‘Description of 36 animals found during Capt. Cook’s 2nd voyage round the earth 1772-75’

Johann Reinhold Forster

			New species
Mammals		*Pecora*	[New species] 1
		1. *Bos connochætes*.	
		2. *Antelopes tragulus*.	
		3. *[Antelopes] dama.*	
		4. *[Antelopes] leucopus*.	
		5. *[Antelopes] tragocamelus*.	
		6. *[Antelopes] strepsiceros*.	
		7. *[Antelopes] cervicapra*.	
		8. *[Antelopes] oryx.*	
		9. *[Antelopes] bubalis*.	
		10. *[Antelopes] gazella.*	
		11. *[Antelopes] oreotragus.*	
		12. *[Antelopes] minuta.*	
		13. *[Antelopes] Grimmia.*	
		14. *[Antelopes] leucoptida*.	
		15. *[Antelopes] dorcas.*	
		16. *[Antelopes] tatarica*	
		17. *[Antelopes] rupicapra*.	
		18. *[Antelopes] glauca*.	
		19. *[Antelopes] bezoartica*.	
	Glines	20. *Yerbua capensis*.	[New species] 2
		21. *Fossor capensis*	[New species] 3
		22. *[Fossor] leucops*	
Birds	*Acciptres*	23. *Falco serpentarius*.	
	Picæ	24. *Calldas cinerea*.	[New species] 4
		25. *Certhia cincinnata*.	
	Gralla	26. *Chiones lactrea*	[New species] 5
	Anseres	27. *Anas pteneres*.	
		28. *Perna serrata*.	
		29. *Aptenodytes hypernotia*.	[New species] 6
Amphibians	*Nantes*	30. *Raja edentulata*.	
Fish	*Jugulanes*	31. *Blennius fenestratus*.	
	Thoranes	32. *Harpurus nigricans*	[New species] 7
		33. *Harpurus lituratus.*	
		34. *Perca polyzonias*.	
		35. *Atherina Menidia*.	
		36. *Mugil arrhostomus*	

Bos connochætes

Ox with spreading horns, twisting both upwards and downwards. The neck and throat from the chin to the chest are hairy, the tail tufted.

An animal similar to the *Paphagus* of Ælian; Kolb, *Cape of Good Hope*, vol. II, p. 129.

No one that I know of makes any mention of this ox; neither is it the animal believed by Kolb to resemble the *Paphagus* of Ælian bk. 16, for it was said to be much bigger than a horse whereas this one is scarcely the size of a fallow deer or a donkey – and that had a long tail for which it was principally sought by the hunters while our animal has a tail scarcely reaching to its knees. And it is my strongly held opinion that the *Paphagus* is perhaps to be identified as the Tibetan ox, remarkable with its long tail distinct from the grunting ox – but from this diversion we must resume our proper path. Kolb mentions having seen a picture of another animal recorded in the interior of Africa which also looks something like a *Paphagus*, but in truth nothing in that animal relates except that it may have a long mane like a horse, while its body corresponds in every way to that of an ox. In this way it shows some similarities to our bovine, but these are few and imperfect, and anyone might have thought that no such animal existed in Africa; and since no one searching for it had succeeded and no such animal could be found, many people believed it to be mythical until about five years ago, when one of them was caught and brought to the Cape of Good Hope. Shortly afterwards it was sent to Holland by ship, but it died on the way. And this very animal was also seen by that most kindly of men, Joseph Banks; then a male and a female were brought which, when little, had been caught by a Dutchman living in the interior of Africa, some thirty-eight days' journey from the Cape of Good Hope; he had trained them for a whole two years. The male was also sent to Holland and died on the way. The three-year-old female which was brought to the Cape of Good Hope still lives there to this day. A description of this animal has been compiled and it has also been drawn by my son; in truth, the image of the male was composed after a picture drawn by a German artist: the animal was in a poor state when we saw it and living in a stable, where it was fed with bread and cabbage-leaves: in appearance and size, and partly in its conduct, it was much like an ass, but its dung was like that of an ox and it ruminated too like an ox: it could not bear to be tied up or stroked. The male may be said to be somewhat larger than the female.

Body the size of a fallow deer, or perhaps a donkey, in the three-year-old specimen. Head with a rather flat brow, narrowing laterally and outward-curving underneath. Square muzzle, the nostrils lunate with bristles waving with the mouth, curving apart and sprinkled with white. Lips and jaws of unequal size; incisors in the upper jaw, nil; in the lower jaw, eight, wedge-shaped and rather short. Eyes horizontal, placed high-up, large and black, fierce. Eyelashes on the upper lids dark or black. Eyelashes both above and below the eyes, waving. Ears divergent, broad, dark (bovine). Horns smooth and rounded, conical, spreading and twisted first downwards, then bowed in the middle and upwards; the tips pointed, black. Neck squat, narrow; the upper part upright. Throat without a dewlap; abdomen barrel-like. Haunches slightly raised; back straight; shoulder-blades muscular. Legs slender, sulcated; thighs lean. Hooves narrow, laterally rounded, black; with small spurs. Lumbar region raised like a keel, dropping down towards the tail. Tail narrow at the base, cone-shaped, tufted.

Body covered all over with short, dark hairs, like a deer.

Face from the eyes to the muzzle covered with hair – thick, long, dark, erect.

Between the horns long, dark hairs, parted, occurring laterally towards the horns.

From the nape of the neck at the horns to the crest of the haunches the hair is dense, erect, thick, dark-grey.

From the chin to the throat the hair and beard are thick and dark, lengthening towards the gullet; from the gullet to the beginning of the breast-bone it is thick, long, and dark-grey; in the middle it thickens to form a pointed beard, hanging down almost to the knees.

On the chest between the forelegs the hair is long, dense, and dark-grey.

The stomach is covered with thick, long, dark-grey hair.

The tail has a thick tuft of long, dense hair, pale-grey, hanging below the knees.

Measurements

Head from the tip of the nose to the base [of the ears]	15½	Length of horns	18
Body from the ears to the base of the tail	50	[Horns] from the ground to the downward curve	69
Tail, including hair [to the base of the tail]	50	[Horns] from the curvature to the upward-pointing tip	9
Ears	5½	Height of the body to the top of the haunches	40½
Shoulders	10	[Height] above the loins	39
Knee to foot	8	Femur	13
Tarsus	3	Tibia	10
Hooves	2	Tarsus	3
		Hooves	2

Apart from the *Bos connochætes*, there are other wild and fierce oxen in the region, of which we have received reports and eye-witness accounts and whose horns are preserved in the public library of the Cape of Good Hope. They resemble most closely the American bison. Their horns are well illustrated by Buffon, vol. IX [*sic*]. These the Dutch call wild oxen (*wilde Buffel*). They live in the interior of the country, though they are not very numerous. Immediately and without warning they paw the ground and charge at horses or men with their horns and with one huge blow not infrequently they kill; if any sign of life remains the oxen will finish them off by trampling them under their feet. When the learned Thunberg and the gardener Auge were going through the African interior in the region of Cape of Good Hope, Thunberg dismounted from his horse to go on foot into the thickets and woods in order to collect plants, suddenly a wild ox turned on his horse and threw it to the ground before turning on the gardener; he only just made his escape, jumping aside between two trees near to the path and almost touching each other. Then it forced down a second horse and, striking it with its hooves, killed it. Before Thunberg could recover and before the gardener had a chance to get out his musket, it got away unharmed. Mr Hemmy, on his farm about 20 miles out of town, kept captive three oxen of this kind which he had caught while they were young and which he attempted to yoke to the cart and train for other tasks. They proved extraordinarily obstinate and unyielding and when six other tame oxen were yoked to the cart with one of these it would not pull true, and not one amongst them could be made to draw in this way. If I had not had to board ship again on the day before, I would have heard this from the master himself, for surely I would have questioned him, if there had been enough time for this purpose.

[Note. Today *Connochaetes gnou*, black wildebeeste or white-tailed gnou. Cf. Forster 1844: 392-6. Four drawings by Georg Forster survive in the Natural History Museum, nos 005019, 005020, 005021 and 056312]

Antelope

The antelope genus, containing numerous species, has been admirably systematized by the celebrated Pallas; yet it is to be regretted that it is not yet sufficiently well known or studied by the zoologists. The Cape of Good Hope and the adjacent regions

of Africa settled by the Dutch form an enormously productive part of the world for plants and animals, of which scarcely half are yet well known. The abundant flora has been tirelessly studied by D. Thunberg, a disciple of the great Linnaeus, who journeyed to the interior of Africa and for the space of three years succeeded in applying himself thoroughly to the task of examining and describing them; we expect this to be communicated rapidly to the scholarly world by that learned man Nicolaas Laurens Burman. The animals, in truth, are not yet adequately completed. Finding myself in the region of the Cape of Good Hope and able to visit the whole area, I was able to search out and collect for examination a large number of animals, to describe them anew and to draw them, although not without considerable difficulty. But if anyone were to give thought to these difficulties, I shall say little of how things might have been improved, about the brief period of time during which the ships lingered there, or about the impudence and greed of the inhabitants, who demand excessively high prices from foreigners for the most common things that they sell, or the great distances from the town at which the places lie that are frequented by the animals, or of the small number of men who could be persuaded even for a high price to collect animals, birds and fishes. Certainly I had to spare neither wealth nor labour whereby I might collect a great store of new animals and in truth I believe that the forty new animals that had been obtained by me established enough and more than enough credibility for what was said. In addition, I managed to recognize a further twenty animals whose true identities had been concealed under new and false names, but which have now been recovered and restored to their genera and species. Moreover, I have been in the vanguard, so that experts in the natural world in the future who shall come to the Cape of Good Hope may know straightforwardly of the many new animal types on these shores, and of the skins I have been able to see, and of those I have accepted as widely known by fame and common repute, and others will now be able to carry on their researches with greater care and, as I hope, with more propitious success.

Of all the kinds of antelopes found at the Cape of Good Hope, eleven species are known to me, of which I have myself seen the majority, or have at least examined their skins and horns: specifically I have seen four species and the skins of three. I have made known the horns of two specimens of this genus and species and, as far as I shall be able, I will communicate clear accounts of them. In my opinion, research on the antelope has been carried out most exhaustively and exactly by the learned Pallas,

and by the distinguished English zoologist, my most excellent friend Pennant who, applying himself with great pains, has brought them out of obscurity and into a position of considerable certitude.

I have no doubt that the form and conformation of the horns will provide the means by which the numerous species in this genus may be distinguished, although I would suggest that this method should be used with caution: I have seen within one species of *Dorcas* and in the variety *Pygargus* horns which appear almost flame-like; in others they are lyre-shaped and in others bowed, although ultimately not always curving backwards. If all the horns of this genus were set out in order, they might be seen to belong to any one of several species. Therefore it is fitting that as many characteristics as possible ought to be collected and the many animals of this type in this clime and those separated by the great spaces of the earth should be compared between themselves, with neither the average appearances neglected nor the extremes, so that true species may be established.

Indeed, some zoologists seem driven to ensure that no species at all are left intact, nor varieties of those species, nor that many species are not mingled needlessly into a single one. The illustrious Linnaeus distinguished six distinct species amongst his *Capras*; but some of his synonyms are in error. The illustrious Buffon separated several antelopes from the genus *Capra*, which he called gazelles; he described, but did not illustrate them. Undoubtedly he did a great service to the history of the antelope, diligently bringing together both ancient and more recent sources; but in truth this greatest of zoologists does not convince me with this part of his work, for it can be seen that he too has joined together several varieties and mingled them in a single species. Adanson separated those varieties back into different species. The matter was taken up in print by the celebrated zoologist Pallas, who, in his *Spicilegia Zoologica* vol. I set out our sixteen antelope species, several of which must be reunited into one species, namely five kinds of *Dama*, and he reduced into the same animal *Pygargus*, *Dorcas* and *Kevella*, having retained *Dorcas* only as a variety; although he added many well-observed details, he was mistaken a number of times in his synonyms. He later communicated a number of other very useful works to the scholarly world in which the antelopes are treated. My great friend and distinguished English scholar the very generous Sir [*sic*] Thomas Pennant, who describes briefly but graphically in his usual manner, in his *Synopsis Quadrupedum*, twenty-two kinds of antelope, is led into error by earlier authors by not recognizing amongst the species

that *A. velox* and *A. rufa* are varieties of *Dama*, while *A. barbara, platycera, alba, Sinensis* and *maculata* are concealed amongst the varieties of *Dorcas*. His *A. cervina, Senegalensis*, and *Gambensis* all denote a single *Bubalis* and are probably varieties of it. However, although the synonyms are, I suspect, incorrectly applied, he none the less provides a great deal of excellent information, either from those of the antelopes encountered, seen and examined at the Cape of Good Hope, or from the rest of the types which I have heard about there and have delineated. Several other kinds of this animal, which I have gathered from the works of other authors, may be said not yet to have been brought together.

Before speaking of a number of species of antelope I may observe, briefly, that the only one of them I know that truly lives in Europe is *Rupicapra. A. bezoartica, tragocamelus* and *leucopus* seem to be species occurring only in Asia. In Africa alone I believe I can distinguish *A. glauca, leucophæa, Grimmia, minuta, oreotragus, bubalis, strepsicerota, dama,* and *tragulus*. In Europe and Asia together is to be found *Tartarica*; and only four are common to both Asia and Africa, namely *Dorcas*, *Cervicapra*, *Oryx* and *Gazella*. Altogether, the true species I know are eighteen in number, which we shall briefly outline.

1. *Antelope tragalus*

Antelope with erect horns, rounded, smooth, unbranched, curving slightly backwards. Many examples of this species have been noted, but as far as I know scarcely any have been described by authors. Certainly Kolbe and de la Caille come to mind among these as inadequate, imperfect, and very brief. The inhabitants of the Cape of Good Hope talk of three varieties of this species, of which I have seen two: the first is known as the *greisbok*, the second as the *steenbok*, and the last as the *bleekbok*.

α The first variety I have called *melanoti*, on account of its black-ears. The hair covering the body is chestnut coloured or dark red, interspersed with numerous white hairs which cause the animal to appear grey: hence they call it the grey (*greisbok*). It lives mostly on the mountain tops, on the plains and amongst the rocks, seeking out for itself heaths and shrubs. There are few animals that are faster-moving, although they are not infrequently caught by the greyhounds of the hunters. Only the males have horns; the females have none.

Body about the height of a goat, but much more graceful and with longer feet in relation to the body.

Head oblong, somewhat rounded, covered with hair, and with an almost conical snout. Narrow mouth with black lips; the nostrils are covered with sparse blackish hairs. The crown of the head is black and the eyes large, green and black. The area around the eyes is wide and black, with a prominent ring. Towards the nostrils is a tear duct or sebaceous gland, black above, with a rounded opening. Ears in line with the head, elongated, black on the outside and densely covered with short hairs; the insides are less densely covered, with longer hairs.

Horns rounded, dark, widely spaced and diverging from the base; they are quite erect, rounded, very smooth, curving a little towards the rear.

Feet long and slender, tapering towards the hooves. Hooves dark, three-sided, tapering.

Tail: scarcely any.

Body dark red; head and legs pale; underside and abdomen pale grey; the back, haunches and sides thickly sprinkled with grey hairs.

β The second variety I have called *rupestrum*; it lives in rocky places and on the plains, amongst the brush. Amongst the inhabitants it is called the *steenbok*. It can leap a distance of 7 to 9 feet and is extremely fast-moving; it frequently finds its way in amongst the vines.

It resembles the *melanotis* in several ways, certainly in its form, size and proportions, differing only in colour: its whole body is a chestnut red, with spots above interspersed with greyish hair. Dark ears with three raised hairy ridges on the insides; dark, with whitish spots above the eyes. Abdomen and inner surfaces of the thighs white; bristles above and below the eyes, dense and black. White patch below the tail.

I have not seen the horns, but they have in the past been described as rounded, straight, parallel, not branching, smooth and black, joining the head at an angle.

γ The third variety is called by me the pale; the name applied to it by the Dutch inhabitants – *bleekbok* – carries the same meaning. I have not seen this one myself, but at the word of reputable and trustworthy men you may know who have encountered these through their love of hunting, it corresponds in every way with the *rupestris* except in its pale red colour, by which it may be recognized.

Observation: These three varieties are all included in the diet of the Dutch, and although the best sources deny that the *Antelope tragalus* is included among their meat they frequently consume the first two varieties.

[Note. Today two species, *Raphicerus campestris*, steenbok, and *R. melanotis*, Cape grysbok. Cf. Forster 1844: 36-7. A drawing by Georg Forster of *R. melanotis* survives in the NHM, no. 005017]

2. *Antelope dama*

The *Nanguer* of Buffon, *Histoire Naturelle*, vol. XII, p. 213, pl. 34; The *Nagor* of Buffon, *Histoire Naturelle,* vol. XII, p. [326/236], pl. 46; *A. dama* of Pallas, *Spicilegia*, fascicule 1, p. 8; *A. redunca* of Pallas, *Spicilegia*, fascicule 1, p. 8; *A. velox* of Pennant, *Synopsis of Quadrupeds*, p. 30; *A. rufa* of Pennant, *Synopsis of Quadrupeds*, p. 30.

Antelope with rounded horns, straight, parallel, backward-sloping and curved, annulated towards the base. This antelope is known only from the descriptions by Adanson, as given by Buffon, which are somewhat imperfect and unclear. It is clear, nevertheless, from this and from the pictures, that this species is a variety distinguished only by its colour, which in *Dama nanguer* is red on the abdomen, legs and haunches and whitish on the buttocks, while the *nagor* is red all over. The kind with curved horns is properly called *Dama*, and is, I suspect, properly to be considered the same as that seen with their own eyes by Pliny and Ælian.

[Note. Today *Dama gazella*, dama gazelle. Cf. Forster 1844: 377]

3. Antelope leucopus

Bœufs gris, Nil-gaux of Bernier, *Voyages*, vol. II, p. 245; Dr Hunter in *Philosophical Transactions* 61 (1771), pp. 170-81; Pennant, *Synopsis of Quadrupeds*, p. 29, *A. leucopus*.

Antelope with rounded horns, straight, smooth and slightly curved. Ears and legs white at the tops with black bands; the mane on the neck is short.
The celebrated Hunter described a living specimen and had it drawn; for it he preserved the name *Nilgaux*, as used in India. Nothing is added here to what he says. Both sexes are horned.

[Note. Today *Boselaphus tragocamelus.* Cf. Forster 1844: 377. See also Rookmaaker 1985: 205]

4. *Antelope tragocamelus*

D. Parsons in *Philosophical Transactions* 43 (1744-5), p. 465 and figure, *Tragocamelus*; Pallas, *Spicilegia*, fascicule 1, p. 9, *Antelope tragocamelus*; Pennant, *Synopsis of Quadrupeds,* p. 29, *A. indostanensis*.

Antelope with rounded horns, smooth and slightly curved; short mane, slack dewlap, humped back.
Mr Parsons gives an excellent description of the living animal and illustrates it; the other authors follow after him.

[Note. Today *Boselaphus tragocamelus*, nilgai. Cf. Forster 1844: 377. See also Rookmaaker 1985: 205]

5. *Antelope strepsiceros*

Strepsiceros of La Caille, *Opusc / journal.* 56, Gesner, *Historia Animalium*, *De Quadrupedibus,* p. 309 [*sic*], and Jeon (31); Kolbe, *Cape of Good Hope*, unnamed buck; *Animal anonymum* of Houttuyn, *Natuurlyke Historie*, pt. 3, pp. [198-201]; The *Condoma* of Buffon, *Histoire Naturelle*, vol. XII, p. 301, pl. 39; vol. XV, p. 142; *Strepsiceros* of Pallas, *Miscellanea*, p. 9, *Spicilegia*, fascicule 1, p. 17; *Cerf du Cap de Bonne Esperance* of the *Historia et Commentationes Academiae Electoralis Theodoro-Palatinae*, vol. I (1766), p. 487; *A. strigata* of Pennant, *Synopsis of Quadrupeds*, p. 31.

Antelope with somewhat rounded horns, carinated, straight, divergent, with longitudinal spirals and with wrinkles at the base.
Although the distinguished Pallas takes issue with Buffon, who attempted to re-establish the connection between this antelope and the ‘buck without a name’ of Kolb, I believe Buffon to have been correct; but what is most unusual is that the name he adopts, *Condoma*, seems to preserve the suggestion given by Kolb, for almost all the French corrupt foreign names in an astonishing manner. When the Frenchman sent out some horns from the Cape of Good Hope and asked from what powerful animal

they derived, the Dutch responded by referring to Kolb and finding the 'buck without a name' they confected the name *Condoma* and sent the horns by ship under this name, which Buffon passed on in distorted form. I have no objection to supporting the distinguished Pallas. The *Strepsiceros* lacks a beard, although Kolb wanted to characterize it by reason of a beard formed by the long hair on its chin and chest. Amongst the Dutch living in the Cape of Good Hope the name now used for this antelope is *koedoe*, which the French render as *coudou* and the English as coodoo. I have not seen this animal alive but have compiled descriptions from several skins and have seen several horns. Some years ago a specimen of this antelope was to be seen in the public gardens in the Cape of Good Hope, very agile and very beautiful, which regularly executed huge jumps over the iron gates to get at the bread offered to it by the public, and having got it would then jump some ten feet over the gate again to re-enter the garden. Both sexes are horned.

Body mostly whitish-grey, with snow-white lines on its back and seven stripes to either side.

Short black mane and longer black hairs from the chin to the breast, in dark bands; from the area surrounding the eyes on either side two white lines running to the nostrils. Tufted tail with black hairs at the tip, white below. Eight incisor teeth, longest in the middle, second pair following in size and third pair smallest.

Ears dark black. Legs slender and deer-like, white on the insides and with black knees. Horns dark black, ridged with about three spirals, with the tip curved and white.

[Note. Today *Tragelaphus strepsiceros*, greater kudu. Cf. Forster 1844: 377-8. See also Rookmaaker 1985: 205]

6. *Antelope cervicapra*

Strepsiceros or *Addax* of Pliny, *Natural History* [bk VIII, cap. 79 (53); XI, cap. 45]; *Capra bezoartica* of Aldrovandi, *Quadrupedum omnium bisulcorum Historia*, p. 256; *Antilope* of Charleton, *Exercitationes de Differentiis & Nominibus Animalium*, p. [10]; *Gazella africana*, the Antilope of Ray, *Synopsis Quadrupedum*, p. 79; *Mémoires de l'Académie Royale des Sciences* 1 (1731), p. 84; *Gazella* of Brisson, *Regnum Animale*, p. 44; *Tragus strepsiceros* of Klein, *Quadrupedum*, p. 18; *Capra cervicapra*

of Pallas, *Miscellanea*, p. 9, *Spicilegia*, fascicule 1, p. 18 with pl.; *Antelope vulgaris* of Pennant, *Synopsis of Quadrupeds*, p. 32.

Antelope with rounded horns, faintly annulated and spirally twisted. The males only are horned. Dark on the face and the body, almost black on the sides of the neck and on the shoulders, the neck yellowish-grey and the back with two stripes; the area around the eyes, white. Underside, inside legs and tip of tail all snowy white. Females mute, yellowish-grey. Eight front teeth, the middle ones broadest. Under the knees, tufts of hair.

[Note. Today *Antilope cervicapra*, blackbuck. Cf. Forster 1844: 379]

7. ***Antelope oryx***

Kaapshe or *Elandt* of Kolb, *Cape of Good Hope*, vol. II. p. 110; *Coudous* of Buffon, *Histoire Naturelle*, vol. XII, p. 357, pl. 46*bis* (horn); *Antelope oryx* of Pallas, *Miscellanea*, p. 9, *Spicilegia*, fascicule 1, p. 15); *Antelopa ind[i]a* of Pennant, *Synopsis of Quadrupeds*, p. 26.

Antelope with rounded, somewhat angular horns, straight, very long, naked, spreading. Short mane; loose, hairy dewlap.
Both sexes are horned. The female I myself have seen, examined, described and drawn; it lived in the public gardens at the Cape. The illustrious Buffon has erroneously called this species of antelope *coudous*, while this name applies rather to our *Strepsiceros*. The very generous Pennant, meanwhile, has wrongly called it the *Antelope indiam*, to distinguish it from his *Alce capensi*, and holds out the gazelle about to be described below as the true *Alce capensi*, while the Dutch inhabitants of the Cape of Good Hope reserve the name gazelle to denote the gemsbok (*Rupicapra*). Mild and gentle, the one I saw was a female, and in oestrus. It may be for that reason that in the absence of a male among the antelopes the *Damas* may indeed leap upon humans. They are said to live in the mountains.
Body the size of a deer or a horse; at the haunches they stand about 4 feet high. Perhaps the majority are dark grey, or coloured like a deer. The dorsal line and the knees are blackish; the belly and the inner surfaces of the legs lightly shaded. The throat is scrofulous, with a prominent, almost globular larynx. The short mane is

black; on the haunches the hair becomes increasingly dense. Loose dewlap, covered with long, black hair. Small hooves for the size of the body, tapering and black. Horns rounded and somewhat angular; straight, growing about 2 feet from the head (in a three-year-old); they are naked, slightly annulated at the base (the rings like faint waves), black, opaque, leaning backwards (i.e., growing out from the head in line with the face then curving backwards), divergent (so that they grow forming a steep Roman letter V). Front teeth broad and quite large, those at the sides somewhat smaller.
Large ears, with three hairy ridges on the inside. Nostrils with sparse, black hairs. Eyes large and lively.

[Note. Today *Taurotragus oryx*, eland. Cf. Forster 1844: 379-80. A drawing by Georg Forster survives in the NHM, no. 005030]

8. *Antelope bubalis*

The *Bubalis* of Pliny, *Natural History,* bk. VIII, cap. 15); *Βυβαλος* of Oppian, *Cynægetica*, bk. IX, 300; *Bacula cervina* of La Caille, *Opusculae*, 63; *Buselaphus*, of Gesner, *Historia Animalium*, *De Quadrupedibus*, p. 121 [*sic*]; *Bubalus* or *Capreolus africanus* of Aldrovandi, *Bisulcorum Quadrupedum*, pp. 363-5 with fig.; *Vache de Barbarie* of the *Mémoires de l'Académie Royale des Sciences* vol. I (1731), p. 208 with fig; the hart of Kolbe, *Cape of Good Hope*, vol. II, p. 126; The *Bubale* of Buffon, *Histoire Naturelle*, vol. XII, p. 294, pls 37-8; The *Koba,* or *Grande vache brune* of Buffon, *Histoire Naturelle*, vol. XII, pp. 210, 267, pl. 32, fig. 2; The *Kob,* or *Petite vache brune* of Buffon, *Histoire Naturelle*, vol. XII, pp. 210, 267, pl. 32, fig. 1; *Capra dorcas* of Houttuyn, nat. hist. vol. III, p. 213, pl. 24, fig. 3); *Antilope bubalis* of Pallas, *Spicilegia*, fascicule 1, p. 12; *Antelope cervina* of Pennant, *Synopsis of Quadrupeds*, p. 37; *Antelope senegalensis* of Pennant, *Synopsis of Quadrupeds*, p. 38, pl. on p. 39; *Antelope gambiensis* of Pennant, *Synopsis of Quadrupeds*, p. 39.

Antelope with the horns graceful, annulated, lyre-shaped, naked [and] straight at the tip; the Dutch of the Cape of Good Hope call this animal *Hartebeest*, i.e. stag. I have seen its hide and have examined it with the horns: it is in all respects an animal like that which Adanson in Buffon's work calls the *koba*. But to what extent this is like the *Bubalis* and the other smaller variety that Adanson calls the *kob* will easily be

revealed if what Buffon and Pallas and Pennant [in the place cited] report is compared, and so I do not wish to linger on these any longer. Certainly they are to be referred to the same species and are to be called varieties only.

[Note. Today *Antelope bubalis*, cervine antelope. Cf. Forster 1844: 380]

9. *Antelope gazella*

Capra gazella; *Gazella indica* of Ray, *Synopsis Quadrupedum*, p. 79; *Capra gazella* of Linnaeus, *Systema Naturae*, 12th edn, vol. I, p. 96; *Algazel* and *Pasan* of Buffon, *Histoire Naturelle*, vol. XII, p. 211, pl. 33, figs 1-3; *Antelope bezoartica* of Pallas, *Spicilegia*, fascicule 1, p. 14; *Antelope ægyptiaca* of Pennant, *Synopsis of Quadrupeds*, p. 25.

Antelope with rounded horns, very straight and long, with annulated bases. In their treatment of this antelope almost all authors are in error, and for that reason what they have said will be carefully noted. First of all, I believe this animal to be the oryx of Pliny and the ancients, for in the *Tabula Isiaca Tauriensi* Hercules is shown sacrificing an oryx of which the horns are very straight, and I have no doubt from the evidence of this antelope, which was common in Egypt, that our gazelle was indeed the oryx of the ancients. Apart from this, Pliny (*Natural History,* bk I, 8 c.79) writes 'There are also the Oryges, he states, about which it is said that they are dressed with the hair running contrariwise and turned towards the head'. Moreover, Buffon, in describing the hide of his Pasan, observes that the back is covered with hairs growing contrariwise and towards the head; and thus it seems more and more plain to me that the oryx of the ancient Egyptians is the gazelle, and further that the Pasan of Buffon is a gazelle or a variety of it. Thereafter the illustrious Linnæus wrongly renamed his gazelle as the Cape elk of Kolb, which we have shown to be the oryx of more recent times. Shortly afterwards the illustrious Buffon wrongly separated *Antelope gazella* and *pasan* into two separate species, causing great confusion; for although *A. pasan* is indeed a separate animal from *A. gazella*, none the less I say that his *pasan* has no standing, for Buffon confused the words of Kaempfer on this matter and attributed to the *pasan* the backward-curving horns of the *Capra bezoartica*, though he clearly denies this and has them appearing straight, or a little divergent in the middle, and tending towards the back. Besides, the skin he describes of the *pasan* is of a gazelle,

or more probably a variety of it. Indeed the hide he describes as belonging to his *A. bezoartica* or his *pasan* seems from the horns to be similar to that which Johann Daniel Major describes under the name of *Capra bezoartica* in the *Ephemerides Naturae Curiosorum*, vol. VIII (1677), which undoubtedly led Bont into error. This mistake of Buffon's gave occasion to many more, namely in the discussions of the scholarly Pallas and the generous Pennant, who were misled by what they gathered and both received also the wrong synonyms. The known animal of the Egyptians with very straight horns, which is found again at the Cape of Good Hope, is in fact called by the natives of the interior the gemsbok (*Rupicapra*). The most noble Baron de Plettenberg, who is presently Governor of the Cape of Good Hope, made me a gift (and kindly helped in many other ways) of the hides of *A. gazella*, killed in the interior of Africa while he visited those parts, and the flesh of which he himself tasted; he made me a present of one which lacked one horn, which I found to be wholly similar to the animal described by Pennant under the name of *A. Ægyptiaca*. If this is compared with the description given in the *Itinerario* in the Kingdom of Congo under the name of *Pacassa* or *Empacussa* – an animal similar to a buffalo, white all over with black and reddish patches, with elongated ears and with straight horns – I have no doubt that it would be our *A. gazella* that is being described under the name *Pacassa.*

[Note. Today *Antelope* sp. Cf. Forster 1844: 380-2]

10. *Antelope oreotragus*

Antelope with rounded horns, very straight and upright, pointed, broadly annulated at the base. To my knowledge, this elegant little animal has not previously been described or illustrated by anyone before us. It is called by the Dutch inhabitants *klipspringer* (rock-jumper). They live mostly on the rocky summits at the tip of Africa, chiefly at the Cape of Good Hope, around False Bay. If disturbed by hunters, they jump a great distance in the air on the rocky slopes, frequently on to rocky promontories; they withdraw where there is scarcely a passage of 4 feet, and remove themselves to the most restricted places. Gathering their legs in some narrow place, they spring up again on to some neighbouring rock if one is nearby, or else they jump down into some place they consider protected by the steepness of the slope, so that with marvellous agility they elude the skill of the hunters. The females lack horns.

The hairs in this species are barely attached to the skin, and fly off to the touch; they are used by the inhabitants in making cushions.
Body about the size of *A. traguli*, or a little greater.
Conical head, smooth, a little thick, dark. The nostrils are black, naked and flat; the lips are thin and black. The mouth opens only moderately, a little asymmetrically. The teeth . . . Large eyes, in a bare, black patch, a tallow-coloured lachrymal sac, in the same patch a large oval opening. The ears almost in line with the length of the head, pointed, ovate, with black tip and border.
The horns are a little shorter than the ears, widely separated, a little divergent, very straight, erect (i.e. in line with the head and perpendicular to the ground). Smoothly pointed, wrinkled at the base, black.
Slender legs, elongated; the hooves are at an angle, black and narrow. Tail very short.
The head is dark reddish-brown all over, with black streaks of varying width.
The hairs are white at the roots, blackish in the middle and reddish-grey at the tip.
The body has tiny traces of variegation around the joints, from yellow to dark red.
The hairs, as on the head, are white at the root, black in the middle and yellowish-grey at the tip.
The legs are whitish on the inner surfaces; the ears are of the same colour. The hairs are easily shed, soft and springy, yet thread-like and growing thickly.

[Note. Today *Oreotragus oreotragus*, klipspringer. Cf. Forster 1844: 382-3. A drawing by Georg Forster survives in the NHM, no. 005029]

11. *Antelope minuta*

Antelope with rounded horns, annulated at the base, pointed, black.
Rex cervorum of Bosman, *Description of Guinea*, p. 236; *Cerva parvula* of Des Marchais, *Voyage en Guinée*. vol. I, p. 312; *Cervula parvula africana* of Seba, *Thesaurus*, vol. I, p. 70, pl. 43; *Cerva parvula* of Adanson, *Voyage au Senégal*, [p. 14]; The *Chevrotain de Guinée* of Buffon, *Histoire Naturelle*, vol. XII, p. 315, pl. 43, fig. 2 (horn); *Antelope regia* of Pennant, *Synopsis of Quadrupeds*, p. 28.

This elegant little antelope is very often taken for another small animal named the musk deer, though they could not be more easily distinguished from each other due to the very different characteristics that Nature has given them. In *Antelope minuta* the

males are horned and have no canines in their upper jaws; the true *Moschus pygmæus* of either sex is lacking in horns and has canine teeth protruding from its upper jaw. Buffon appears to have been unaware of the difference between *Antelope* and *Moschus*, for each animal is called in French *chevrotain*.

[Note. Today ***. Cf. Forster 1844: 383-4]

12. *Antelope grimmia*

Capra sylvestris africana of Dr Grimm, Ephem. Nat. Curios. 4 (2 December 1686), p. 131?; *Capra sylvestris africana grimmii* of Ray, *Synopsis Quadrupedum*, p. 80; Klein, *Quadrupedum*, p. 19; *Moschus grimmia* of Linnaeus, Systema Naturae, 12th edn, vol. I, p. 92; the *Grimme* of Buffon, *Histoire Naturelle,* vol. XII, p. 307, pl. 41 (head); *Antelope grimmia* of Pallas, *Miscellanea*, p. 10, pl. I; *Spicilegia*, fascicule 1 pl. 15, 38 pl. 3; *Antelope guineensis* of Pennant, *Synopsis of Quadrupeds*, p. 27.

Antelope with somewhat smooth horns, quite straight, wrinkled and annulated at the base, striated, pointed, backward-sloping, black, upright; with a tuft of hair [between them].

Grimm first saw this antelope at the Cape of Good Hope; in fact that specimen was a female without horns, as was the conclusion also of the best of all zoologists, the illustrious Linnæus; the result was that this antelope, which at first had been placed among the *Capras*, was later included amongst the *Moschus*. The illustrious Buffon correctly discerned the *Grimmia* to be an antelope; in truth I do not know what might be made of the fact that the head reported and sent by Adanson from the region of Senegal may demonstrate the contrary, though I doubt that the true horns of our *Grimmia* provide a match. All the same, I do not wish to assert anything that remains in doubt: it is enough in these circumstances to lay out the entire facts and to leave the ambiguity for others to judge. The learned Pallas was the first to comment fully and justly on the *Grimmia*. The one he described was sent from Guinea. The horns that he saw were those illustrated with precision in Seba's *Musæum* (vol I, pl. 43, figs C-D). The generous Pennant saw this same *Grimmia* at The Hague; he did not give a description of it since the learned Pallas had already done so. While at the Cape of Good Hope and trying to gather materials from every source for a history of the antelopes, amongst the other things that were offered to me was a horn of the animal

which the Dutch inhabitants refer to colloquially as the *duykerbok*, i.e. *Capra merga*: it answers exactly in every way to the figure published by Seba: it is 4 inches in length, angled upwards, striated, encircled for one third of the horn by some four or five wrinkled rings about the base: on the external face to the rear are some raised seams or rough angles, almost touching each other, so the horn is not altogether smooth; in fact behind it is almost flat and in front more convex and marked with more striae: it is a little inward-curving behind, and pointed. Moreover, that same person and numerous others who recognize and who hunt this animal told me that this *Capra merga* (*duykerbok*) has in the middle of its head a tuft of hair like a crest (*en kuifye*): the females amongst them have no horns. Then while seeking an explanation of the name *duykerbok*, I was told by way of response that this antelope passes a great part of its life in the fields and amongst the bushes of the plains; and if a hunter happens in his quest upon its lair it will take flight through the shrubs; after some time it will emerge, leaping prodigiously from the bushes so that it may see where the hostile hunters are, before its flight is continued unseen among the bushes until, after a long interval, it suddenly leaps again into view before plunging back into the brush. It is from this irregular progress that it has earned itself the name of *Capra merga* and not, as claimed by the learned Pallas, by whom the name is interpreted as *Capra nictitante*. The same supreme zoologist formed the opinion that the *Grimmia* was probably Kolb's *Capra Cana* (*greisbok*), which is by no means the case: this *Capra cana*, which is said to be identical with our antelope *Tragulus melanotis*, completely lacks the aforementioned tuft of upstanding hair, and the *Capra merga* is somewhat smaller; nor does it have horns like those the *Grimmia*.
And finally, with its long, converging horns, the Guinean *Grimmia* is rather smaller than that from the Cape, but in truth I cannot confirm this since I have never seen that animal.

[Note. Today *Sylivicapra grimmia*, duiker. Cf. Forster 1844: 384-6]

13. *Antelope leucophaea*

Capra variegata (*bontebok*) of Kolb, *Cape of Good Hope*, vol. II, p. 115; the *Guib* of Buffon, *Histoire Naturelle*, vol. XII, p. 327, pls 40 and 41 fig. 1 (horn); *Antelope scripta* of Pallas, *Miscellanea*, p. 8, *Spicilegia*, fascicule 1, p. 15; *Antelope jugata* of Pennant, *Synopsis of Quadrupeds*, p. 27.

Antelope with horns set rather close together, erect, with two angular faces marked by spirals, smooth at the tip.
The body nut-brown, streaked, with tufts of hair and with white patches.
When I was gathering together at the Cape of Good Hope all the materials for a natural history, there were offered to me, amongst other things, horns and part of a hide.
The skin that was sold to me is like that of a goat, nut-brown and marked with white patches; on account of the horns, it is called *bontebok*, i.e. *Capra variegata*, which animal is said to be about the size of an *Axis Bengalensis* and the horns were somewhat similar to the horns of the antelope called by Buffon *le guib.* Accordingly, the learned Pallas wished to correlate the *Capra variegata* with *A. pygargus*, but in my opinion the name must refer to our *Leucophæa*. In any case, antelopes of this kind are met with throughout Dutch South Africa.

[Note. Today *Tragelaphus scriptus*, bushbuck. Cf. Forster 1844: 386]

14. *Antelope dorcas*

Δοςκασ – Ælian, *Historia Animalium*, XIV, 14; *Algazel ex Africa* of Hernandez, *his. Mexic*. 893; *la Gazelle d'Afrique* of Buffon, quad. 45; *Capra dorcas* of Linnaeus, *Systema Natura* , 12th edn, vol. I, p. 96; the *Gazelle* of Buffon, *Histoire Naturelle*, vol. XII, p. 209, pl. 23; *Antelope dorcas* of Pallas, *Spicilegia*, fascicule 1, p. 11; *Antelope barbara* of Pennant, *Synopsis of Quadrupeds*, p. 33.

Antelope with smooth horns, annulated at the base, striated, backward-sloping, the tips bent backwards, naked; blackish streaks at the sides; wisps of hair at the knee.

[Note. Today *Damaliscus dorcas*, bontebok. Cf. Forster 1844: 386-8]

α Variety *Kevella*

The *Kevel* of Buffon, *Histoire Naturelle*, vol. XII, p. 258, pl. 26; *Antilope kevella* of Pallas, *Spicilegia*, fascicule 1, p. 12; *Antilope platycera* of Pennant, *Synopsis of Quadrupeds*, p. 34.

[Note. Today *Antilope kevella*, flat-horned antelope. Cf. Forster 1844: 387]

β Variety *Corina*

The *Corine* of Buffon, *Histoire Naturelle*, vol. XII, p. 261, pls 27 and 31 figs 3-4; *Antilope maculata* of Pennant, *Synopsis of Quadrupeds*, p. 37.

[Note. Today *Antilope corina*. Cf. Forster 1844: 387]

γ Variety *Pygargus*

Pygargus of Pliny, *Natural History* VIII. cap. 79; Buffon, *Histoire Naturelle*, vol. XII, pl. 31 fig. 6 (horn); *Antilope pygargus* of Pallas, *Spicilegia*, fascicule 1, pl. 10; *Antelope candida* of Pennant, *Synopsis of Quadrupeds*, p. 34.

[Note. Today *Antidorcas marsupialis*, springbok. Cf. Forster 1844: 388-90. Two drawings by Georg Forster survive in the NHM, nos 005018 and 032459]

δ Variety *Tzevian*

Tzevian thu. Olear. itiner. 237, & 276. 277 (German edition, published in folio, Hamburg, 1696); *Ahu* of Kæmpfer, *Amœnitatum Exoticarum*, p. 403, pl. on p. 407 (no. 1); *Dsheren, Caprea, campestris, gutturosa*, Gmelin 1751-2, vol. II, p. 103 & nov. Comment. Petropol. 5. 347. pl. 9. & pp. 36, 37; *Geizan* of Gemelli Cancri 2. 63; *Jairain* of Boullaye le Gouz, p. 247; *Ahu* of Mandelslo, *Voyages célèbres*, p. 2 pt. 159;[1] Antelope *sinensis* of Pennant, *Synopsis of Quadrupeds*, p. 35.

[Note. Today *Procapra gutturosa*.

Among the antelopes none has so many varieties as our *Dorcas*. Not only do the horns certainly vary in this species, but they show an astonishing variety in the nature of their conformation, as I have witnessed with my own eyes in the *Pygargus*. I have indeed seen an adult male, unquestionably of eight or nine years, in which the horn was very like those illustrated by Buffon (vol. XII, pl. 31, fig. 6), and which on that account were correctly related by the scholarly Pallas to the *Pygargus*; I have further seen other *Pygargus* with almost palmate horns, others lyre-shaped, and one female

[1] The only mention I can find of this animal in Mandelslo is on p. 88, where writes of '*ahus* ou anes sauvages' in Gujarat.

curved backwards: whence it is more than adequately demonstrated that in this species the conformation of their horns is insufficient on its own to apply to their characterization, and in truth other characteristics must be used to eastablish a stable characterization.

Dorcas, *Kevella*, *Corinna*, and *Pygargus* are coloured cinnamon, with oblique, drawn-out, brownish-black streaks on the sides from the shoulder to the haunch, ceasing where they meet the white of the abdomen: the flanks are white on the side, the tail tufted at the tip, black. These are constant characteristics of all the varieties which I have described.

As for those varieties which we know under the Turkish-Tartar name *Tzeiram* or *Dsheren*, they may relate to the *Dorcas* or may conceal a new specimen; up to this point I am uncertain about it. Their colour is undoubtedly similar to that of a roe deer, that is, distinctly reddish coloured like a stag and becoming almost cinnamon-coloured. The authors who have observed this species so far say nothing of the wide, dark wrinkle or furrow, nor of the <isjiourat**> which appears on the rump, which is generally whitish and the tail black. Consequently its identity remained in doubt up to the point where the scholarly Pallas, who was on these shores in Asia, where the *Tzeiran* lives, on his return imparted certainty to the scholarly world. In these circumstances, I would not wish to number the *Tzeiran* for certainty among the varieties of *Dorcas*.

In the *Dorcas*, *Kevellas* and *Corinnas* the knees are covered with hair, as I have also observed among the *Pygagrus*, of which I have seen more than twenty living specimens. It is true, however, that Buffon judged the *Dorcas*, *Kevella* and *Corrina* to be varieties of the same species, made separate and distinct by factors of climate and topography, differing in size, slight variations in colour, and the infrequency of spots. Regarding the *Pygargus*, I would venture the same to all right-thinking people to be a variety of the *Dorcas*; but however little our word may weigh in this dispute, I shall now describe this little animal so that the anyone who wishes may be allowed to make a judgement on the whole matter.

Antelope Dorcas and variety Pygargus

This elegant animal is called by the Dutch of the Cape of Good Hope *springbok*, (*Caprea saltatrix*). It inhabits the furthest interior parts of Africa and not the neighbourhood of the Cape of Good Hope, unless driven there through shortage of

water in upper and parched Africa. It lives in herds, feeding in groups of 10 to 50 thousand at a time; it is not very fearful of men. Lions, leopards, wolves, hyaenas and other carniverous animals prey on them, following them in groups of seven. First an individual group might be singled out, perhaps on the move to new and abundant feeding grounds, to fatten themselves after a lean period from want of food; from this place they will later try to regain upper Africa. After gaining the better pasture, the herd grows fat from day to day, but in the end they grow lean from lack of food. When men attack them on horseback or with carts, they set the herd running and cut into them, herding the antelopes with whips, and they kill many of them with cudgels when they are drawn forth by the need of food, or again it may be that they try to capture others alive, chiefly roe deer [?]. They are easy to tame and can be fed with bread, wheat and cabbage leaves. The adult males have fine, strong horns clearly marked with annulae. In the menagerie of animals bought for the East India Company I have seen a male of eight or nine years with powerful horns, perfectly annulated, somewhat nodular, with abbreviated tips (how this came about is uncertain); it was apt to butt, and unless it was kept under control with sticks and stones by the keeper of the menagerie, it used to attack everyone present with great force and bring them to the ground. Of all things its call most closely resembles a snore, or perhaps the grunting of a pig. To some extent the adult females were tame and would come up and take bread from the hand. The three-year-old adult males of the herd would butt each other with ferocity, but from among them a single female of that kind, sent by ship as a gift by the most noble and generous Baron de Plettenberg broke out; however, within a few days had become gentle and tame and would come and take bread and powdered tobacco offered from the hand. While in the wild they have a presentment of stormy weather and winds: they spring off the ground with enormous leaps in a certain manner, lowering their head and pawing the ground with their feet, arching their joints and their whole body into an arc and laying back the dark hairs on their rump, even as far as the flanks. When one leaps up, the whole herd will do the same. The males and females both have horns but, as mentioned above, they vary a great deal.

The body is about the size of that of a fallow deer, or perhaps an *Axis bengalensis*, and of an elegant form. The body is slender, the feet larger than those of the fallow or axis.

Head conical, oblong, and covered with hair. The nostrils are lunate, narrow, joined to the division of the upper lip, and where they connect with the little swelling of the humidary gland they are naked and black. The upper lip is united, with short bristles amongst the longer, greyish hairs. Incisor teeth in the lower jaw . . . Large eyes, with dark, black irises. Below the eyes, in front of the inner canthus, is the tear-duct or *ductus obliteratus* – a small, rounded opening. Ears almost the length of the head, markedly large, cylindrical at the base, narrow, pointed, and standing fairly upright; covered with tiny, grey-black hairs on the outside and on the inside with longer hairs arranged in groups of three.

Smooth horns with numerous annular grooves, naked at the tips, pointed, black, and standing forward at an angle to the forehead (not upright).

The neck is narrow and slender; the body is narrow, standing slightly higher at the hindquarters than in front. The hairs on the back are in line, growing towards the hindquarters, but around the middle of the back they grow upwards at an angle to form a parting, which for its pleasure the animal tries to flatten out as far as the furthest converging cinnamon-coloured hairs, and in this way carefully to part it obliquely as far as the whitest cone-shaped patch at the flanks, and then to bring the hairs together again. The legs are rather slender and elongated; the knees are naked (i.e. not covered with tufts of hair) but with hairs pressed densely together. The hind limbs appear somewhat bow-legged and held apart. The hooves are cloven, black, square, pointed, with small spurs. The tail is sparse, with a tuft of hair at the tip.

The head is white, upright, and forming a cinnamon-coloured arc in front. From the eyes to the junction of the mouth a dark, nut-brown line extends, which in some instances descends, cinnamon-coloured, almost as far as the nostrils.

The neck, body and legs are cinnamon (i.e. dark-brown) coloured. A dorsal line, starts in the middle of the flanks; the abdomen and interior parts of the legs are white. Narrow, oblique, black-brown lines run from the haunches to the thighs, stopping at the junction with the white of the abdomen. The tip of the tail is black-tufted. The flanks are dark next to the white area.

[Note. Today *Pygargus dorcas*, bontebok. Cf. Forster 1844: 388-90]

15. *Antelope tartarica*

Κολος Arab. 7. Κωλος. Athem. Deipnosoph. 5; *Colus* of Gesner, Historia Animalium, De *Quadrupedibus*, p. 361 [*sic*]; *Suhak* of Rzaczinsk 1. hist. Nat. Polon. 2. p. 24; *Ibex imberbis* of Gmelin, Nov. Comment. Petrop. 5. 345. pl. 19. 7. 39; Saiga, Forster, *Specimen historiae naturalis Volgensis*, p. 344; Bell's *Travels* vol. I, p. 43 [?41]; *Capra tartarica* of Linnaeus, *Systema Naturae*, 12th edn, vol. I, p. 97; *Saiga* of Buffon, *Histoire Naturelle*, vol. XV, p. 98, pl. 32 fig. 2 (horn); *Antilope sythica* of Pallas, *Spicilegia*, fascicule 1, p. 9; *Antelope sythica* of Pennant, *Synopsis of Quadrupeds*, p. 35.

Antelope with smooth horns, annulated at the base, backward-sloping; the tips are naked, bent backwards, translucent yellow. The upper lip is elongated.
I have little to add on this species, except that it is distributed even into Moldavia, Walachia and Hungary and feeds together in herds of up to 10,000. In winter they are driven by hunters into enclosed valleys covered with deep snow; the females are easily killed and butchered, all together.

[Note. Today *Saiga tartarica*, saiga. Cf. Forster 1844: 390-1]

16. *Antelope rupicapra*

Rupicapra of Pliny, *Natural History*, . l. 8. 15; *Rupicapra* of Gesner, Belon, Aldrovandi, Olearius, Dodart, Scheuchzer, Wagner, Ray; *Capra rupicapra* of Linnaeus, *Systema Naturae*, 12th edn, vol. I, p. 95; *Chamois* of Buffon, *Histoire Naturelle*, vol. XII, p. 136, pl. 16; *Gemse* of Klein, *Quadrupedum*, p. [17]; Ridinger, *Kleine Thiere*, p. 72; *Wilde* Khine 25; *Antelope rupicapra* of Pallas, *Spicilegia*, fascicule 1, p. 7; *Capra chamois* of Pennant, *Synopsis of Quadrupeds*, p. 17.

Antelope with smooth horns, naked, black, erect, the tips hooked; with a hollow behind the horns and the knees covered with tufts of hair.
Quite correctly, in my opinion, the scholarly Pallas bids us place the *Rupicapra* amongst the antelopes and arguments can be produced in favour of this opinion. What is certain is that the *Rupicapras*, *Capras* and *Antilopes* are interrelated. Both sexes carry horns.

[Note. Today *Rupicapra rupicapra*, chamois. Cf. Forster 1844: 390-1]

17. *Antelope glauca*

Capra cærulea of Kolb, Cape of Good Hope, vol. II, p. 114 (*blauebok*); *Antilope leucophæa* of Pallas, *Miscellanea*, p. 4; *Spicilegia*, fascicule 1, p. 6; *Antelope glauca* of Pennant, *Synopsis of Quadrupeds*, p. 24.

Antelope with smooth horns, annulated, curved, pointed, naked, erect, and black.
The Dutch inhabitants of the Cape of Good Hope call this the blue antelope (*blauebok*) and assert that it is rarely met with in the interior of Africa. While living it so displays the hair of the body that the blue colour appears much more marked, with the appearance of a smooth, silky-textured fabric (in English velvet, in French *velours*); but when slain the hairs of the animal die down and render the colour a much lighter grey or ash-grey colour. The head and the dorsal line are blackish; the abdomen, legs, patches under the eyes and tip of the tail are white. Both sexes carry horns. They are somewhat larger than a fallow deer.
Kolb appears to be in error when he attributes a beard to this antelope.

[Note. Today *Hippotragus leucophaea*, blue antelope. Cf. Forster 1844: 391]

18. *Antelope bezoartica*

Pasen capricerva of Kæmpfer, *Amœnitatum Exoticarum*, p. 398, pl. on p. 407 (no. 2); *Capra bezoartica* of Gesner, *Icones Quadrupedum*, p. 38 [*sic*]; *Hircus bezoarticus*. Aldrovandi, *Quadrupedum Bisulcorum*, p. 756; *Capra bezoartica* of Linnaeus, *Systema Naturae*, 12th edn, vol. I, p. 96.

Antelope with smooth, rounded, curved, annulated horns; the throat is bearded.
A great many among the more recent authors that I know of have disagreed (with what consensus I do not know) as to whether the *Antelope pasen* or *bezoartica* should be considered to exist with straight horns, due to an error which appears to have been introduced by Bont and Major, who attribute it on this basis to *A. gazella*; I have discussed it with many [naturalists] since that time, but they appear disunited since one among them with the eye of a judge, Kaempfer, claimed their horns to be curved. What is certain is that different opinions are held throughout the world of the animal Kaempfer identifies as *Pasen Buffonii* and the *A. bezoartica* of the learned Pallas and

of Pennant, as confirmed by the beard of the *bezoartica*. Nor would those have gone badly wrong who place this obscure animal amongst the *Capras*.

Amongst those antelopes of the Cape of Good Hope which are accessible and which have been recorded by the inhabitants, I have identified ten certain and determined species, which is a major achievement, so that in future if learned naturalists wish to ascertain anything about a certain antelope the will know under what name it should be sought. One species, called *rehbok* (*Caprea*), corresponds to no known species: nor could I ascertain anything about it except for one thing – that the hairs were very soft and slender, resembling wool, and not as among the rest of this kind, small and rigid.

[Note. Today *Antilope bezoartica,* Indian antelope. Cf. Forster 1844: 392]

Yerbua capensis

The little animal which we shall now describe appears hitherto to have been unknown to zoologists. The inhabitants of the Cape commonly call it the mountain hare, for it lives for the most part in the foothills, in burrows. We, however, examining a little more carefully several animals of this type, perhaps known here and there in the world but unexamined in this species by the best zoologists, have applied the general rules of nature to them. At first the incomparable Linnæus placed them among the mice, while Gmelin, in the *Acta* of St Petersburg put them amongst the rabbits or hares. They do indeed have characteristics which seem to relate them to one of these species or the other, but there are others which mark out this little animal from all other kinds and allow them to be distinguished from all other species. The elongated hind legs, and in particular the elongated tarsi with their hard calluses on the undersides, their very short fore paws serving as hands and seldom or never used to slow or speed up its progress, and moreover the tail densely covered in hairs and in certain species tufted, distinguish it from the mouse and the long tail separates it too from the hare; thus we have here a new genus. In the past it was identified under the name of αςκτομυζ or else Μυσζ διπ*ζ, or even χοιρογρυλλοζ. In Hebrew holy scripture it was undoubtedly called *Sapan*. The Arabs of that time (and still today) call it *Yerbua*, and accordingly we therefore will adopt that name as the best-known and most suitable.

Yerbua

Mammal; dormouse.

Front teeth . . .

Ears long, wide, naked.

Prominent, large eyes.

Fore legs very short.

Hind legs elongated, callused on the underside.

Elongated tail, hairy (often bushy).

They are always burrowing, never at rest; they rarely or never use their fore paws for holding or moving along, and they jump with their hind legs. Their call is like that of a hare, or like a grunt. Their lips are always in motion; they use their fore paws as hands, conveying food to the mouth with them. During the day they hide, dozing, and at night they catch their food and roam about. In the winter they are remain torpid in their burrows. They live on seeds and grains. They defend themselves by biting and with their claws. They make enormous leaps by bounding off their hind feet and extending the femora. The animals included in this new genera are six in number, including, of course the yerbua, which Linnæus presents under the name *Mus jaculi*, and other call *Mus longipes*; one such is noted in the works of Gmelin from Siberia, where it is called *Alagtaga* in the native language, to which little animal the illustrious Buffon would shortly apply the name *Tarsier*.

The generous Pennant, my great friend, described one of them from the museum of the most distinguished anatomist Hunter, brought back from India. The most generous Joseph Banks brought a new species, exceptionally tall, all the way from New Holland, called by the natives a kangaroo, of which I myself first saw a new specimen at the Cape of Good Hope, which was examined by me and drawn by my son before being sent to England, which was called locally *Capensis*. Four yerbuas have tails bushy at the tip, namely the *Tarsata, Capensis, Sibirica* and *Jaculus*; two have longer hairs at the tip, namely *Kanguru* and *Longipes*. Other specific differences relate to the digits, for the *Tarsata* has five digits on the fore and hind paws, the *Capensis* has fore paws with five digits and four digits on the hind paws, *Kanguru* and *Sibirica* have five-toed fore feet while *Jaculus* has fore paws with four digits and three toes on the hind feet – sufficient differences to make these new species.

Yerbua capensis

Yerbua with a bushy tail, five digits on the fore paws and four toes on the hind feet. Habitat in the mountains around Stellenbosch, in the foothills of which they make their burrows. They produce three or four young and live on grasses, cabbage leaves, and when tame eat bread, wheat and other vegetables: they pursue and catch their food at night while roaming about; during the day they are overcome by sleep. In the winter they are said to remain torpid in their burrows, in order to keep life going. They are never still, their forelegs are rarely if ever used to help or restrain movement but the paws take the place of hands: they transfer their food with them, and wash their face and body. They scratch, and defend themselves with their claws. The hind legs, with elongated tarsis, help their walking and creeping about with leaps, and when they are pursued they make enormous leaps by pushing off on them. The also bite when defending themselves, and they grunt or emit a tremulous sound like a she-goat. As they move about their lips are working, as though they are ruminating. They sit upright and look about them, pricking up their ears to listen out. In their timid behaviour they resemble in many ways the hare, and indeed they are called by the inhabitants of the Cape of Good Hope *Berghase* (*Lepus montanus*).

They have a body about the size of a common hare, dark yellowish and bay-coloured below.

The head is laterally narrow or sub-conical, the front of the face in a prominent curve. The mouth has grinders below and more elongated and regular teeth above. Two incisors in either jaw, projecting, close-set, closing on each other, parallel, incurved, square, the tips obliquely cleft and truncated. The upper ones project from the jawbone through the upper lip, the socket below them closed, with no sinus that I know of going down into the bone internally. The lower ones project similarly from the lower jaw. Canines, none. Molars . . . The mouth is small, in line. Between the mouth and the closed foramen below the upper incisors is a transverse membrane, set out with an opening beneath the teeth as with the upper lip. Narrow, smooth tongue. Wrinkled palate. Nostrils rounded, pinkish, naked. Lateral eyes, large and protruberant; nocturnal. Ears with a length almost that of the head, large, wide, shell-like, with veined, naked tips.

Trunk with a narrow thorax, swelling around the abdomen and hind legs. Four pectoral teats, closely set, beneath the hind legs; but small and inclining backwards; large opening, closed, scarcely prominent, rounded, reddish, contractile. Towards the

inside is the anus and genitalia, the anus behind and the glans penis reticulated and warty; the whole penis points backwards.
Feet: the forepaws have five digits, very short and thin; the three middle digits are of equal length, the outer ones shorter. On the underside is a prominent callus, tough and naked, facing the inner part of the leg but with a lateral lobe on the outside, deeply divided, naked on the outside and hairy on the inside. Strong, pointed claws, a little incurved, almost the length of the digits.
The hind feet are very long, strong, and with four digits, the metatarses and tarses being elongated.
The middle digit longer, the two either side short, the end digit smaller still. Square callus under the calcaneum, on the outer side. The claws are short, strong and pointed.
Very long tail (longer than the body), covered with long, dense yellow hair; bushy, long black hair at the tip of the tail.

Measurements

From the tip of the nose to the base of the ears	4	From the shoulder to the front paws or feet, I make it	3
From the ears to the base of the tail	12	Tibiae	3
Tail	17	Digits and metatarsals	2
Ears	3	Claws	¾
Femur to hind foot	4½		
Tibiae	4		
Metatarsals and digits	5		
Claws of the middle digits	½		

[Note. Today *Dipus capensis,* Cape jerboa. Cf. Forster 1844: 368-70. Hoare 1976: 344, notes that two accounts of this animal, one in Swedish and one in German, were published in 1778 by Forster in the proceedings of the Royal Swedish Academy of Sciences. A drawing by Georg Forster survives in the NHM, no. 005013]

Fossores

When I first arrived at the Cape of Good Hope in 1772 I wanted to examine the moles of this region, and shortly after making this resolution I acquired a live specimen, which over two days I observed, described and drew. While examining it I realized that the animal which the inhabitants call *Talpa* is indeed very different from the *Talpa*, whether in dentition and structure of the mouth, and that the diet of this genus is solely of vegetables; they belong to the order *Gliride* and since they do not

correspond with the carnivores they should be placed in this order. The inhabitants of the Cape of Good Hope treat them as food and count them a delicacy, using them to give a strong taste which they greatly value, so that many of them make use of this kind of food. The moles dig up bulbs of various kinds of sorrel. Their subterranean burrows are not interconnected, but appear to open up without any real order. They venture abroad at night to find their food. They have a foul smell, and are infested with fleas. Occasionally they will bite: I would leave them tied up in their hutches for some hours and one which was stronger severed a leg from each of two others. Their burrows dug below the ground can cause difficulties when riding.

The genus Fossor

The dormouse.
The front teeth are placed close together, projecting on either side outside the mouth.
Two upper teeth, quite short, truncated.
Two lower teeth, elongated, curving backwards, oblique at the tip, cleft and truncated.
Canines none, molars eight, in either jaw.
Eyes tiny.
Paws with five digits.

Fossor capensis

Eared *fossor*, dun-coloured above, white below.
La Caille, *Journal,* p. 299; *Taupes fort grosses*.
Description. Body about the size of a marmot, squarish, heavy.
The hair above is pale tawny, woolly, dark at the base and pale at the tip; the underside of the body overall and the frontal patch (on some of them) is white.
Head conical, flattened; the neck joining the body is thick and short.
Tiny eyes. Short ears, slender, with a conspicuous opening. Muzzle abbreviated, the nostrils small.
Mouth under the head, pulled back between the front teeth, oblong and in line. The front teeth placed outside the mouth. The upper teeth are more straight, half the length of a thumb, pointing towards the ground, square at the tip. The lower teeth 1½ thumbs in length, growing up in a curve, square at the tip, obliquely cleft, truncated. No canines. Molars sixteen in either jaw, eight (four on either side) more flattened.

Very short feet with five digits. Both fore and hind feet are naked on the upper surface with sparse hairs, with comb-like bristles at the margins. The claws of the fore paws are long and inward-curving, apart from the two outermost. Those of the hind feet are really short, more recessed, blunted.
Tail the length of a thumb, covered all over with long bristles.

[Note. Today *Bathyergus suillus*. Cf. Forster 1844: 32. A drawing by Georg Forster survives in the NHM, no. 006021]

Fossor leucops

Eared *fossor*, yellow-grey, with white spots on the ears, eyes and crown, with a dark band.
Body the size of a European mole, or a little greater; oblong, muscular, smooth, with short feet.
Head large, ovoid, sloping downwards, flattened at the top, convex. The muzzle is abbreviated, raised on the upper side and from there hollowed at the blunted area. Nostrils rounded.
Mouth underneath, narrow, elongated. Lips fleshy, lateral.
Front teeth in or thrust out from the mouth opening. The lips are cleft; where they meet, above, two teeth close together, extended, set in the jaw under the nose and breaking through the lips, cone-shaped, rather square, a little convex on the outside, as long as the snout. Lower teeth, two below the mouth set in the lower jawbone, close-set, rising upwards, four-sided, obliquely cleft at the tips. Canines, none; molars . . . The tongue . . .
Tiny eyes, black, banded with a white patch, greater than in the *Fossor Capensis*.
Lateral ears, behind the eyes, with a small opening; no external ears, unless you wish to take as external ears the fold of the skin, thickly covered with hairs on the rear edge, above the fold.
Thick bristles of several kinds, on the depression between the eyes and the snout.
Feet short, with five digits, the tarses extended. The fore paws are naked with large, double-callused heels. The digits are short and hairy; the claws are conical and very short. Second intermediary digits longer than the rest (the remainder as found in *Fossor capensis*).
Tail short, smooth, set at an angle, covered with sparse long hairs.

The hairs covering the whole body are downy, soft, and slightly upright.
Large white patch on the face, in front of the rising angle, encircling the snout and the mouth; the white is encircled by black. A small white patch encircling each eye. Another white spot on the crown – and then other large white patches encircling either ear.
Fore and hind feet pinkish-white. The whole body is coloured yellow-grey above (i.e. pale yellow and light grey mixed), the hairs dark at the base.
The underside is mostly grey.

[Note. Today *Georgycus capensis*. Cf. Forster 1844: 364-5]

Falco serpentarius

Falcon (yellow cere), the cere and eyelids yellow, the legs red and extremely long; double crest on the neck, tail feathers sickle-shaped.
Habitat throughout the Cape of Good Hope: it rarely flies, but runs at speed aided by the beating of its wings. Their preferred diet is snakes, which proliferate all over Africa: they grasp them strongly in their feet and attack them, and, having crushed them and dislocated some of the vertebrae, they kill them and devour them. For that reason, Nature has fashioned the body and legs of these unusual birds to so that they can rid this region of the snakes that infest it and are not harmed by them. The Dutch inhabitants in their scholarly writings call them in Latin *Serpentaria*, while the unlettered common folk call them *Sekretarie-Vogel*. This bird evidently is linked to the orders *Accipitra* and *Gralla*: and while I used to suspect from illustrations that our bird was to be placed among the *Palamedeas*, in fact, having examined it and studied its habits, I would surely risk affirming that it is indeed closely related to the falcons but may perhaps form a new genus. I brought back with me from Africa two living specimens of this bird, a male (I believe) and a female, which were fed with meat during the long journey. When the bird is frightened or angry, it raises its crest. Its call is like the chirping of a falcon, or it may sound like a coarse rattle.
Its body is about the size of *F. melanaëti*, but is much taller and with very long legs. The beak is stubby, almost triangular at the base and hooked at the tip, black, turning blue at the base and the tip; the rim is complete, extending all the way back to the angle of the throat and reaching even as far as under the eyes. The upper mandible extends much further than the lower, which is rather flat. The tongue is lance-like,

pointed . . . The nostrils are within the cere at the base of the beak, oblique, ovate, large, wide. Cere golden, with sparse dark bristles; it encircles the eyes.
Eyes towards the front, large. Eyelids golden, with stiff eyelashes above and below, stout, dense, spiny and black. Nictating membrane blue; the iris golden. Bristles below the eye all of a single kind, stiff, spiny, black, swept back.
Very long legs (i.e. much longer than the body); a wader. Extended femora, covered. Knees naked behind. Tibiae about the length of the femora, reddish, slender, strong, lightly grooved to either side and covered with scaly skin.
Metatarsus strong. Digits covered with reddish scaly skin, four in number: three in front and one behind attached by a short membrane; the central one is about the length of the beak at the angle of the jaw, the outer ones about two-thirds the length of the central and the rear one about a quarter. The claws are horny and powerful, straight and curving inwards; that at the rear is slightly hooked.
The head is rather flat, with grey hairs; the face has sparse, yellow-grey feathers.
Elongated conical neck; the neck feathers grey, and then yellow-grey. The crest swept backwards, the feathers at the nape (or the upper part of the neck) stiff, flat, black, in two rows; those of the head are longer, in two rows, and erectile at will. (In some smaller individuals the tips of the feathers are white: perhaps sexual differentiation?)
Males: neck, throat, breast, abdomen and lower part of abdomen formed of yellow-grey feathers. Back, shoulders and upper wing feathers all grey (in a small number of individuals a few black feathers around the alula and then fringed with yellow-grey at the tip). Black at the thighs, the feathers fringed with pale red.
Black rump, with tufts of white feathers, the haunches covered with wide, yellow-grey feathers, flecked with black.
Complex wings, extending beyond the rump. Wing feathers all black, the underside and the tail feathers yellow-grey; the outermost are white, flecked with black.
Tail feathers elongated, sickle-shaped, pointed, white, flecked with black, white at the tip.

[Note. Today *Sagittarius serpentarius*, secretary bird. A watercolour painting by Georg Forster (completed by William Hodges) survives in the NHM, no. 005032]

Callaeas

Magpie.

Beak inward-curving, arched over the lower mandible, naked.

Nostrils sunken, partly covered with sub-cartilagenous membrane.

Short tongue, serrated, chisel-like, parallel-sided, sub-cartilaginous.

Legs on which it walks about, carinated behind.

Fleshy dewlap at the angle of the throat.

Callaeas cinerea

Callaeas, grey-black all over; at the angle of the jaw is a rounded, golden dewlap.

Lives in both the islands of New Zealand; it walks on the ground and roams about in the trees and bushes. It sings with a piping song, and gives forth in the trees as though it were murmuring. It feeds on berries, insects and, I was told, also on small birds. Its flesh is quite tasty.

Body the size of a jay, grey-black all over.

The strong beak curves inwards, arching over the lower mandible; flattened on the face, naked, black.

Nostrils sunk in the scrobiculate membrane: the openings of the nostrils stand up a little, rounded, part covered with a half-round sub-cartilaginous membrane.

At the angle of the jaw is a fleshy crop, rounded and pendulous, dense, golden-yellow at the start, with a rounded patch of blue. Short tongue, parallel-sided, with three saw-like sharp notches in the middle, the remainder twice as long, with a chisel-like edge, sub-cartilaginous.

The irises of the eyes bluish-black.

Large ears, standing open, sparsely covered with feathers.

Cloven-footed, ambulatory, thin legs carinated behind, each striped at the sides, black.

Claws dense, hooked, black, that at the back longer.

The head, from the face to the angle of the throat and from the nostrils to the eyes, is covered with close-set, upstanding feathers, very smooth, forming a border to the face.

Wing and tail feathers black; primary feathers 1-3 shorter than the rest, 4-18 irregular; not remarkable in relation to the size of the body.

Tail-feathers twelve, the tail rounded.

Measurements

From the tip of the beak to the tip of the tail	14½	[From the tip of the beak] to the claw of the middle toe	15½
The wings expanded	18½	Along the front of the beak	1¼
From the beak to the swelling of the angle of the throat	7/10	From the beak in front of the fleshy area	1
From the tip of the beak to the centre of the eye	1⅗	Total length of the crop	1
Width of the crop	7/40	Legs, including the femora	7
Naked part of legs	4½	Middle digit	1½
Claw of middle digit	½	Tail feathers	9¼

Observation 1. From the arched structure of the beak this bird is probably to be related to the *Gallinas*, although the appearance of the rest of the body, the large feet, and the curved outline of the beak perhaps appear to recall the *Picas* and to connect it to that order of birds.

Observation 2. We bestow the name *Callaeas* or *Καλλαιον* on this genus, on the basis of the fleshy crop at the angle of the throat.

Observation 3. The inhabitants of New Zealand call this bird *Roghòk*.

[Note. Today *Calleas cinereus*, kokako. Cf. Forster 1844: 74-6. A drawing by Georg Forster survives in the NHM, no. 005052]

Certhia cincinnata

Tree-creeper, iridescent greenish-black all over, the feathers somewhat curly at the throat, the penultimate wing feathers white.

Habitat all over the islands of New Zealand and called in those islands *Règho Etoòce*; The inhabitants of the islands of the Pacific Ocean are in the habit of making shining spheres for collars, called *Pòhe*, and the English sailors call this the *Pòhe*-bird, as the curly feathers at its throat resemble those shiny balls. This bird is highly gregarious; it feeds on insects and on the nectar of flowers, or in captivity on bread, sugar and malt. It is imitative and fractious; it cleans itself in the dusty sand and washes itself in water; it is combative, garrulous, with a sweet piping voice. In flight it is ponderous and noisy, as it swoops restlessly from tree to tree. It nests in the bushes, the nest made from small twigs and moss; for the most part it lays four eggs. If food is offered to it which is pleasing to its palate, it takes it elegantly and daintily.

Body about the size of a common starling, all over bluish-black, with a greenish lustre.

Beak curved, narrow, sharp-pointed, long, sub-triangular, black.

Tongue blade-like, the tip like a very long brush.

Eyes iridescent, deep black.
Feet black, elongated, slender, carinated behind.
Claws flattened, slightly hooked, black, those at the back somewhat longer.
Under the throat on either side a bunch of curled, white, elongated feathers.
On the neck, as far as the part between the shoulders, several feathers formed at the base, with white quills and tongue-like tips.
Rump of a highly shining steely colour.
Flight feathers of the wings eighteen, of which the first three are shorter than the others, the remainder of unequal length, all bluish-black, or shining steel-coloured.
The second-last tail feathers have tips with bars of white marked with white bands.
Tail feathers twelve, of shining bluish-black; the tail rounded.

Measurements

From the tip of the beak to the tip of the tail	11½	Legs including thighs	4½
From the tip of the beak to the claw of the middle toe	11	From exposed part of leg to claw of the middle toe	3
Wings extended	17	Claws of the middle digits	⅖
Beak to the face	1	Tail	4½
Beak to the angle of the throat	1⅖		
From the tip of the beak to the middle of the eye	1¼		

[Note. Today *Prosthemadera noveseelandie*, tui. Cf. Forster 1844: 78-9. A drawing by Georg Forster survives in the NHM, no. 005061]

CHIONIS

Jackdaw
Beak concavo-convex, inward curving on either side, flattened, very solid at the edge, horny cera at the base, the edge overhanging irregularly.
Nostrils oval, oblique, the nasal passages partly covered with horny cera.
Tongue cartilagenous, blade-like, the tip sharply truncated, the base irregularly arrow-shaped. The palate covered with backward-facing bristles.
Face and orbits naked, with short eyelashes.
Feet with four digits, cloven, with a bare, almost boney callus above a feathery tuft.

I cannot relate this kind of bird to any other noted hitherto, so I have come to consider it best to establish it as a new genus, although it seems to me to be closely related to

the *Fulicas* and to be connected to the genera *Grallas* and *Picas* and probably also to the *Gallinas*. It has its food from the sea (unless I am mistaken), from shellfish. It invariably passes its time on rocky ledges close to the sea and within the very wash of the waves; they gather in flocks gaping for their prey by the tidal pools. Their flesh is very strong-smelling.

On account of the snowy-white colour of its wings and of the whole body, I gave it the name *Chionis*.

Chionis lactea

Chionis

Lives on rocky ledges washed by the sea. The first mention of them is contained, I believe, in the *Travels* of Bougainville, who placed them among the petrels, as did Pernetty in his *Travels*; but it is certain that they have nothing in common with the petrels. Snowy petrels are found in the Antarctic Ocean, but they do not have a horny pinkish beak, but rather black; it is therefore my belief that in reality Bougainville had our Milky Chionis in mind.

Body the size of a domestic pigeon, or a little larger.

Beak concavo-convex, incurving, laterally flattened, with a blunt tip, the mandibles of equal size, the edges strongly incurved on either side. The upper mandible has a convex back, curving downwards on top, laterally flattened, blunted at the tip, with very strong, rather sickle-shaped edges: the lower one is convex below and downward-curved, laterally somewhat flattened, with a blunt tip, strong edge, incurved to form a backward-facing arc. Both mandibles have a sulphurous or greenish-yellow base, horny and red (or the pale colour of human nails); the back, bottom and tip of the beak are black. Horny cera from the face to the nostrils reaching the beak, with irregular outlines, rounded on the back of the beak; above the nostrils it runs sideways at the back into an angle, then again towards the edge as far as the sub-pendicular. Tongue loose, lanceolate, cartilaginous, with a groove-like hollow in the centre and the tip bluntly abbreviated; the base irregularly arrow-shaped and fringed on the underside. The palate angled and for three-fifths of its length covered with horny bristles, conical and rigid, bent backwards; with a perforated groove at the back, its edges acutely serrated towards the rear.

Nostrils oval, oblique, the nasal passages partly covered by a sheet of horny cera.

Eyes devoid of lashes, with milky teat-like growths around the edge of the face. Head with a narrow band at the junction of the back of the beak and above the eyes and also from the angle of the throat, below the eyes, stretching as far as the ears.
Feet adapted for walking, four-toed, cleft, dark blue and granular.
Femora half covered; the knees naked.
Tibiae rounded, of medium length. Three digits in front, that at the back very short, on the inner edge; the middle toe in line with the tibia, the outer almost covered with skin (as in *Haemaptopede ostralego*), the inner of the same length, cloven. The claws are incurved, blunt, black, convex on the top and hollowed underneath (almost as in the *Gallinaceae*).
A bare, milky, almost boney callus, above a feathery tuft.
The body is covered all over, like the wings and tail, with milky white feathers.
The wings when folded with the length of the rump or a little longer, the second flight feather longer than the rest; twenty-six wing feathers, primaries ten, secondaries sixteen.
Rounded tail; twelve tail feathers.

Measurements

From the tip of the beak to the end of the tail	15½	Legs including femora	7
From the tip of the beak to the claw of the middle toe	17	Legs, naked parts	4½
Wings extended	32	Beak to the face	1 3/10
Tail	5	Beak to the angle of the throat	1 4/10

[Note. Today *Chionis lactea*, pale-faced sheathbill. Cf. Forster 1844: 330-2]

Anas pteneres

Duck, dark grey above, speckled below and with a white head. The hard skin of both wings is naked.
Habitat in the region of the [Straits of] Magellan. They rear four or five young and are monogamous; both parents look after the young. Eggs green. They build their nests on rocks among the thickets, from straw, from stalks, and from feathers plucked from themselves. If men approach these ducks swimming in the sea, they do not fly off; indeed we have never seen any of them flying, but they beat the water with their wings as though with oars and in this way they very quickly flee over the water, almost more quickly than if they could fly with their wings.

Their flesh is oily and insipid, with little flavour. They weigh over 16 pounds.
The body is equal in size to the largest of their kind.
Beak sub-cylindrical, blunted oblong, convex above, with lamellar or toothed edges, (greater in size above, negligible below).
Upper mandible elongated, high on the face, becoming flat as it descends. The nail is incurved and black, unlike the rest of the mandible (in which are placed the nostrils, with lunate spots, almost in line with the face, black), which is orange. The lower mandible is straight and flat, with a groove below, to both sides of which it converges towards the back; raised up, orange, the tip flecked with black. Fleshy tongue, grooved along the middle and lobed at the tip, robust, blunted; the lateral margins are transversely grooved, with *lobulis ciliatis*. Palate a little wrinkled, carinated in the centre. Nostrils around the middle of the beak, with ovate, open nasal passages. Eyes with naked, orange eyelids. Irises blood-red. Feet four-toed, webbed, orange above, sooty-black below. Femora covered, the knees naked. The tibia are shorter than the middle digit; digits 3 are webbed, with a sooty-black membrane towards the joints; outer phalanges 4, middle 3, inner 2, a lateral membrane towards the outer digit, the rear short, provided with a loose membrane at the rear (with no rounded callus). The feet are all sooty-black; the claws are black, the central one broader and larger, all blunt.
The head is a muddy white, with tiny dark linear spots. The area around the eyes is white, the collar around the neck a silky-white. The lower parts of the neck and breast, back and rump are dark grey. The anus at the rear of the abdomen, thighs pale yellow.
When folded, the wings barely reach the rump. Twenty-six flight feathers, the secondaries long, primaries 1-10 dark grey. The first secondary is dark grey on the rear face, with the edge, the tip and the inner face white; second secondary on lower rear face spotted with dark grey, otherwise white; secondaries 3-10 white, 12-16 dark grey. Flight feathers all dark grey.
Rounded tail; twenty tail feathers, dark grey.
Female: head and neck grey, remainder grey but more sooty than in the male; the area around the eyes is white, the remainder of the body, the wings and the tail as in the male. The whole of the body somewhat smaller than the male.

Measurements

From the tip of the beak to the end of the tail	30	Legs including femur	11½
From the tip of the beak to the claw of the middle digit	34	Legs (naked part)	8
Wings extended	42	Beak to face	2½
Tail	4½	Beak to angle of the throat	2 9/10

[Note. Today *Anas pteneres*, Fuegian steamer duck. Cf. Forster 1844: 338-40]

Sterna serrata

Tern with a forked tail, the body black on top, white below, on the face, and at the tips of the wing feathers.

Habitat in the region of New Caledonia, around Syrtes, and shot with short muskets.

Body about the size of a common tern, or a little larger.

Beak in line with the head, a little curved, bordered with black for the greater part in front. Mandibles of equal size, with serrated edges. Tongue cartilaginous, with a pointed, cleft tip, somewhat shorter than the beak. Nostrils oblong. Eyes with dark irises. Feet black, with three broad digits, the rear short. Claws black, hooked, serrated in the middle on the inside.

Upper body: feathered crop and the line of the neck, black. Face, knees, throat and neck (except for the line around the neck), breast, abdomen and thighs, white.

When folded the wings align with the tail feathers. Flight feathers twenty-seven, dark grey, the first very long, sooty-black at the roots. Underside of the wings sooty black.

Tail forked; twelve black tail feathers, the extremes white on either side, with the tip of the underside feathers dark. Underneath, sooty black.

Measurements

From the tip of the beak to the end of the tail	16¼
From the tip of the beak to the end of the claw of the middle toe	11¼
Wings extended	34
Tail	6 1/8
Legs including femora	3½
Beak to the angle of the throat	2¼
Beak to the face	1⅝

Remark: this bird appears to link the terns with the pelicans.

[Note. Today *Sterna fuscata*, sooty tern. Cf. Forster 1844: 276-7. A drawing by Georg Forster survives in the NHM, no. 005110]

Aptenodytes hypnerotia

Genus Aptenodytes
Goose bird.
Beak straight, a little flattened, share-like. Upper mandible with an incurved tip, obliquely grooved along its length; lower mandible with a truncated tip.
Nostrils linear, small, in the groove of the beak.
Palate and tongue thickly covered with a number of rows of bristles, flexible, facing backwards.
Feet closely linked, four-toed, webbed, with all the digits at the front, the last one separated; the third or innermost is supported by a lateral membrane; powerful talus or calcaneum.
Wings with feathered flaps, covered with a membrane and found with little feathers but with no flight feathers.
This genus belongs to the southern world, while the auks belong to the northern regions. All the auks that I know of have flight feathers, but our birds all have flipper-like wings which they use frantically to paddle themselves, especially underwater. The feet of all the auks are three-toed, those of the *Aptenodytes* four-toed, three of the toes webbed; they are shorter and have a membrane running down to the inside edges of all three toes. The toes are stout and the feet have a strong talus or calcaneum behind, covered over with a rough membrane, which is better and more effective in enabling them to stand upright and climb in and out of the slippery or frozen pools by the edge of the sea.
The feathers all over its body are formed in an unusual way. When it wishes, the feathers of its lowest part adhere with its downy feathers, which are loose and very soft. The quills of these feathers are dense, flat, and concave on the exterior; from them extend radii on either side, lying parallel to these broad feathers. At the tips the radii in the feathery parts of some of the plumes are divided, each tip forming bristles resembling shining silk; from this all the birds of this kind have the appearance of being clothed in silk. The feathers are short, strong, very dense and lying close to the body, from which they combine to form an exterior that is very soft, particularly smooth and compact, and totally resistant to water – a primary necessity of this genus, since the *Aptenodytes* live their in seas, which are often stormy, habitually crossing

immense stretches of ocean by swimming. A peculiarity of theirs is that no matter how great a distance they may have passed under the waves they emerge with a jump, as though propelled from the water on to the shore, and from the same spot go head-first back under the water. They live in flocks; during the time of the moult and of mating they compete for territory near the ocean, when most of them come up from the sea and advance like an army, standing upright. They nest in the ground, or in subterranean burrows. They lay a single, large egg. They have no fear whatever of man, but when attacked nevertheless they flee. Should there be no place for them to retreat, they peck vigorously and attack with their feet.

These *Aptenodytes* are known over the whole of the southern hemisphere. They form a class of their own, and they are best divided into those with crests and those with no crests. Crested *Aptenodytes* were first met with on the other side of the southern part of New Holland by Captain Furneaux, who brought back with him their dried remains from which we compiled a charming description and which I called *Aptenodytes chyrisocoma* , which must be taken to indicate a specific, separate kind. *A. crista* has a pair of laterally-turned sulphur-yellow ears. Bougainville described another crested specimen inhabiting the Falkland Islands, less gregarious than the *hypnernotia*, leaping and agile when advancing, with an intense yellow crest which it erects when roused, and with yellow eyelids: perhaps this is the same as our *chrysocoma*, or it may be a separate species, for in truth it is unclear from the description given by the illustrious traveller. Hence, amongst those with no crest, of which we have known many, firstly, of those with features presented plain to everyone, our *hypnerotia* holds the first place on account of its size and the golden patch at the ears. They all have the same feature, strongly represented. *A. panioyica*, with a golden patch, black beak and feet, is closely related. Our *A. magellanica* has two white bands, one of which incorporates the eyes, the other running down from the breast to the thigh, with a black beak and reddish feet. This agrees with the *A. demersa*, of which Linnæus attributed a young one to the Diomede Islands. *A. supercilis* has a band descending from the breast to the feet, the beak and the feet black. There follows in order our *Antarctica*, with black neck-band, black beak and reddish feet. The last two have only their size to differentiate them, and the colour of their feet and beak, which I have thought unnecessary to call into aid, since there are in truth sufficient firm characteristics to distinguish the two species from one another. *A. catarracteres* has been subsumed within Linnæus's *Phaëton*, but this bird shares nothing in common

with those and I was unable, therefore, to attribute a specific name for I had already used the same bird within *A. demersa*. I maintain, therefore, that Brisson's name *Catarracteres* is correct for it, with its dark head and red beak and head. It is to be distinguished from our aforementioned *minor*: its black beak and whitish feet are quite different and unlike this, making it easy to distinguish it from our one.

Aptenodytaes

A. ***Cristatae***

1. *Aptenodytes chrysocome*, with twin sulphur-yellow crests at the ears, turned to the sides.

B. Alophae

2. *Aptenodytes hypnerotia*, with a swollen golden patch, the beak and feet black.
3. *Aptenodytes Magellanica*, two white bands, one incorporating the eyes, the other running down from the breast to the thighs; beak black and feet red.
4. *Aptenodytes demersa*, eyebrows and band descending from the breast to the feet; beak and feet black.
5. *Aptenodytes antarctica*, black neck-band, black beak and feet red.
6. *Aptenodytes catarracteres*, head dark, beak and feet red.
7. *Aptenodytes minor*, beak black, feet whitish.

Remark: *Aptenodytes* is the name attributed to this genus from its flightlessness, from απτην, not knowing how to fly. From the language I deduce 'sand diver' and in our language 'diver bird', which corresponds in every way.

Aptenodytes hyp[n]erotia

Aptenodytes with a swelling golden lump near the ear, beak and feet black.
Bougainville, *Voyage autour du Monde*, second penguin.

No one that I know of before the illustrious Bougainville has made mention of this bird, and what he has written of our *Aptenodytes* is somewhat imperfect and obscure. We are the first I know of, to give forth to the learned world, with greater accuracy and certainty, such information as we can on the general type, amongst which we

have seen a minimum of six species. I know indeed that the most scholarly and generous Pennant has contributed a certain amount about the whole species to the *Philosophical Transactions*, when he was dealing with the Patagonian penguin, but volume 58 is not currently at hand, and nor do I retain any memory after three years of sailing of what our distinguished friend and foremost zoologist writes of the various species. It will be of use to treat of this subject, and even if [readers] are left uninformed of something that might have been written prior to us, since we are truly ignorant of all these matters and frankly confess our ignorance, it will be easy otherwise to correct an errors when we return to our homeland with what we have achieved.

Our *Aptenodytes* is in terms of strength the greatest of its kind. It lives in the Falkland Islands and in South Georgia. Those that I saw there myself, standing amongst the rocks at the edge of the sea, were found in groups numbering from four or five up to ten or twelve. When they came out in mid January they were at their fattest; they would approach and scarcely make way for men or seals. This too was the time of their moult, which we did not see, for after we had returned to the ship, from twelve that we brought with us we could scarcely make use of the skin of one, for all the feathers fell off the remainder. We ate them, along with the *Magellanica* and *Antarctica*. They stand on the ground with their bodies erect, keeping together. Their cry is insignificant. They commonly weigh about forty pounds.

Their bodies are very great and plump, the greatest among their type.

Beak in line with the head, laterally compressed, carinated, pointed, somewhat arched, with mandibles of equal size; the upper is black, with a sharp angle in front; towards the nostrils, feathers grow down at an acute angle; a groove runs from the nostrils almost to the tip of the ridged beak. The lower mandible is reddish at the base and black at the tip. The tongue is short, conical, fringed, covered with backward-facing bristles in five rows. The palate is grooved towards the front, and at the rear covered with seven rows of fleshy bristles, conical, facing backwards. The irises of the eyes are straw-coloured.

Feet close together, webbed, four-toed, powerful, short, covered with black granular skin. Femora sunk within the body; tibiae barely projecting. Three toes, united by a shiny membrane; the third interior toe has a pointed lateral membrane, the thumb or rearward digit is short, with the membrane growing on to it. Calcaneum humped, the claws blunt, powerful, dense, semi-cylindrical, black.

Head black; behind the ears a saffron-yellow ovate patch, extending in a line under the throat, enclosed by a black band. Throat black; on the breast below the throat a saffron-yellow line sharply edged with black, gradually turning whitish towards the back. The neck and back are bluish-white above, the back and rump black. The breast, abdomen and haunches silky white.
Wings flipper-like, bluish-white above and white below, with a black, oblong patch at the tip; the lower edge of the upper area white.
Tail cone-shaped, pointed; the tail feathers short and very stiff, numbering about twenty-six or thirty.

Measurements

Length of the bird standing upright, from its top to its heel	36	Wings extended	29

[Note. Today *Aptenodytes patagonicus*, king penguin. Cf. Forster 1844: **. A drawing by Georg Forster survives in the NHM, no. 005081]

Raja edentula

Ray with smooth body, with two hooked stings in its extremely long plumed tail.
[Piso and] Markgraf, *Historia Naturalis Brasiliae*, vol. I. 4, p. 175-6: *Narinari pinima.*Willoughby, *Historia Piscium*, vol. I, p. 66.

In Spanish *Raja*, in Dutch *Pylstaert*, in the language of the Brasilians, *Narinai-pinima*, in the language of the Tahitians, *E whài*.
Lives in the seas of Brazil and in the Pacific near the islands of Otaheite and Tanna. Their hooked stings are poisonous, and for that reason they are cut out by the natives after the fish has been caught; in the feasts of the inhabitants of Otaheite they are considered not the worst of fish. In the Atlantic they grow to a huge size, but in the Pacific I have seen only smaller ones.
Rhomboid body, naked, smooth, flattened, the back a little convex in the middle; above they are the colour of lead, or iron, with scattered rounded white patches (the size of a pea); below they are white, the tail black.
The head narrower than the body, sub-triangular, snouted, blunted, with a medial longitudinal groove on the upper side, broadly ridged. Mouth with an opening below, transverse, small. The snout is flattened, cartilaginous, blunted, narrow, the lateral

margins folded over. Lower lip straight, transverse, at an opposing angle to the teeth, the upper lip in two lobes, the central division attached to the palate, notched at the edge, rounded laterally; at the lateral division are two small lobes placed within the entrance to the sinus behind the snout, one to each lobe.

The lower teeth are bony, forming a spatula shape where joined but where distinct formed from many bony parts, lunate, tile-shaped and joined by a membrane; higher up they are much longer. The upper teeth also are also formed from many bony parts, tile-shaped and joined by a lateral membrane, broader than the bony parts of the lower teeth. No tongue. The eyes are placed laterally, far apart, slightly projecting, small; the pupils are perpendicular (as in a polecat or a cat), oblong, black, with a yellow iris. No gills, but there is, behind the eyes, a large ovoid opening through the middle passage of the head, connected internally to the mouth by a flap or covering lobe. Five vents in line on either side, in the lower part of the breast; each is in the form of a letter S, with notched edges. Anus of large size, between the ventral fins. Small double vulva, between the ventral fins, behind the anus.

Very long tail, elongated, rounded, exceeding the length of the body by three times. Twin spines behind the dorsal fins in the region of the tail, unequal in size, both hooked or double-toothed, the teeth hooked and very sharply-pointed.

Dorsal fin situated at the very beginning of the tail, smooth, short, about 16 or 18 inches.

Pectoral fins to the sides, horizontal, very large and pointed, sickle-shaped, notched on the outside edge with many little rays, numbering over 140, two to every notch.

Ventral fins towards the end on the underside, oblong, sub-rectangular, notched at the tip, with eighteen to twenty rays, each notch with one spur.

Measurements.

From the start of the snout to the beginning of the tail	11
From the pectoral fin at the outermost corner, across the fish to the opposite corner	20½
Tail	35
Length of the head, from the snout to the aperture behind the eyes	3½
Width between the beginnings of the pectoral fins	3½

[Note. Today *Mobula mobular*; synonym of *Aetobatus ocellatus* (Kuhl 1823), devilfish. Cf. Forster 1844: 227-9. A drawing by Georg Forster survives in the NHM, no. 005250]

Blennius fenestratus

Blenny with simple spurs on the brows, the back with three fins; all the fins spotted, with openings.

Lives in the south island of New Zealand, amongst the rocks at the mouths of freshwater streams and in places washed by the tide of the sea. All the species of blenny which I caught in New Zealand were lurking among the rocks and were taken by me in pools of water as the tide was going out; one, *B. varius*, was taken with a fishhook on the rocky shore. It is wonderful that a single island should contain so many species of this fish, and I do not doubt that the rest of New Zealand may have many species of blenny, but these were not discovered by me due to the shortness of time available at the two places where we made port.

Body vertically almost flat, lanceolate, scaly, dusky dark olive.

Head sub-conical, narrow, blunt, smooth. Two small fins on either side: the first behind, set above the brows, rhomboid, abbreviated on top, robust; the second in front, less by half the size, set before the gills, like a crest, fringed at the tip.

Lips drawn back, rather thick, the upper and lower membranes curled backwards. The jaws and palate are covered with very small teeth. The gills are both double, above the anterior ocular arch. The eyes are slightly prominent, the irises dark green, the pupils bluish-black encircled in gold. Gill openings smooth above, and fleshy; below they are smooth, terminating at the solid part in a membrane and two pliable rays below.

A membrane covers the gills, with six rays below; arched, half-covered on the top at the beginning.

A lateral line on the surface from the beginning of (and parallel to) the gill opening, running down as far as the end of the second dorsal fin; whence it continues straight, medially as far as the tail.

The anus is closer to the head than to the tail.

All the fins are olive-coloured, clothed in a dark membrane, perforated.

Dorsal fins: the first major ones irregular, the third angular, high at the front and declining to the rear, with four simple rays; one rhomboid perforation, ¾ in. Second with ten rays of more or less equal size, undivided beyond the membrane; three oval patches, perforated, 4/5, 7/8, 10/0. Third sloping downwards, with thirteen simple, undivided rays and with two oblong patches, perforated, 4/5. 9/10.

Pectoral fin: rounded, with eleven rays, plain and undivided; pure white covered patch with rays at the base, 4/5. A row of perforated patches 1-6 and a separate rhomboid patch at the tip 6/7.
Ventral fins: two rays with short fingers, as in all blennies.
Anal fin: twenty-four rays, simple and undivided; twelve ovoid patches towards the base, perforated, 3/4 (5/6 6/7) (8/9 9/10) (10/11 12/13) (14/15 15/16) . 18/19 . (20/21 21/22).
Caudal fin: shortened, with twelve short, divided rays; many large patches, perforated, more or less continuous.

Measurements	
Length of the whole fish, with tail	5½
Breadth at the anus	1⅛
Length of head from the snout to the pectoral fin	1¼

[Note. Today *Notoclinus fenestratus* (Forster 1801), topknot. Cf. Forster 1844: 124-5. A drawing by Georg Forster survives in the NHM, no. 005186]

Harpurus

Fish with spiny, finned thorax.
Body oval, vertically flat, scaly.
Head steeply flattened. Snout with an elongated end. Teeth in both jaws close-set, flat, evenly sized, rigid, facing in a uniform direction (but spiny). Gill opening lateral.
Gill membrane with four or five rays.
Dorsal and anal fins lengthways, naked, almost as though painted or coloured (but fleshy and also scaly, as in the *Chaetodontes*).
Lateral spines at the tail, on both sides, single and multiple.
This is a new genus of fish, to be numbered amongst the *Chaetodontes*, but I have decided it must be distinguished from them. Certainly our *Harpurus* has teeth disposed in a single row, flattened, with blunted tips, close-set and of equal size, whereas in the *Chaetodonte*s they are spiny, bent, dense and very numerous. Further, these have dorsal and anal fins that are rough and scaly, while those have fins that are in fact naked and membranous. The gill opening on our kind is invariably lateral and rather small, almost of the form customarily used in slings, while in the *Chaetodontes* for the most part this aperture extends sideways as far as the throat. Moreover, the

lateral spines towards the tail are peculiar to our kind: indeed they occur singly on either side within a cleft, are mobile and readily capable of being opened out near the urogenital aperture. In those others there are spines on both sides, grooved, immobile, powerful, with an expanded base, broad, robust, shield-shaped, attached to the tail below the lateral line, one behind the other. Hasselquist first saw and carefully described a specimen, brought from Cairo on the Red Seas. Artedi saw two further specimens in Seba's cabinet, and placed them among the *Chaetodontes*, in which matter even the illustrious Linnæus followed him, placing all three of them in the same genus. Indeed, enough and overmuch is made clear from what has been said above to show how much they differ from the *Chaetodontes*. The best we can do is to call all these different kinds of fishes by the single name *Harpurus* on account of the caudal spine, whether sword-shaped or sickle-shaped.

Harpurus with lateral spines at the tail.

a Expandable spines		
1 *Harpurus nigricans*	*Chaetodontes*	*Chaetodon nigricans*
2 *Harpurus lineatus*	of Linnæus	*Chaetodon lineatus*
3 *Harpurus fasciatus*		*Chaetodon trirostregus*
4 Harpurus guttatus	new species	
b Sickle-shaped, immobile spines		
5 Falcatis immobilibus lituratus	Hasselquist, *Travels*, p. 332	
6 Falcatis immobilibus Monoceros	new species	
c No spines		
7 No spines, defenceless	new species	

Harpurus nigricans

Harpurus with somewhat sickle-shaped tail and with eight dorsal spines and with spines, recumbent and mobile, on either side of the tail. Below the eyes is a white, rhomboid patch.

Linnaeus, *Systema Naturae*, 12th edn, vol. I, p. 462 no. 10: *Chætedon nigricans*; Artedi, *Specierum*, p. 90, *Chætodon nigrescens*:[2] whitish tail, with spines equally on either side; Seba, *Locupletissimi*, vol. III, tab. 25, figs 2-3.

Lives in the seas around the tropical islands of the Pacific Ocean and is called by the Tahitians Màito; it is also found at the island of St Helena in the Atlantic Ocean.
Body ovoid, vertically flat, scaly, black.
Blunt head, steeply profiled, scaly. Mouth opening small, oblique, projecting, the snout turned down slightly. Small jawbones, lipped, toothed, mobile, at the end, on the underside. Membranous lips, mobile. Teeth in both jaws, tiny, evenly distributed, tips truncated, serrated, a little more flattened, rigid, all uniformly arranged; no teeth in the palate. No tongue. Twin breathing vents, indistinct, close together, oval, the front one larger. Eyes on top, hooded, close together, protruberant, globular, half covered by an annulated membrane. Pupils black, irises dark, the interior margin golden. Gill openings double-leaved, flexile, slightly arched, scaly, small. The branchial membrane is lateral, scarcely open, with five rays; the branchial opening is lateral, arched, small, covered over. The gills are lateral, opening towards the back, covered over, comb-like on the outside, spiny on the inside.
Throat negligible; large thorax, swelling under the belly.
Back with a single wing-like membrane, arched. Lateral line above, descending in a curve and disappearing, smooth, almost parallel to the back, straight at the tail. Anus in the centre, yellowish. Tail narrow, pointed, with a strong spine, lateral, pointed and yellowish, with the point to the front, easily visible, housed within a longitudinal cleft and capable of being expanded horizontally. The scales are sub-triangular, very small, closely packed, serrated, chisel-like. White rhomboid patch under either eye and a white band almost encircling the snout.
Dorsal fin: longitudinal, complex, arched, upstanding, a little scaly between the rays; all dark, with the extreme edge blue; the interior towards the back, with a yellow line spreading out on the fin towards a patch below the tail. Eight spines, thirty-one rays, bifid.

[2] In the *Descriptiones Specierum Piscium* referred to here, *Chætodon nigrescens* appears on p. 79, with a cross-reference to 'Art. Spec. 90': the reference evidently should be to Artedi's *Synonyma Nominum Piscium*, where the identical wording does indeed appear on p. 90.

Pectoral fins: underneath, middle sized, sub-triangular, black, with sixteen divided rays.
Ventral fins: thoracic, close together, bifid, rounded, middle-sized, black; the edge in front and behind blue; one short spine, five divided rays.
Anal fin: in line, complex, rising in an arc; a little scaly between the rays; dark all over, the outside edge blue; further in from the abdomen with a yellow line spread out behind on the fin towards a patch below the tail. Two spines, twenty-nine divided rays.
Caudal fin: robust, laterally sickle-shaped; white, with a yellow band in front of the tip; twelve divided rays and five simple supporting rays to either side.

[Note. Today *Acanthurus nigricans* (Linnaeus 1758), gold rim tang. Cf. Forster 1844: 214-16. A drawing by Georg Forster survives in the NHM, no. 005196]

Harpurus lituratus

Harpurus with
Chaetodon (Red Sea) also have two stings at either side of the tail. Habitat in the seas around the Tahitian Islands and in the Red Sea. The inhabitants of Otaheite call it *Epārāhà.*
Hasselquist's description is the best and most complete; he is also comprehensive in his treatment of the colours, which in the dried specimen will be sought for in vain. The fish is black all over; an elliptical line to either side of the head; the pectoral fin and the outside edge of the tail are green. Around the mouth and lips are sickle-shaped spines with shield-shaped bases which are fixed to the body; anal fin yellow; the inner and outer edges of the dorsal and anal fins are blue.

[Note. Today *Naso unicornis*, bluespine unicornfish. Cf. Forster 1844: 218. A drawing by Georg Forster survives in the NHM, no. 005194]

Perca polyzonias

Perch with fused dorsal fins with ten spiny rays and fifteen foreshortened rays; bifid tail, sulphur-yellow body with four bluish longitudinal bands.
Habitat in the seas around the St Christina islands, Wāitàhu, Oliatea, Bolabola and Otaheite, where it is known as *Tāàpe* by the inhabitants.

Body vertically flattened, oblong, scaly, sulphur-yellow above, with a white abdomen with longitudinal streaks, four of them blue: the first from the upper edge of the eyes to the middle of the base of the spiny dorsal fin; the second from between the eyes to the angle of the branchial opening and from there to the base of the first short ray of the dorsal fin; the third from the upper part of the branchial opening to the rear of the base of the dorsal fin; the fourth rising from around the upper lip, below the eyes and above pectoral fin almost to the middle of the caudal duct.

Head flattened vertically, narrower than the body, scaly. The mouth opening is horizontal, oblique. The snout is acutely angled, longer than the upper jaw.

The upper jaw shorter, prominent, and toothed; the lips are fleshy. Teeth in both jaws and in the palate: in the jaws they are pointed, short, and sparse; in the palate they are minute in size. The breathing vents are double on either side, the middle a little more separated, smaller at the front and rounded, larger at the rear and ovate. Eyes at the top of the head, symmetrical, close together; the irises are golden-yellow. The tongue forms a parabola; it is small and somewhat cartilaginous. The branchial operculae are three-leaved, bony and squamous: the laminae of the front element are serrated at the edge, rounded below and dentally serrated; on that behind, above the base of the pectoral fin where a spiny membrane runs down and itself with a spine, they are close together and flat; it is narrow above the junction with the rear operculum, and marked by a bony nodule within the laminae of the front edge. The branchial membranes have seven rays. The branchial aperture is lateral to the throat, operculate, large, arched. The branchiae are close together, operculate, lateral to the throat; on the outside they are lidded, internally they are spiny.

The back is arched, with one wing-like fin; the abdomen is almost straight. Lateral lines on the upper side, curved and parallel to each other. Anus towards the rear. The tail is narrow and compressed, the scales tiny and tile-like, close together.

Dorsal fin in line, undivided, complex, with a spiny part folded alternately; also, hidden amongst the folds are ten spines; it has fifteen divided rays.

Pectoral fins spiny, low, moderate, with sixteen rays.

Ventral fins short, rounded, complex, with one spine and five divided rays.

Anal fin irregular, complex, with three spines: the first is short, the second longer than the others, the third of medium length. It has eight small divided rays.

Caudal fin bifid, with fourteen rays.

All the fins are yellowish.

Length 9 inches; width 2⅛.

[Note. Perch, Lutianidae; current status unknown. Cf. Forster 1844: 225-6. A drawing by Georg Forster, executed in the Marchesas Islands, 1774, survives in the NHM]

Atherina menidia

Atherina with a single dorsal fin, with eighteen rays forming a ring.
Browne, *Civil and Natural History of Jamaica*, p. 441, pl. 45, fig. 3. Menidia with translucent body; Gronovius, *Zoophylacium*, p. 112, no. 350. Broad silvery lateral lines.

The habitat of this little fish is in the seas around Jamaica and the tropical islands of the Pacific Ocean, where it is called by the inhabitants *Anàhou* and is eaten raw by them; nor, when we tasted it, did it have an unpleasant flavour but rather may be counted a delicacy.
The scholarly Linnæus misnamed the type of *Atherinae* of the rivers of Carolina, giving it the name *Menidiae* after Brown. There are, in fact, two totally distinct fish in the whole world. Our fish and Brown's has a single dorsal fin, that from Carolina has two. The membrane covering the gills on the Carolina fish has six rays, while our *Menidia* has twelve. The anal fin on the *Menidiae* has twenty-eight rays, that in the Carolina fish has twenty-four. Ours is toothless, the Carolina has teeth. The scales on the Carolina species are black-spotted, in *Menidia* they are widely spaced, large, silvery and easily removed. To say nothing of the fact that the Carolina fish are to be found in fresh water, while the *Menidiae* inhabit the sea.
The learned Brown, following Gronovius as mentioned above, omits the ventral fin, which we observed in our specimens: otherwise, Brown's description and illustration are the best. The different features and descriptions given by Linnæus apply to the freshwater *Atherinae* while the synonyms relate to the *Menidiae*; for that reason, I have established a new and different species.
Body lanceolate, oblong, rather narrow, translucent, scaly.
Head rather flat on top, with a raised longitudinal line in the middle; moreover and noteworthy, are two other raised lines, above the eyes. Mouth opening below, oblique, without teeth. The upper jaw is arched over the lower one, is longer than it, and broad; mobile to the angle of the jaw, pointed below, smaller, shut in. No teeth. The tongue

is cartilaginous, large, fringed, with a pointed tip. The breathing vents are high up, towards the front, isolated, in a cleft on the head. The snout is a little more pointed. Eyes large, to the front and above, the irises silvery. The branchial opercula is three-leaved, naked, silvery. The branchial membrane is below the throat, with twelve rays. The branchial aperture is to the side of the throat; four gills, arched, lidded on the outside, spiny on the inside. The back and sides are somewhat more convex. Anus below the middle of the dorsal fin. Straight lateral line, central, broad, silvery. Large scales, well spaced, silvery, easily shed.

Single dorsal fin, to the rear of the centre point, triangular, with thirteen rays.

Pectoral fins below, with scales bound closely together, mobile, in line, over the adjacent fin); twelve rays.

Ventral fins on the abdomen, with six rays.

Anal fin, with eighteen rays.

Caudal fin bifid, with about eighteen rays.

[Note. Today *Menidia menidia* (Linnaeus 1766), Atlantic silverside. Cf. Forster 1844: 233-4]

Mugil cirrostomus

Mullet, with shaggy-fringed lips and with five gill rays.

Lives in the seas around the island of Otaheite.

Body elongated, lanceolate, scaly, smooth, silvery. Back leaden-coloured, with scales turned backwards forming a dark band down the centre of the sides. Black patch at the angle at the base of the pectoral fin.

Blunt head, moderately slanting on the side, scaly. Mouth opening at the extremity, crooked, small. Snout blunted, flat on the side, a little backward-leaning, short. Upper lip prominent, fleshy, with fringes of thick hairs around the opening, turned back, the apex rough and fringed with hairs; lower lip carinated on the inside, with a small nodular bone towards the ridge and lower opening. Upper jaw projecting, toothless on either side, large, with a slightly raised margin, the apex rough with closely-set teeth of minute size. Palate smooth, without teeth. Twin breathing vents central on either side, separated, ovate at the front, small; to the rear they are transversely oblong, large. Eyes above, separated, close to the snout and the mouth, convex, globular, large, half-covered with an annular membrane. Pupils black, the irises silvery. Branchial opercula scaly, bony, mobile, smooth, silvery. Gill membrane with five

rays, covering the throat, large. Gill aperture at the throat, lateral, broadly curved, covered. Four closely-set gills, evenly sized; hairy on the outside, pimply on the inside.

Throat formed with a cover. Back straight, double-winged, convex. Thorax and abdomen plano-convex; scarcely any line. Anus towards the rear, large. Narrow tail.

Tile-like scales, large, mobile, smooth, hemispherical; rounded before, with a marginal membrane; truncated behind.

Dorsal fins: 1st, with four spines, central, oblique; 2nd, with nine rays, curving inwards.

Pectoral fins abdominal, high up, small, slightly sickle-shaped, with sixteen double rays.

Ventral fins oblique, quite close together, with five double rays.

Pectoral and ventral fins have triangles, lying close together on the surface above the lateral scales.

Anal fin behind, inwardly curved, with nine double rays.

Caudal fin bifid, with about seventeen double rays.

All the fins, with the exception of the ventrals, are dark leaden-coloured.

Measurements

Length of the whole fish	19 inches

[Note. Today a synonym of *Crenimugil crenilabis* (Forsskål 1775), Fringelip mullet. Cf. Forster 1844: 198-9]

Clupea setipinna

Anchovy with a long bristly spur behind the dorsal fin; gill membrane with twenty-four rays.

Habitat in the island of Tanna; it is taken with hooks in pools of fresh water, scattered in the sand hardly twenty yards from the sea; or rather, since it is certain that this is a sea fish, it is probable that due to the hot season or to being carried by chance by the winds that they gather in these pools beyond the edge of the sea; or else they are brought here by some other accidental means. Linnaeus proposed a relationship between our fish and the *Clupea thrissa*, but our fish has twenty-four rays in its gill membranes, while Linnaeus's has five or seven.

Body oblong, with a broad perpendicular line, scaly, silvery, the back blackish, the sides sprinkled with tiny black spots below the lateral line. Scales large and rounded, with a silvery membranous edge.

Head deltoid, as thick as the body, without scales, bright, silvery-black on top. Mouth opening central, oblique, arched, small. Snout short, rather blunt. Upper jaw slanting and flat on the side, toothed; lower jaw longer, toothed, mobile, with a raised edge at the back. Teeth in the jaws, tongue, palate and upper part of the throat are tiny, dense and coarse to the touch. Tongue blunt, spatulate, cartilaginous, toothed in the centre, curved backwards at the sides. Palate grooved, with two lateral lobes, muscular and toothed. Breathing vents central and towards the top, close together, oval, both expanding towards the rear. Eyes on top, close to the snout, flat, rounded, large, partly covered by annular membranes; iris silvery. Branchial operculae three-leaved, flexible, transparent, naked, silvery, loose, with the lamina in front rising out of the part covering the rear. Gill membranes with twenty-four rays, half-open, by the throat. Branchial aperture at the throat, lateral, large, curved, covered. Branchiae elliptical-oblong, covered, lateral, with four little bones projecting on the outside; sharp spines on the inside.

Throat with a carinated hyoid bone, with a spine behind. Membranes extend sideways over the gill membranes. Thorax and abdomen convex (neither carinated nor serrated), the sides flat. Medial lateral line straight, the scales marked with five to ten radiating lines. Anus towards the rear. Narrow tail.

Dorsal fin almost in the centre, sharply angled, shining, with four double rays, with the exception of the rearmost ray, which is elongated and spiny.

Pectoral fins deltoid, with elongated scales alongside the fourteen double rays.

Ventral fins abdominal, with elongated scales alongside the ten double rays.

Anal fin central, hollow sickle-shaped, with twenty-five double rays, with the exception of the rearmost ray, which is elongated and spiny.

Caudal fin bifid, with twenty-one double rays.

All the fins, except the dorsal, are sprinkled with very small black dots.

[Note. Today *Thryssa setirostrus* (Broussonet 1782), anchovy. Cf Forster 1844: 295]