osteol. B. M. 64; Knows. Menag. 68. t. 48.—*Cervus nemorum*, Desm. Mam. 446.—*C. simplicicornis*, Illiger, Pr. Max. Abbild. t. .—Young? *Moschus delicatula*, Shaw, Mus. Lever. t. 36.

Inhabits Brazils.

A male specimen at Knowsley Menagerie, drawn by Mr. Wolf in Nov. 1850 (Pl. XXII.), was dark brown; streak on each side of the forehead, upper part of the legs and spot on the angles of the lower lip blackish; streak over each eye yellowish; under lip and spot on upper lip near muffle, underside of the tail and inner side of the upper part of the thighs white; muffle smooth, bluish, upper edge slightly arched; ears small, lower half of the inner side black.

This male was the size of a full-grown Roebuck, as is the largest of the genus in the Menagerie.

There is a female at Knowsley (Pl. XXIII. and XXVII. f. 3), drawn by Mr. Wolf in November 1850, which is probably a young female of this species. Mr. Fraser thus described it: "A female: dark grey, tinged with brown, greyer on the head and neck; the lower part, and the inside of legs, the belly and round the eyes rust-coloured; the purple brown patch in the ears smaller and less distinct than *C. rufus*. A small white stripe in front of the eyes and the under surface of the tail white; from the eyes to the nose short and thick compared with the other specimens."

2. COASSUS RUFUS. The CUGUACU-ETE or PITA.

(Mammalia, Pl. XXIV. XXVII. f. 2.)

The fur bright shining red; crown and neck grey; sides of face and chest paler. Young: reddish, white spotted, spots of side unequal; nape with a distinct white-edged dark central streak; the muffle carunculated, rather angularly produced above.

Var. With white rings above the hoofs.

Cervus rufus, F. Cuvier, Dict. Sci. Nat. vii. 485; Cuvier, Oss. Foss. iv. 53. t. 3. f. 41, 42, t. 5. f. 44; H. Smith, G. A. K. iv. 140. t. ; Pr. Max. Abbild. t. ; Fischer, Syn. 446, 618; Licht. Darst. t. 20; Sundeval, Pecora, 60.—*Cervus simplicicornis* (*Apara* β.), H. Smith, G. A. K. iv. 141. t. .—*C. dolichurus*, Wagner, Supp. iv. 389.—*Cariacou de la Guyane*, Buffon, ix. 90.—*Biche rouge*, Buffon, Supp. iii. 126.—*Gouazou pita*, Azara.—*Coassus rufus*, Gray, Knows. Men. 69. t. 47.

Inhabits S. America.

The males cast their horns in the month of September, and they are very shortly replaced by a new pair.

Mr. Fraser has kindly sent me the following description of the female at Knowsley, figured by Mr. Wolf in November 1850 (Pl. XXIV.): "A female: light red brown, neck and head greyer; darker grey on the hocks and upper part of the fore legs; the forehead with one black stripe on each side a grey one in the centre, which leaves two brown yellow stripes on each side; ears with a purplish brown patch of about a third of the whole extent inside; the muffle is carunculated as figured Pl. XXVII. f. 2, of a purplish hue."

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3. COASSUS SUPERCILIARIS. The EYEBROWED BROCKET.

(Mammalia, Pl. XXV. XXVII. f. 4.)

Bright shining red; neck and head grey; forehead darker; hocks and front of the fore legs grey; stripe in front of the eye and under-surface of the tail white; muffle deeply arched above; ears moderate.

Coassus superciliaris, Gray, Gleanings Knows. Menag. t. 48.

Inhabits the Brazils. Para.

This species chiefly differs from the former in the form of the muffle and in the presence of the white streak over the eyes. There is a male at Knowsley, and formerly there was a female in the Gardens of the Society.

4. COASSUS AURITUS. LARGE-EARED BROCKET.

(Mammalia, Pl. XXVI. XXVII. f. 6.)

Bright pale red brown; head and neck grey; orbits pale brownish; spot on side of upper lip, chin, belly, hinder side of fore and front side of hinder thighs and under side of tail, white; crown dark grey brown; ears very large, broad, acute, more than half the length of the head, with two lines of hairs in them.

Inhabits the Brazils.

There is a female of this species in the Gardens of the Society; it greatly resembles the Indian *Muntjac* in the distribution of its colour.

In the British Museum there are two skulls which belong to these species. They have the face shorter and thicker than the skull of *C. nemorivagus*, the nasals are wider behind; the suborbital pit small or less impressed, and the grinder larger.

The first belongs to a young specimen in the Museum Collection, apparently of *C. rufus*. It has a small slightly impressed pit just in front of the edge of the orbit. The second belongs to a more adult female, sent, without the skin, from Para by Mr. Reginald Graham; it is considerably larger than the preceding, and there is scarcely any visible impression in front of the orbit, only a slight concavity of the general surface. This skull exactly resembles that of *C. superciliaris*, which was in the Zoological Society's Gardens.

** *Ears thickly covered with short hairs; skull with a very deep oblong suborbital pit; face short; grinders large.* West coast of America. *Pudu*.

5. COASSUS PUDU. The VENADA.

Fur rufous, blackish in front and darker behind, and on the forehead and lower part of the leg; hairs ringed, of cheeks and neck greyish, of forehead and ears bright rufous; ears short; tail very short.

Cervus humilis, Bennett, P. Z. S. 1831, 27. fem.; Sundev. Pecora, 60.—*C. rufus*, Wagner, Supp. iv.—*Capra Pudu*, Molina.—*Chevreuil*, Poeppig, Forriep's Notiz. 1829; Férussac, Bull. Sci. xix. 95.—*Cervus Pudu*, Gervais, Ann. Sci. Nat. 1846, 90.—*Antilope (Mazama) Temmamazama*, H. Smith, G. A. K. iv. 291?

Inhabits Chili; Concepcion and Chiloe (*King*). Brit. Museum.



J. Wolf Lith

M. A. N. Hanhart Imp.

COASSUS SUPERCILIARIS.



F. Wolf, Lith.

W. M. Manhart, Imp.

COASSUS AURITUS, Gray