ALSTRŒMERIA.

TRICOLOR—THREE-COLOURED ALSTRŒMERIA.

THE Alstrœmerias are a highly interesting and even a delightful genus of plants, and well worthy the attention of even the most fastidious cultivator. They are all members of the lily family, that is of the natural order *Amaryllideæ*, and natives of South America—the grand home and head quarters of those exquisitely beautiful plants. Gay as many other members of that order are, there are perhaps none which excel the Alstrœmerias; and among them there is no superior, perhaps no equal, to the three-coloured one; only where all are so beautiful, preference is very much according to the taste and fancy of the selecter. The characters of the genus as described by botanical writers are: The calyx resembling a corolla, that is, the envelope taking the character of a flower, and its sepals or parts having on their interior surfaces the texture and the colours of the petals in those plants which have a double envelope to the parts of fructification, or both a calyx or cup, and a corolla or crown. The calyx is partially bell-shaped, and divided into six segments, with two lips, and the inner sepal or segment narrow. The stamens originate in the basal part of the calyx, and have erect anthers. The style is drooping, and has the stigma or tip divided into three parts, as is the case with many plants of the order. Most of the species are remarkable for their beauty; some for the delicious fragrance of their scent; and there are others which have esculent roots that may be used as substitutes for the common potato.

The character and beauty of the three-coloured one may be better judged of from inspection of the figure than from verbal description, which never can be so framed as to do justice to the more exquisite beauties of the vegetable kingdom. The form and the colours are equally fine, and there is a delicacy of structure about the plant surpassing that of most of the lily tribe. There is one peculiarity: the leaves have a twist in the peduncle or basal part, by means of which the surfaces are recurved in position, and that which in the majority of plants is turned downward in the direction of the earth is, in this genus, turned upward to the sky.

This particular species possesses the advantage of being hardy as well as beautiful, so that though from the climate of its native country it should rank among those plants which require the shelter of the greenhouse, or even the artificial heat of the stove, it may, in sheltered situations, and by means of a little skilful management, be made to grow with considerable vigour, and to perfect its exquisite flowers in the open air, in the milder-climated parts of Britain.

It is not indeed confined to the tropical parts of South America, as many others of the family are; for it is found in Chili, in which country it is called *Flos Martini*, or Saint Martin's flower; but what claim that saint may have upon a flower of which he could never by any chance have even a single specimen, has not been said. When grown in a greenhouse it attains a larger size, and, in so far as that is concerned, it is a more showy plant than when grown in an open border. The flowers are also larger; but what is gained in size is, in some measure, lost in beauty; for the colours of such as are grown and flowered in the open air, are much more sleek and intense than when they have the shelter of a house.

In whatever place it is grown it should be allowed a dry repose, similar to what these plants of South America have in their native country. If in the greenhouse, this may be obtained by letting the roots dry in the pots after the flowering is over and the stems have died down. The roots themselves will show how long this dry treatment ought to be continued; for when they have had that length of repose which is suitable to their nature they will begin to move; and, as soon as they do this, they should be taken up and repotted in equal parts of loam, half mould and half sand, which is their favourite soil; and in that they grow vigorously, and show their flowers to the utmost perfection. If these are grown in the open air, a well-sheltered border, which has a full exposure to the sun, is essential to their proper success. The roots must also be protected by some covering during the winter, as they cannot bear the severity of our seasons if left in the naked ground. In a border they do not grow to above two thirds of the height which they attain in the greenhouse, that is, not more than about two feet; but, as has been said, the colours of the flowers are much more brilliant than when the plants are placed in confinement. Wherever they are grown they require a good deal of attention; and such protection from the humid character of our winters as may in some degree approximate the character of the season of repose in that place of which they are native. But to those who can afford to give them this attention, they bring an ample return in their beauty.

APES.

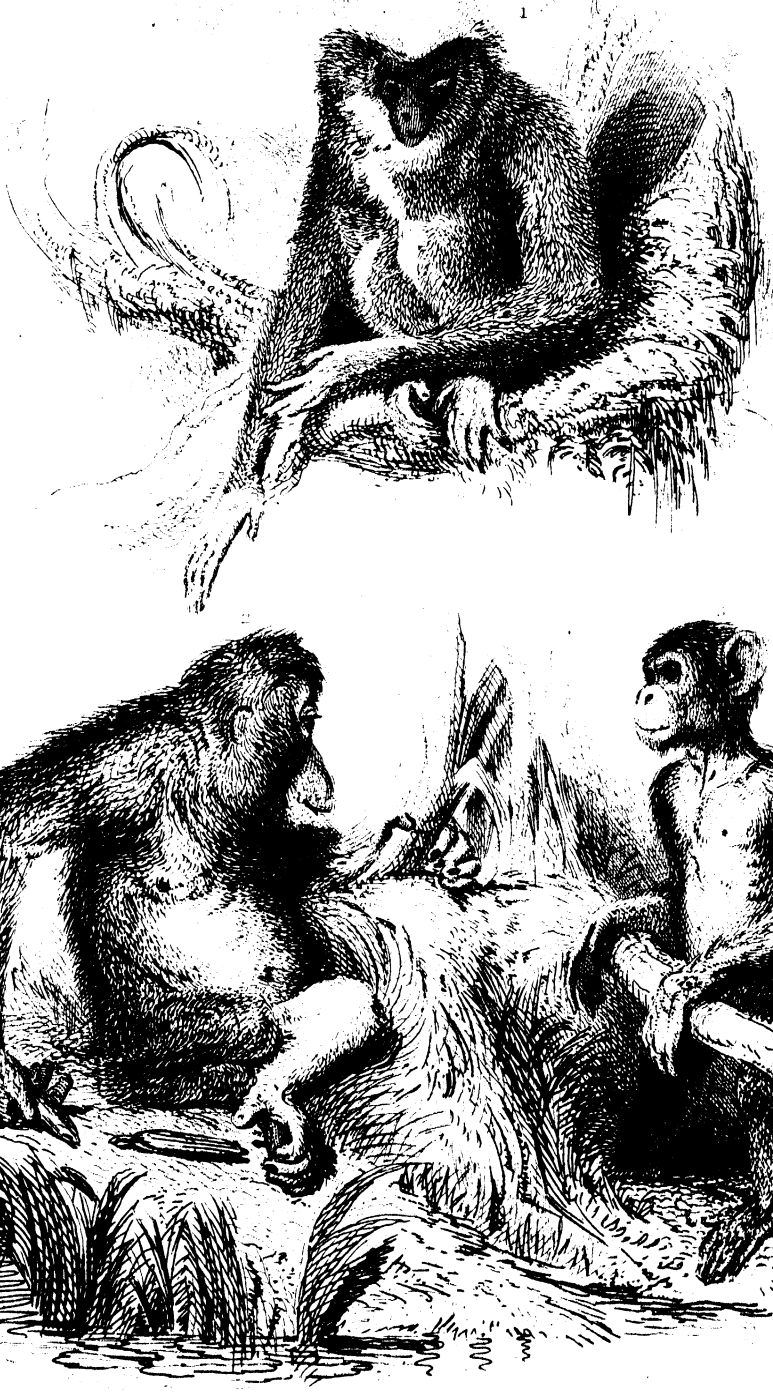
BLACK GIBBON—OURAN-UTAN—CHIMPANSEE.

Apes are ugly and mischievous animals, very amusing in the way of doing mischief, but quite incapable of being trained to obedience. They are attached to each other and to their young, and when in captivity they are melancholy when left without company. They are four-handed animals, but their hands are merely grasping feet; and thus, though they can take a firmer hold in proportion to their size, they can perform none of the offices of a true hand. The grand difference, in appearance, between those feet and true hands consists in the length of their fingers and the shortness of the thumb, which in some of the species is a mere tubercle without any nail. The difference in action is the want of the rolling motion of the human thumb, by which that is enabled to guide the points of the fingers to the nicest operations, not one of which the apes can in the slightest degree imitate.

The true apes are found only in the forests of the hottest parts of Africa, and in those of the extreme south-east of Asia, and the adjacent isles. There are none in America, though the forests of the warm regions there swarm with monkeys. All the apes live chiefly in the forests, and feed upon fruits and occasionally insects. On the ground they are comparatively helpless, and very awkward.

The Black Gibbon, *Pithecus lar*, called *lar*, because it "keeps its castle" in the forest, and moves less than some of the others, is found only in the eastern islands. It is a grave and demure animal, slow in its motions, and more gentle in its disposition than those which show greater activity. It is a small and light animal, and finds its way from one tree to another by swinging on the distant branches. Its general colour is dark, with white round the face, which is very dark, with a low forehead, a projecting muzzle, and a regular chin—a formation which indeed none of the apes possess. There is another species, the Ounko, very like this one, and inhabiting the same forests, only it has the fingers black, and the first and second ones on the hind feet of the female united, while in the Black Gibbon they are all free. Both species dwell in the very depths of the forests, and are rarely seen, so that scarcely any thing of their manners is known.

There are other two species of Gibbon, still natives of the same places. One of these, the Siamang (*P. syndactylus*), is a slow and heavy but an exceedingly wary animal; and the other, the Wouwow (*P. agilis*), is equally lively in its motions. The first has the first and second fingers of the hind feet united, and a large dilatable paunch under the chin; the latter is without these peculiarities. All the Gibbons are remakable for the loud and dismal tone of their cries; they



1 Black Gibbon
2 Durang Outang
3 Chimpanzee

GLEANINGS OF NATURE

CONTAINING

FORTY-FOUR ETCHINGS OF ANIMALS,

AND

THIRTEEN COLOURED GROUPS OF PLANTS;

With Popular Descriptions of their Habits.

BY ROBERT MUDIE.

LONDON:
WILLIAM S. ORR AND CO., AMEN CORNER,
PATERNOSTER ROW.

MDCCCXXXVII.

are timid animals, and though rather wild in confinement they are dull and stupid. Out of the forest they are not in their proper element; and they can hardly live but in that climate of which they are natives. The Siamangs are social animals, living in troops, the others are more solitary.

The Ouran-utan (*P. satyrus*) is a much larger animal, and has been longer known, though the name has probably been applied to other species. Like the Gibbons, it is found only in the eastern isles, and perhaps in the closer woods of the Malay Peninsula. The Ouran-utan is sometimes six or seven feet high, with short and very awkward hind legs, and the fore ones so long that the fingers reach the ground when the animal stands or walks, at both of which it is very ungainly. The forehead is flat, the eyes little, shaded by eyebrows, the ears small and simple, the muzzle long, the gape wide, the canine teeth—in the old animal—large, and the bite powerful. But the animal lives peaceably in its native forest, and even when attacked does not resist if it can escape, which it is sure to do if trees are near; but if they are wounded or are unable to escape, they defend themselves desperately, not by using clubs, as some of the fabulous accounts state, but by using their powerful teeth, with an effect which is very serious. When taken young they are not difficult to tame, and they are playful, but irritable. The specimens which are occasionally brought to Europe are invariably misgrown and sickly, and calculated to give an erroneous idea of what the animals really are in those climates which are congenial to them.

The Chimpansee (*P. troglodytes*) is an African species, and found only in the very warm and rich parts of that continent. The specimens of the Chimpansee which have been brought to Europe are small, but larger ones may exist in the native climate, though the describers, who have represented them as being of the stature of a man and ferocious in their dispositions, probably confounded them with the larger baboons. They walk much better than the apes of the east, and their fore legs are not so disproportionally long, so that when they rest their whole weight on the hind feet they do not so much resemble an animal upon all fours. The face and the ears, which are large, are covered with a shrivelled leather-like skin of a brown colour; the neck, shoulders, and back, have coarse blackish hair; the hair on the arms turns down, and that on the fore-arms up, and the meeting of the two forms a ruff at the elbow. The females, as in all the order, have pectoral mammæ, and when they walk on the ground they carry their young in their arms. Some specimens have been brought to Europe, but they do not live long.

CAMELLIA JAPONICA.

DONKLAARII.

This plate represents a choice variety of what may certainly be considered as the most beautiful of all the flowering shrubs that are cultivated in our greenhouses. The beauty of the Camelliæ is not confined to the mere flower, as is the case in many other genera, for the bud, the leaf, the wood, and the whole aspect and habit of the plant, are very beautiful, vigorous, and healthy in their appearance, and yet delicate in their colour. It should seem that this particular variety was bred in China, for M. Donklaar, curator of the botanical garden at Ghent, after whom it has been named, obtained it of a gentleman from Canton, or rather from Macao.

Camellia Japonica is a native of the east, probably of Japan only as a wild plant; but it has been long a favourite with the Chinese, who are equally fond of plants, and skilful in the cultivation of them and the obtaining of new varieties. It was first cultivated in Britain by Lord Petre about the year 1742; but now it is very generally distributed over the country, and it is held in deserved estimation by all who have any relish for the beauties of nature. There are upwards of fifty varieties now in culture, and every year adds to the number; for of a flower which is in much demand every florist is anxious to produce a novelty, because if he succeeds he obtains a high price at the first, until the novelty ceases and his nursling becomes so common, that it is every body's flower at very moderate cost. Novelty in these cases is not always beauty, at least comparatively in respect of that which may have become very common. We have an instance of this in the roses, among which the common moss-rose, which is in the garden of every cottager of taste, is unrivalled by any of those which are now in estimation among amateurs. In like manner, there are perhaps no varieties of camellia more beautiful than the plain double white and double red. Still the love of novelty is productive of many advantages. It attaches many to flowers and their culture who might otherwise be never employed; it sends collecters to ransack every land for new plants, and as they cannot obtain the plants without a great deal of other knowledge along with them, it tends greatly to increase our knowledge of other countries and encourage our friendly intercourse with them; it makes cultivators attend much more to the physiology of plants than they would otherwise be induced to do; and as the new plant tends instantly to reduce the price of the old one, the poor are enabled, if so inclined, to make their little spots of ground relatively as gay as the more costly gardens of the rich. Every occupation which interests the people in the love and the study of innocent beauty, is highly valuable both in a moral and a social—ay, even in an economical point

PREFACE.

It has become the fashion to offer to the Public, about the close of each year, a species of books which are peculiar in their character, and which were unknown in British literature twenty years ago—books which are pleasing to the eye, but in all or at least the great majority of which, the author or authors are very subordinate to the painter, the engraver, and the binder. It is not intended either to praise or to censure books of this description; and it may be, that the simple attractions of the sense, of which they are so redolent, may tempt many to open them who might not else think of opening any book; and thus, though themselves afford but little information, they may lead to other sources where it is to be found; and that thus those who are at first enticed by the flowers of the boudoir, may come in time to enjoy the fruits of the library.

When children in years run over the common or the meadow, cropping the wild-flowers with all the glee of their happy age, we do not censure them as wandering from the gates which are afterwards to lead them to wisdom. We never suppose that the fondness of the lisping boy for "buttercups and daisies" will be any bar in the way of the future man's progress to the ermine, the woolsack, or the mitre. On the contrary, those toys of nature tend far more to brace the frame, and awaken the mind to thought, than all which can be collected in the nursery. The child pulls the nursery-toys to pieces, in order to "find out how they are made;" and we may conclude that it pulls the wild-flowers to pieces for the same purpose. Thus, the very first essay of the infant's powers on the green sward is really a beginning of the study of Nature and Nature's God.

The winter-flowers of the press address themselves to persons of another growth. They make the table gay in the morning, when the flowers of the field and the garden are gone, and the day and nature are gloomy to eyes intent only upon beauty and elegance; and they are, wisely perhaps, so contrived, that, when the bloom of nature again comes round, they clear the way, and leave it to produce its full effect. They are flowers of high culture; and in such, whether of nature or of art, fine petals cannot be obtained except at a sacrifice of fertility.

These "GLEANINGS" do not emulate either the brilliance or the brief duration of the Annuals, although in the sterling value—the truth and nature—of the illustrations, they challenge competition with them all. Peculiar circumstances have enabled the Publishers to offer them to the reader at only a fraction of what would otherwise have been the prime cost. The animals are from the burin of Landseer, embodying that feeling of nature and life for which he is so celebrated, and free from the hardness of outline and flatness of touch, which so often make engravings of animals look as if copied from images of clay. The flowers are express likenesses, in every instance drawn and coloured from the natural subject. The descriptions embody all that the space allotted to them would contain, of the character of the subject, its locality on the globe, and its relation to the system of nature. From these qualities, on the truth of which the author is ready to receive sentence from every competent judge—convinced that among competent judges there cannot be two opinions—it is hoped that "The Gleanings" will be received in the double character of an ANNUAL and a PERENNIAL.

ROBERT MUDIE.

GROVE COTTAGE, CHELSEA.
December 25, 1837.

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MAMMALIA.

of view; and therefore there is perhaps no surer evidence of the progressive improvement of a country, both in morals and in wealth, than the devotedness of its people to the love and the culture of flowers, according to the extent of their means and their leisure. It is further worthy of remark that, in the catalogue of those who are guilty of crimes, there are perhaps fewer gardeners devoted to their art than there are of any other operatives in proportion to their numbers; and probably the remark might be extended further than to mere operatives.

Camellia Japonica belongs to a very small natural family of plants, all of which are natives of the east of Asia, and the adjacent isles, where the land takes the soft breezes of the north Pacific Ocean; the eastern part of it, especially the Malay Peninsula, Cochin China, China, and Japan, are the chief countries in which the plants of this family are found. Many of the plants of the east coast of Asia, and this family among the rest, are cultivated with great ease, and are remarkably hardy, considering that they have what we are accustomed to call a tropical appearance. Beautiful as the Camellia Japonica is, and delicate as is the green of its smooth leaves, many of the species can bear the cold of a pretty severe winter; and if the cultivators were as solicitous to preserve durable plants as they are to have early and abundant flowers, it is highly probable that any one variety might be made to grow freely and live securely in the open garden or shrubbery. Another Japanese plant, the Aucuba Japonica, was treated as a hothouse one upon its first introduction; but now, in the warmer parts of the country, it is among the most hardy shrubs that we have, and never looks so handsome as when the leaves have been for some time exposed to frost. The means by which free plants may be brought out of the hot or greenhouse to live in the common air, is perhaps a part of culture which is too little attended to. There is no question that it would succeed in very many instances; and not only succeed, but the plants would be all the better for it, for our hot-house plants probably suffer more from our attention, than others do from our neglect. We never can cultivate a plant successfully unless we know its nature, and there is no way of doing that but by pushing our experiments up to the point of failure in every direction; because we can then take note of the stage at which the true medium lies. The Camellia is a plant admirably adapted for this purpose.

BIRDS.

REPTILES.

BIRDS OF PREY.

KING VULTURE—GOLDEN EAGLE—JERFALCON.

This plate represents three very strongly contrasted members of the order of the *Accipitres*, or predatory birds; the King Vulture being one of the most cowardly and carrion-eating of the tribe, the Golden Eagle the most bold and enduring of the eagles, and the Jer the most powerful of all the falcons.

The King Vulture, *Vultur papa*. The "Pope" is an American bird, and ranges over the low and wooded tracts rather than the mountains. This vulture is about the size of a goose, only it is much larger in the wings; and all its characters are of course very different from those of that bird. The colours of this vulture scarcely admit of any single description which will answer to the bird in every state in which it may be seen. When young it is of a dull sooty black; but it becomes mottled with yellowish after the first moult. After this, the general plumage becomes of a fawn colour, and the quills and ruff of thread-like feathers, on the lower neck, black. The naked skin on the head and neck is variously coloured, and the colours change with the angle at which the light falls upon them. They also, as is the case with the colours of the naked skin and membranous parts of all animals, lose much of their beauty and irridescence after the bird is dead. In general, however, they may be said to be bright coral red, purple, and yellow, blending into each other by various intermediate shades. These birds are said to nestle in the hollows of trees, and to have two eggs in a hatch. Notwithstanding their royal name, which appears to have been bestowed upon them solely on account of the gaudy colours of their heads, there is little of royal, or at all events of noble, in the character of these birds. They are scavengers, and that of the most foul-feeding description, no carrion, however putrid, coming amiss to them. It is said that, when, after the violent storms to which the plains and forests of central America are subject, the vultures assemble to devour the casualties, the other species abstain till the king has gorged himself; but the saying wants confirmation, and is not very probable, as the habit of vultures is to devour the dead, not to make war upon the living.

The Golden Eagle is a bird of as splendid character as the vulture is the reverse. It is an inhabitant of the mountains; and never ranges very far from the place which has its nest or aerie, which serves it both as a dwelling and as a cradle for its young. In England, Ireland, or the cultivated parts of Scotland, it is doubtful if the golden eagle is now to be found; though there are still a few among the wild and cliffy mountains of the Scotch highlands. They are not so bulky as some of the other eagles, but they are much more com-

FLOWERS.

Jer Falcon

King Vulture

Golden Eagle

pact; and probably there is no bird which is a match for the female in the two attributes of strength and courage. The length of a full-grown one is about three feet, or a little more, and the extent of the wings is about double the length of the bird. Rich brown, of various shades, and a yellowish brown, which however cannot with much propriety be called golden, are the prevailing colours, when the birds are in their prime; a state in which they remain for a great number of years. The young birds are more or less mottled with white, especially on the basal part of the tail feathers; in which state they have been described as another species, under the name of the "Ring-tailed Eagle." They subsist chiefly upon living prey—birds and small quadrupeds, especially the latter—but they always kill it on the ground, which distinguishes them from the falcons; and they kill it with the talons, which distinguishes them from the vultures.

The JERFALCON is a very bold and courageous bird; the largest of all the falcon tribe, though not the most elegant in its form. It is abundant in the mountains of Norway, and among the cold cliffs of Iceland; and it occasionally appears in the north-west of Scotland, though there seem doubts that it ever remains to breed there. Its building places are however in the fastnesses of the mountain rocks, and there they are not very easily seen. It is in general of a whitish colour, marked with streaks and spots of dark brown, as shown in the plate. There are however some in Ireland of very large size, and almost entirely white; but whether these are very old jerfalcons, or a different species, has not been ascertained. The jerfalcon kills much of its prey on the wing; but it is probable that, in the winter, when there are few birds in the air where it inhabits, it kills its prey on the ground—ground birds and small mammalia indiscriminately. Thus its habits partake of those of the eagles, as well as of the more typical falcons.

ANTELOPES.

STEEDMAN'S ANTELOPE—KLIPSPRINGER.

STEEDMAN'S ANTELOPE is a large and handsome species, and one of the least known and most recently discovered by Europeans. Its locality is far in the interior of Southern Africa, and it never visits the Cape colony. The specimen from which our figure is taken, and which is the only one which has yet come to Europe, was obtained near the west coast, and to the northward of Orange River, in about twenty-eight degrees south latitude. The dimensions are seven feet three from the muzzle to the insertion of the tail; the tail to the extremity of the hair, one foot nine; height at the shoulder, three feet ten; at the croup, two inches less; length of the horns along the curve, three feet and a half. It is said that specimens considerably larger occur in the district from which the one in question was obtained, and that they are daring and even ferocious animals, which, excepting in cases of surprise, defy both the native hunter and the lion. The prevailing colour is rusty brown and grey, the brown nearly entire on the back and the lower parts of the legs. The face deep blackish brown. The interior of the ears, the lips, a streak down each side of the upper part of the face, and an obscure band on the throat, immediately under the jaw, are white. There is also an ellipse of white, very conspicuous and well defined, passing from the croup across the hips, and meeting below. This mark is equally well defined and striking. The hair is not very long, but coarse and in clotted tufts, turning in all directions from a whirl on the middle of the loins, and reversed on the anterior part of the body, under as well as upper. The hair on the neck is also clotted, but there is no produced mane or beard. The horns are very strong as well as long; they rise in the line of the forehead, and gradually bend outwards and forwards, but not to any great extent of curvature, and they incline inwards at the tips. For two feet next the base they are annulated, the annulæ prominent and distinct, twenty-four in number. The annulated part is also striated longitudinally, and of a light brown colour. The six inches at the points, which are smooth, are black. The section is not round, but has a groove, becoming gradually obliterated toward the point; and, contrary to what appears in many other species, the groove is in front. All the characters are expressive of great energy and strength, and, in its native wilds, this antelope must be a noble creature, seen at a safe distance.

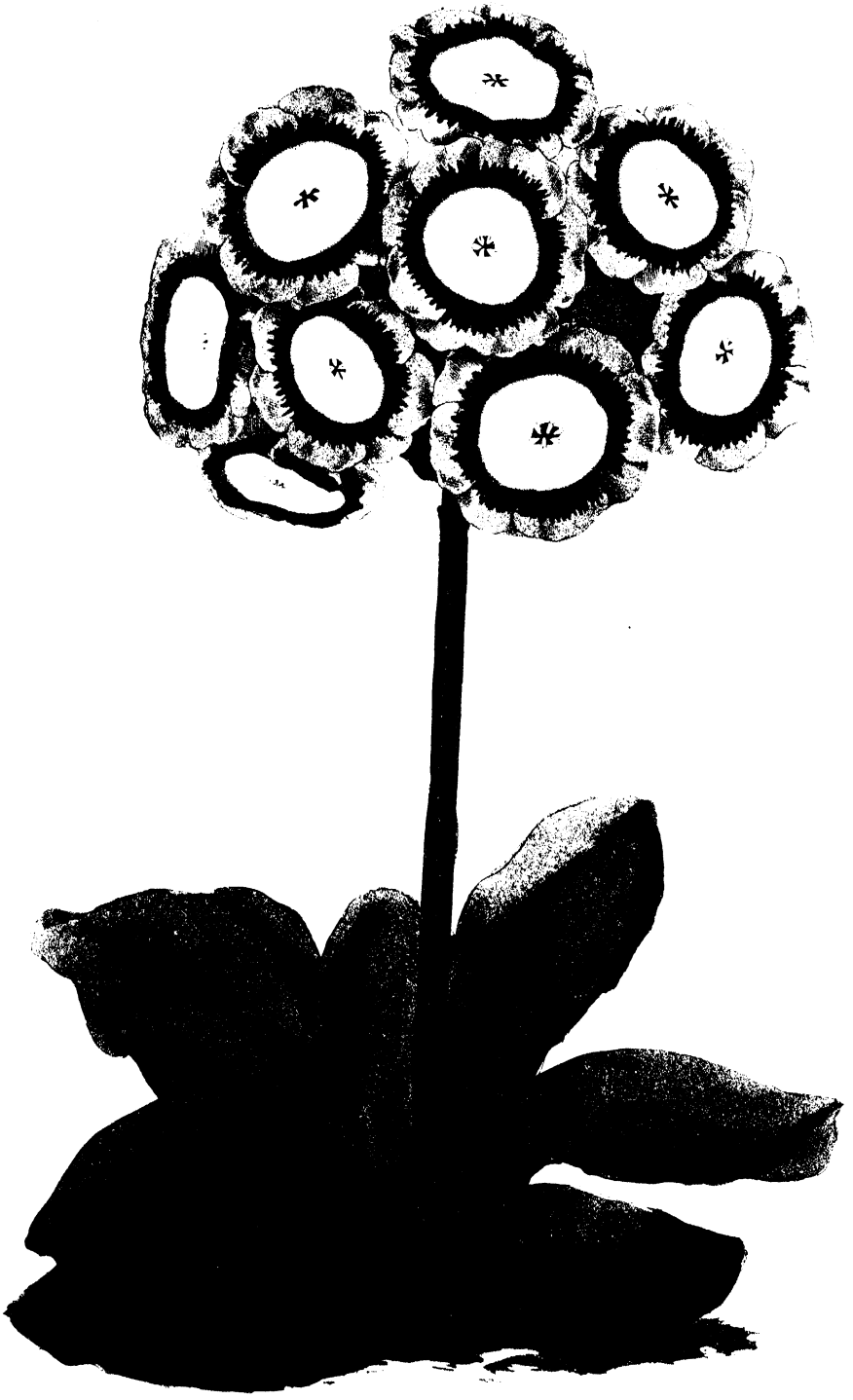
The country near the Orange, or Gareep River, where this specimen was obtained, is much richer and less subject to parching in the dry season than the elevated plains; and thus it contains various species of antelopes of larger size and less given to migrate than those of the more open country.

ANTELOPES.

GNU—GAZELLE—KOODOO—LEUCORYX.

The antelopes are ruminating animals, with two horns, like the sheep and goats; and they are, generally speaking, very handsome,—lively in their expression, clean and elegant in their forms, and active in their motions. In their shape and the covering of their bodies they have most resemblance to deer, but in their horns and many of their characters they more resemble goats. There is only one American species, which has a prong or branch on the horns, and occurs only on the mountains of North America. In Europe there is also only one, the Chamois of the Alps and Pyrenees. In Asia the species are more numerous, and they are still more so in Africa. Taking them altogether, they far exceed in species any of the other genera of ruminating animals, there being from forty-five to fifty different ones, and all in a state of nature.

The Gnu is a native of the southern parts of Africa. It is not, in shape or disposition, one of the most typical antelopes; but it is an active, bold, and highly interesting animal. Gnus are continually using their formidable horns, either in butting against each other, which they do playfully, or in attempting to root up trees and bushes, and gore or fight any other animals that come in their way. The height both at the shoulder and the croup is an inch or two under four feet, and the length from the muzzle to the tail is about six feet and a half. The form of the neck, body, tail and legs, with the exception of the feet, is exactly that of a small, compact, fleet, and strong horse; the feet are those of an antelope, the head and muzzle have a good deal of resemblance to those of the ox; and the horns, though somewhat intermediate between those of the buffalo and some other of the antelopes, have so many peculiarities, that they cannot be described by comparison. The head is square, the muzzle broad, the neck rather short, but beautifully arched like that of a fine horse, compressed throughout its length, deep at its union with the body, but much less so at the head; the shoulders are deep, and the chest ample and muscular; the body is short, but straight, cylindrical, and very firm; the croup is remarkably broad, and the breadth is farther increased by a hump of fat on each hip; the tail is much longer in proportion than that of most antelopes, and it is covered with long hair throughout the greater part of its length, and borne flowing, like that of a high-mettled horse; the legs are long and peculiarly handsome, but at the same time expressive of great strength as well as fleetness. The general colour of the male is deep brown; and that of the female paler, with an ashen shade; the hair on the bodies of both being short and smooth, and thus allowing their symmetrical forms,



and also the ornamental hair of their manes, tufts, and tails, to appear to the greatest advantage. They are not at present found nearer Cape Town than the Grand Karroo, upon which the males are so brave that they attack the lion himself. In collections of living animals, the gnu must be approached with caution.

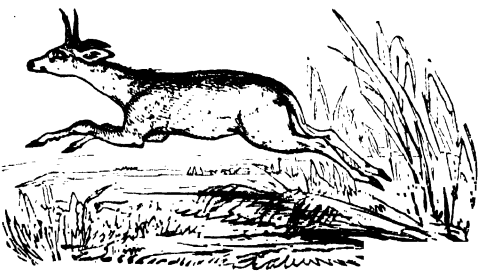
The GAZELLE is the most celebrated of all the antelopes. It is rather less than a roebuck, being about three feet and a half in length, one foot nine at the shoulder, and a little higher at the croup. The head and neck are beautifully formed; the forehead slightly rounded; the eyes large, prominent, dark, and expressive; the muzzle rather slender; the ears long, narrow, and pointed; the horns between nine and ten inches long, gently rounded and lyrated. They are much annulated at their bases, but the annuli disappear on the posterior surfaces about the middle of the length, and a portion of the tips is quite plain. The females are provided with horns as well as the males; but in them they are smaller, and hence some of those who have followed the trade (rather a common one with regard to this race of animals) of manufacturing an antelope out of a pair of horns, have made a species of the female gazelle, and called it *corinne*, and other names. With the exception of the knee tufts, and the tail, which is covered with stiff black hair, and ends in a brush, the whole covering of the gazelle is close and smooth; the anterior part of the head is a reddish fawn-colour, with a dark-brown streak on the nose, and a white one downwards from the root of each horn, over the eye, and along the side of the face. The contrast of these last gives peculiar brilliancy to the dark eyes. The general colour of the upper part is dun, that of the under white, and the two colours are separated by marginal belts of brown, more or less conspicuous. The tints of colour are, however, subject to much difference, both in different individuals, and in the same individual at different ages; so that, in this species particularly, colour cannot be made a character.

Gazelles keep the open plains, and browse upon the saline and other pungent plants which they meet with there. They are gregarious, living in considerable herds; placing sentinels when they graze, and bounding off apparently in different directions when an alarm is given.

The KOODOO is a splendid animal. It gets the name *strepsiceros* from the numerous and graceful turns or flexures of its magnificent horns. These horns are among the most showy borne by any animal. They rise together from the crown, bend gradually outwards, then inwards and outwards again, with several flexures which have in each horn the character of a very peculiar spiral; and their remarkable curvature is rendered more striking by a projecting ridge which winds very gently round them, so as always to keep on the convex side of the curve. They are very thick and strong at the bases, from which for a considerable distance they are wrinkled but not annulated. The basal part, as far as the wrinkles, is brownish horn-colour, the middle part of the

horn black, and the tip white; each horn is, measured along the windings, not less than four feet in length; and, as the animal which carries them is large, they have a very showy appearance. The length of the full grown koodoo is not less than eight feet; it stands fully four feet at the shoulder; and when the head is carried erect, the points of the horns are at least four feet more. There is a good deal of sheeplike expression in the animal; and from the account given it will be seen that the horns are something intermediate between those of the sheep and the antelopes. The ears, face, and muzzle are broad; the neck and body are heavily and rather loosely made; and the legs are thick, without many indications of agility. The general colour on the upper part is light greyish-brown, with a white line down the back, and a number of small bars descending thence over the sides and flanks; the lower parts are whitish-brown. Along the neck and on part of the back there is a sort of straggling mane; and there is also a beard on the chin, which is continued along the neck, and as far as the posterior edge of the sternum. This is a splendid animal, and by no means rare in the Cape country.

The Abu-Harb inhabits nearly the same places as the gazelle, only not quite so close upon the desert, as it subsists chiefly upon the leaves of acacias and other trees. It is a much larger and stouter animal than the gazelle; as may be seen by the plate where its character is accurately expressed. The annexed cut shows another antelope of Southern Africa, in the act of leaping, which it does to a great height in order to clear the reeds and tall herbage.



beauty than any other. These are as follow: suppose a line drawn across the centre of the flower, the tube, with its margin, or cup, should occupy one sixth of the whole, the eye should be the breadth of the cup every way, and thus occupy two sixths of the eye,—the two together taking up half the diameter; and the other half is to be occupied by the ground and the margin, much of the beauty consisting in the regularity and brilliancy of these, and the contrast which they make with each other and with the eye. The paste or iris of the eye, if we may so term it, should be pure white, because that makes a contrast with every colour; and the cup, and also the external boundary of this iris, should be perfectly circular; in short, it should have the true form of a diurnal eye, supposing the opening of the tube within the cup to form the pupil. The ground colour cannot be of too intense a tint. An indescribable purple like that of Page's Champion is perhaps the richest in itself; but an intense crimson, or scarlet, being more nearly the complemental colour, contrasts better with the margin, which should always be bright green.

This beautiful flower is wholly a creature of art, and no small degree both of skill and of labour have been expended in bringing it to the state in which it is found in the collections of those who are most recherché in this plant. Among those who are thoroughly embued with the genuine spirit of floriculture, the auricula will always be a favourite, in consequence of the great attention which it requires, the lottery of whether even one fine flower shall be obtained from a bed of seedlings, and the proportionate nature of the prize when one happens to be obtained. It is not, however, a flower for those who are contented with ordinary borders and window pots, though there are border auriculas of no mean beauty.

On its native mountains the auricula has to brave the elements; and there it is an humble plant, with a low stalk, small flowers, and nothing conspicuous in their colours, which do not show a trace of the exquisitely contrasted colours which vegetation brings upon them. In respect of soil, the auricula must be pampered with that which is at once rich and delicate, and it must not be watered to excess, or exposed to any sudden changes, or violence of the weather.

ROSES.

MADAM HARDY—VILLAGE MAID.

Roses, even as they appear in wild nature, in hedges, on commons, and on the bleak tops of hills—for there are roses in all these situations, are beautiful flowers; and, different from many flowers which please the eye by their beauty, their fragrance is quite unrivalled among all the sweets of the vegetable kingdom. They are also true to a law which holds very generally in the vegetable kingdom, namely, that plants which are naturally found in a variety of situations are far more obedient to the hand of the cultivator than those which are confined to one particular kind of locality. This applies not only to the care and certainty with which the plants may be cultivated, and the improvements in beauty which they are capable of receiving at the hand of the cultivator, but to the great number of varieties which may be obtained by artificial means. These varieties are obtained from seed, for where plants have in this manner a disposition to break into many varieties, a number of these, and also of new ones, are generally, if not invariably, obtained from the seeds of any one species; and if the seeds are gathered from a bed in which there are many sorts of roses, more new ones may be expected among the seedlings than when they are all nearly of the same sort. This is easily accounted for upon the principle of cross impregnation, or of applying the pollen, or fertilising powder, of one plant to the pistil, or recipient, of the ovarium, or seeding organ, of another, of which professional cultivators of flowers make so much and so profitable use. Nor is this difficult to be accounted for; the fertilising and fertilisable parts of all plants of the same species, whatever may be their differences in respect of variety, always retain their power of so acting in concert as to produce seeds that will germinate. Now, though all plants which have been brought to a particular state by cultivation, different from what they have in nature, have a tendency to revert to that state when the cultivator neglects them, and they are, as it is called, allowed to run wild; yet each retains for a time the artificial character which the skill of the cultivator has impressed upon it, so that if there is a cross impregnation between two varieties, the result is quite a new variety, in which the characters of the two are blended together. This holds in the same manner if the one is a cultivated plant, and the other in a state of nature; but we believe that as the natural plant is always the more hardy one, a cross with it is nearer to it in character than to the cultivated one with which it is blended.

When there are many varieties of roses, or indeed of any other plants, growing near to each other, this cross impregnation takes place naturally, and though the result is of course a matter of chance, that is, though the persons

POLAR BEAR.

The dreary climes to which this species is confined, the perils and privations to which it must often be exposed amid turmoiling waves and reeling mountains of ice, the peculiarity of its form and appearance, its great strength and power of enduring much hunger and the very extreme of cold, the many tales which are told of its ferocity and daring, the strong attachments and kindly feelings which it displays to its kind and in its domestic circle, all conspire to render it not only the most interesting of the bears, but one of the most interesting animals in nature.

Its office seems to be that of chief scavenger to those regions in which the extremes of season produce the extreme of animal mortality, and though its system of dentition resembles that of the other bears, it is, from its locality, as much of an animal feeder as they are of vegetable. Being an animal feeder, it has a more habitual propensity to kill than the land bears. But still, the prey which it pursues and captures in the living state is not land animals, but animals of the sea—not fishes, though occasionally it may not reject them, but the aquatic mammalia; and more especially those smaller kinds which subsist by being fishers. Of these, the seal is perhaps its staple food; and as the seals do not hybernate, but keep breathing-holes open in the ice, even in the depth of the polar winter, this species of food is accessible to the bear at all times of the year. In winter too the foxes and wolves of the northern regions seek the ice, because their summer food on the arctic lands has either migrated to milder climates or is buried beyond their reach in the snow: these animals may form part of the winter repast of the bear during the portion of that season when it keeps the ice. Indeed the fact of its hybernating or not is not very well ascertained, though the probability is that the male, at least, is not so long dormant as in the land bears of the north.

The distinguishing characters of the polar bear are—the great length of the body compared with its height; the length of the neck, the smallness of the external ears, the large size of the soles of the feet, the fineness and length of the hair, the straightness of the line of the forehead and nose, the narrowness of the head, and the breadth or expansion of the muzzle.

The size varies considerably. Some are mentioned as long as thirteen feet; but the accounts of these are in all probability exaggerated. Captain Lyon mentions one eight feet seven and a half inches long, and weighing 1600 pounds. The domestic manners of these powerful animals are not much known. The pairing season is understood to be in July and August; and such is the attachment of the pair, that if one is killed, the other remains fondling the dead body, and will suffer itself to be killed rather than leave it. The females retire to their hybernation about Christmas, sooner or later,

Madame Hardy. Village Maid.

Arctic Bear

TULIP.

VARIETY—MARCELLUS.

The tulip, in the greater number of its almost innumerable varieties, and more especially in those upon which the greatest value is set, is merely a flower to please the eye; for the few varieties which have an agreeable scent are very inferior, both in size and in colour. But still there is perhaps no flower which has been more highly prized, or brought a larger price in the market, than the tulip; especially at those times when the inhabitants of some countries have been seized with what has, not improperly, been called "Tulip-mania." This peculiar kind of infatuation has been carried to a greater height among the Dutch, who are in most matters a cool, cautious, and calculating people, than among any other nation; and the Dutch continue to excel most other nations in the culture of tulips, and indeed in all the finer roots of bulbous plants. Even in Britain rare and beautiful new varieties of the tulip fetch very high prices; and tulip culture, carried on upon any thing like a superior scale, is an expensive matter, though nothing to what it once was in Holland. During the *mania*, there was a favourite variety, *Semper Augustus*, of which a single root sold for 4600 florins, together with a new carriage, horses, and harness complete. The money portion of the price is easily counted, being £402. 10*s.*; but the value of the carriage, horses, and harness, is not so easily estimated; though it has been supposed that the total price of the tulip could not have been less than *six hundred pounds!* and, though Holland was a very wealthy country in those days, yet the price, rated at the present value of money, must have very considerably exceeded a thousand pounds. No such sum is of course now given for a single tulip; but still, a tulip bed, of the very first class, cannot now be furnished for less than five hundred or six hundred pounds.

The tulip is a native of the warmer parts of the temperate latitudes; and there is in some parts of England, in Norfolk and Suffolk chiefly, we believe, a wild tulip, an insignificant plant of a yellow colour. This, however, is not understood to be the one out of which the florists' tulips have been bred; for they are understood to have come from the west of Asia, though from what particular country or district is not so well understood, neither is it a matter of any very great importance.

There is a classification of tulips founded on the tints and arrangements of their colours, and without any reference to botanical distinctions; and the simplest form of this is that which considers every garden tulip as belonging to one or another of the three sections of Biblœmens, Roses, and Bizarres. The biblœmens have the hollow of the cup and the general ground white, but the

who gathe[r] the seeds do not know what the characters of the seedlings are to be, yet th[e]re are delicate beauties of variation brought about in this way, and new variet[ies] result from them very often far superior to any that could possibly be pr[o]duced by the direct and intentional application of human art. The two species of roses, of which representations are given in the plate, are instances of [w]hat may be done in this way; but they are only two instances out of a coun[t]less number.

Madam Ha[r]dy is a white damask rose of great beauty, forming an elegant plant, with a [p]rofusion of flowers, which are very double, and true to their shape. The co[l]our is what is called a warm white, that is with just a trace of red in it, but no[t] so much as to have the slightest approximation to a bluish. These warm ting[e]s, which are so faint that they give no decided colour, but which yet take off [t]he cold and hard appearance of an entire and unsoftened tint, are very pleasi[n]g to the eye, and we believe we may add, that roses which possess these have an equally delicate and indescribable odour.

Village Maid is a very charming and desirable rose. The colours are fine, and the contrast which they make in the individual flower, and also with other roses whatever may be the colour of them, is very striking. The petals are peculiarly delicate in their texture, and thus the individual flower does not continue for any great length of time, but they blow abundantly, and in succession, so that the plant remains a long time in flower. This rapidity of succession is a much more valuable quality in roses than the mere duration of the individual blossom; for whatever the rose is, and especially if it is a delicately coloured one, its freshness and beauty soon go off, even though it should remain a considerable time upon the tree without absolute decay of any part. The "new-blown" rose is the prime condition of the flowers in respect of delicacy and freshness, both of colour and of perfume; and lovely as it is in its bud and the first expanding of its petals, there is something painfully unpleasant in a rose which has begun to wither on the stem, far more so than when it sheds its petals before they are faded. Village Maid has this desirable property in a very high degree; it is fresh blown on every day that the flowers continue, and, as it is a free-grower as well as an abundant flowerer, it is a preferable species for culture as a standard race.

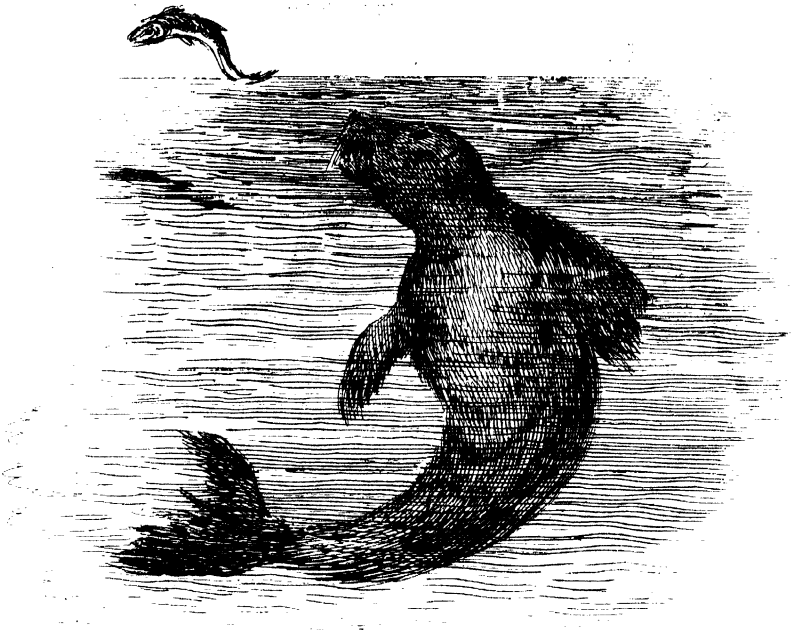
AMPHIBIOUS ANIMALS.

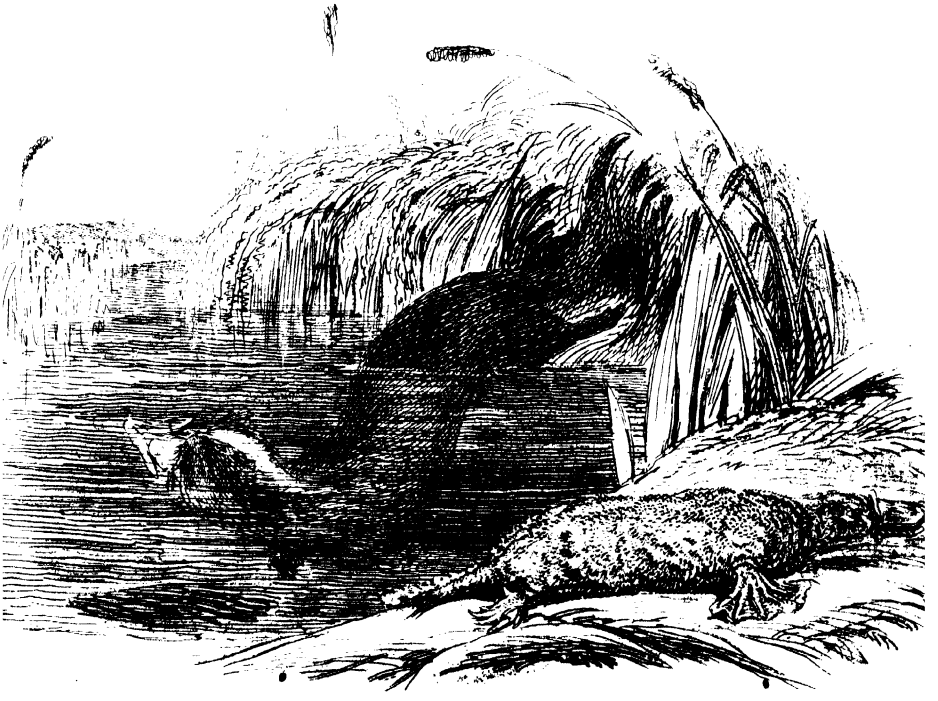
SEAL—OTTER—ORNITHORHYNCHUS PARADOXUS (YOUNG).

AMPHIBIOUS means, having "both lives," that is, being capable of living and breathing indiscriminately in the air and the water. There is no known animal which has this power, except perhaps the siren, a reptile of the Batrachian, or frog tribe, found in the lakes and pools of the Eastern Alps. Cuvier applies the name amphibia to animals which are specially formed for motion in the water, but which breathe air. The seal is one of these; but the other two animals on the plate, though aquatic in their habits, are much less so in their forms than the seals. The otter, which is shown partially in the water, is a carnivorous animal, belonging to the same family with the martens, polecats, and weasels; and the third, shown wholly on the land, is a curious animal of New Holland, classed by Cuvier among the toothless mammalia, and in that section of them which have but one passage to the body as in birds.

SEAL.—Seals are a numerous family, and vary considerably in their size and appearance. The one shown in the plate is the common seal. It is abundant on most of the cold shores of Europe, and by no means rare on many parts of those of Britain. The head resembles that of the land mammalia, but the body is shaped a little like that of a fish, the fore paws being formed into swimming flaps, and the hind ones turned backwards and united with the tail, so as to form a swimming instrument, but they are of comparatively little use in walking on land, where, though the seal can both crawl along and climb, it does so in a very awkward manner. The length of the full-grown seal is about five or six feet; it is of a yellowish grey colour, mottled with darker spots, and when old it gets hoary. The female brings forth her young, never more than two, in the month of June; she keeps them in a concealed cave, and is very attentive to them, and resolute in their defence.

Seals are watchful and wary animals, and not easily surprised when on the banks and beaches, to which they resort in order to bask in the sun; but on the shores and in the caves of the northern isles, where they collect in such multitudes, they are killed by attacking them with sticks. They are easily tamed, and will eat various substances in confinement, as well as gambol and play tricks with those who are kind to them, but they do not thrive unless they have access to sea water. Their natural food is fish, which they are very expert at catching, and in the estuaries of the British rivers they devour the salmon with more avidity than they do any other fish, and capture vast numbers of them. When the seal nearly comes up with it, the fish springs out of the water, as shown in the plate, and the seal is almost seen to catch it as it falls. Seals when fat yield a good deal of very excellent oil; the skins





markings may be of any shade, and very often there are several of them in the same flower. The roses are also white in the ground; but the markings of them are confined to various shades of rose red. The bizarres have the ground of a yellow colour, without any particular regard to the markings. Which of these should have the preference, is very much a matter of taste, or rather of fancy, for there are very fine varieties belonging to all of them. The cultivated tulips are all evidently natives of a climate where there is a dry season of rest, after the flowering and seeding, and the seasoning and ripening of the bulbs; and therefore they cannot be kept from degenerating, in our climate, unless the bulbs are taken out of the ground and dried; but they must be placed in it again as soon as they begin to show any symptoms of activity. As is the case with all flowers which have a double propagation, that is, which produce seeds and also new plants from the roots, the most certain way of multiplying any one variety is by means of the off-set bulbs; though they will sometimes "sport," as the growers term it, and break away from the characters of the parent bulb. New varieties are chiefly obtained from seed; and the cultivator may make his election, whether he is to obtain his increased number of plants in the one way or the other. If his object be to continue the varieties of which he is already in possession, then he takes care to remove the seed-vessels as soon as the beauty of the flowering is over; and then the whole of the relieving energy of the plant is devoted to the bulb and its offsets. But, on the other hand, if he wishes to obtain new varieties, then he must allow the seed to ripen, by which means the bulb must, of course, be greatly deteriorated, and if it does produce any effects, they must form very superior plants.

Marcellus, which is represented in the plate, is a very fine Bizarre. It is a plant of British origin; and was bred by Mr. Clark, of Croydon. The flower is of ample size, and handsome shape. The ground colour is of rich yellow; and the hollow, or centre of the cup, is very pure. The margins of the petals, or rather of the sepals—as they are both united and entire—the feathering upon them, is of a very rich brown; and the flower, or dark portion which radiates along the centre, is of the same colour, but, if possible, rather richer and deeper in the tone. It is a fine and regular growing plant, and the foliage is handsome, as well as the flower; thus it has justly become a favourite, and is to be met with in most of the collections of those who are ambitious to have a show of the finest tulips.

BABOONS.

PIG-TAILED—BLACK—MANDRILL—MAGOT.

Four species of Baboon are represented in this plate; and from them the great difference in appearance between the baboons and the apes, and also the great diversity which there is among the baboons themselves, may be seen. Like the apes, they are confined to the Eastern Continent, and Africa may be said to be their head quarters, as the Asiatic isles are of the apes; but they are pretty widely distributed, and one, the Magot, or Barbary Ape, figured in the plate, is found on the top of the rock of Gibraltar, though in no other part of Europe. All the paws of the baboons are formed like hands, and they are clinkers; but the fore legs are much shorter in proportion to the hind ones than in the apes, and they are in consequence little walkers. In every respect they have more of the quadruped in them than the apes, and their dispositions are more sullen, and their manners more offensive. In walking they have a clumsy gait, because the whole flat of the paw is applied to the ground, and the knee-joint is free, whereas it is embedded in the flesh in all animals that walk gracefully on all fours.

The Pig-tailed Baboon belongs to that section which are intermediate in their characters between the typical baboons and the apes. It is a native of the south end of Asia, and but little is known of its manners. There is indeed some confusion about it, but two species, distinguished from each other by naturalists, as *Macaco nemistris* and *Macaco rhesus*, have been indiscriminately called pig-tailed baboons, or pig-tailed monkeys. The former is the one of which the attitude and form are shown in the plate, and these are almost all that are known concerning it. They are not rare, but they are dull animals, possessing very little interest.

The Black Baboon, or *Black Ape*, is an animal of more interest, at least in the eyes of naturalists; but the interest of it is negative rather than positive. It is rare, and the part of the world of which it is a native is not known with certainty, though it unquestionably is an animal of some warm part of the Eastern Continent or its islands. Several living specimens have been brought to England, by means of which artists have been enabled to delineate the animal, and naturalists to describe its structure; but all that has been communicated respecting the land of its nativity is that it is from "the South sea," a word of very wide and vague import. The probability is that it is really from the *north* sea, that is from the Philippines, or some of the other islands to the east of Asia, and to the north of the equator. The engraving will show that it is not a very handsome animal. It approaches the apes in some of its characters, the tail being a mere tubercle, and the fore legs being

are made into leather; those of the young ones are sometimes dressed with the hair on, and the flesh was once esteemed, but it is not now eaten in Britain.

Otter.—There are several species of otters, natives of different parts of the world, as of North and South America, the West India Islands, Southern Africa, India, and the Asiatic isles; but though they differ in some particulars, they all agree in their general characters with the common or European otter which is represented in the plate.

The common otter is very low on the legs, but it is long in the body, and a strong and bold animal in proportion to its size. The body of a full-grown one is about two feet in length, and the tail about a foot and a half. Its general colour is blackish brown, with a white spot on each side of the nose, and a larger one of the same colour on the chin. The nostrils are capable of being closed by means of a set of membranous valves, which shut the passages into the lungs the more closely that the animal swims against the currents of those rivers in which it fishes for the chief part of its subsistence. The eyes and ears of the otter are small, but the former are sharp and piercing, and it can see equally well on land and under water. Its haunts are the tangled banks of rivers, where it nestles in a natural hole, if it can find one suited to its purpose, and if it cannot it constructs a burrow. The young are four or five in number, produced in the month of April, after a gestation of about nine weeks, and the mother suckles them for a month.

Ornithorhynchus.—This is a very singular animal, as are the greater part of the native mammalia of that part of the world in which only it has hitherto been found. It is found by the banks of the slow-running waters, in which it digs a burrow, having the entrance below the surface, and the chamber, to which there is a double passage for part of the way, raised above the highest flood. In this chamber the female makes a nest for her young, which she suckles with milk, though the suckling apparatus is not perceptible except when actually required. The female is marsupial, or has an abdominal pouch, or bones for the support of one, but what state the young are in when transferred is not known, as the animal is very shy, and its habits obscure. The jaws are furnished with mandibles resembling those of a duck, which however are very short in the young one, but lengthen as it begins to find its own food, which consists of worms and other small animals, for which the creature dabbles in the same manner as a duck. It varies in length from fifteen inches to two feet, is very low and squat, and covered with long silky hair of a brown colour, with soft grey fur among the roots. Whatever length of time it may be in the water, it is never wet. The annexed cut represents it swimming with the hand above the water, and also shows the webbed foot, the membrane of which can be withdrawn from the claws, in which state the foot is a digging one.

coloured and more richly pencilled and marked, than the three inferior ones. Much of the beauty of the flower in the estimation of amateurs depends on the character of the "blaze," or white streak in the basal parts of these superior petals; the "cloud," or dark spot in which this terminates; and the clearness and delicacy of the finer pencillings.

Far greater changes are produced upon some flowers than those which mark the difference between the Geranium and the Pelargonium; and such changes give us a little insight into those curious properties of plants which make them, in the hands of the skilful cultivator, as docile as clay is in the hands of the potter. The first step is to work either for enlargement of volume in the individual plant, or for productiveness in the way of flowering and fruiting. The farmer works for the one or the other of these, according as he sets more value on the haulm or straw, or on the seeds or grains; and the orchardist generally directs his attention more to the productiveness of his trees than to their increase in size, while experience teaches him, that the one of them is always inversely as the other. But neither of these heeds the beauty of the flowers, so that they are fertile.

The florist, again, carries the matter a step farther, and makes a distinction between the beauty and the fertility of the flower, either of which may, he finds, be promoted, if the other is sacrificed to the same extent. The first parts that give way to the beauty of the petals are the stamens. We see in the Pelargonium that the three large petals are obtained at the sacrifice of three out of the ten stamens; and there are many instances in other plants in which the stamens all disappear, and petals occupy their place, so that the flowers are entirely barren; in other cases the change is only partial. Any one may see that this is done; but the way of doing it successfully is a matter of experience, and therein consists one of the advantages of a skilful breeder of flowers.

BEAVERS.

This plate represents the locality of a colony of beavers, with their habitations, by the banks of a slowly-running stream, and the colonists themselves employed in their usual avocation,—some cutting timber, others carrying, others floating it along the water, others again inspecting the huts to see what repairs they stand in need of, and others still entering by those apertures which open to the air.

In the breeding time, and during the summer generally, the beavers do not occupy these habitations, but spread themselves over the country, as is the case with many animals which are social during the winter. But previous to the setting in of the cold, when they collect again, their haunt presents a busy scene. The dams, in situations where they are required, need repair, and so do the houses; and new houses have to be built for the young, if the casualties of the season have not prevented an increase. This but rarely happens, as the winter is the time when the beavers are hunted. In summer they are not so easily found, and though they were, their fur is of little value compared to what it is in the winter. Hence, partly from the nature of their haunts, and partly by that very cupidity of man which makes him seek them so eagerly at other times, the beavers are spared in what may be called the close time.

Beavers are still abundant in such places of the north of both continents as are suited to their habits; but they are very rare in the middle latitudes, and unknown in the south even, of Europe. There have been none in Britain for many years, though both traditional accounts, and the existence of their bones in the accumulations of peat as far south as Berkshire, show that they were once among the wild mammalia. The country appears to have been much more humid, and the banks of the streams far more tangled with rapidly-growing trees, than they are now.

The beaver is low and squat in its body; the line of its profile, from the occiput to the muzzle, is unbroken; the muzzle is oblique and blunt; and the upper lip cleft, as in the hare. The eyes are small, oblique, and wide apart from each other; and the ears also are small. The fur is remarkably close and soft; but interspersed with longer bristly hairs, which get more abundant as the animal grows older; both the hind and the fore legs seem short in proportion to the size of the animal when it walks on the ground; but, as is the case with all animals of the order, the habit of which is generally to leap, to stand up, or to support themselves on their hind legs, these are much longer than the fore ones. In the use of its feet in walking it combines two distinct habits. On the fore feet it is *digitigrade*, or walks on the toes only; and on the hind feet it is *plantigrade*, or walks on the entire length of

the sole. This again gives the fore feet more apparent stability than the hind ones in walking, but it gives the whole animal a wriggling gait, and the beaver is in consequence rather a slow animal upon land. The tail is the most peculiar part of its structure. It is very large, nearly half as long as the body of the animal, oval in shape, and flattened on the upper and under sides. It is also, with the exception of a small portion at its base (which is very thick and strong), covered not with fur, like the rest of the animal, but with a sort of horny scales, which are produced by a thick and dark-coloured skin. This tail is not however used as a mattock, a hammer, a trowel, a sledge, or any other implement, though it is so stated in the books; but it sometimes answers as a prop, when the animal stands erect and uses its fore paws in working.

Beavers have a double element, being adapted both for the land and the water, and perhaps for both in nearly an equal degree; for though the hind feet are aquatic rather than terrestrial in their structure, the structure of the fore ones is wholly terrestrial, and the animal is in no respect a water-feeder. It spends, indeed, a considerable portion of its time on the margin of the waters, and some part of it in that fluid, but the water directly produces nothing which can be considered as beaver's food. The beaver eats no animal substance; and plants which are strictly aquatic, and grow in the water without being rooted in the soil, have no matter in them adapted for its support. Sometimes, indeed, beavers eat the roots of water lilies and other plants which form bulbs, or other roots containing, during the season of their repose, a considerable quantity of albuminous matter; but these are not, strictly speaking, water plants; they are marsh plants, and though water is necessary to their growth, soil is equally so, as we never find them on the washed sands or clean gravel of running streams.

When a family or society of beavers begin to construct a house (for houses are not made by solitary ones), they at first dig a foundation proportional to the number which it is to accommodate; and the walls are formed of the earth and the stones which are dug out of the foundation, mixed with billets of wood, crossing each other, and thus binding or tying the other materials, so as to prevent them from being separated by the weather. The walls are made of considerable thickness, and so compactly put together, and all the interstices so filled with mud, that they are both water and air tight. When the walls have been raised to the proper height, they are closed in by a sort of dome roof, so that the structure is externally something in the shape of a hay-cock. The centre of the floor is a little raised, so that the place where the animals repose may be dry, notwithstanding any moisture which may trickle down the walls. All the grand works of the beavers are however carried on during the night, and thus the accounts of them which are given in books are more imaginative than real.

BEARS.

THE GRISLY BEAR OF NORTH AMERICA.

Bears are, in the system of the late truly illustrious Baron Cuvier, classed among those carnivorous animals which are plantigrade, or walk upon the soles of their feet. They differ from the more typical carnivora in many respects. In the first place, they do not confine themselves to animal food, but eat succulent vegetables, honey, and other substances which are not animal; in the second place, they do not kill the animals which they eat, in what may be called a business-like manner, by attacking them in some vital part, but, on the contrary, lug or tear them to death; and, in the third place, those of them that inhabit the cold climates which are their appropriate places of residence, often hybernate during the winter, or some part of it, which is never done by the characteristic carnivora. There are bears in almost all latitudes, from the equator to the pole; but those which inhabit the warmer latitudes are lame and feeble as compared with the natives of the colder ones; and therefore we must regard them as being, in their proper home and locality, animals of the colder regions of the globe. According to the accounts, the one represented in the plate is the most formidable of those which find their food exclusively upon the land.

The grisly bear is described as the largest and most formidable of American bears, and indeed of all land bears; and the character of its habitation points out the purpose which bears answer in the grand system of nature. The whole genus, as already noticed, have a polar rather than an equatorial character, and may thus be considered as geographically the reverse of the more formidable among the strictly carnivorous animals—the lion and tiger in the eastern world, and the jaguar in the western. These are all tropical in their home, habitually ardent in their temperaments; and though they can endure hunger for considerable periods, they feed all the year round, and thus have no season of repose. The bears again are seasonal animals, retiring during the winter, and coming abroad in the spring. But it is not from the storm that the bears retire, it is from the cold serenity—the almost total cessation of atmospheric as well as living action—which reigns during the polar winter: the storm is both seed time and harvest to the bears. During the utmost of its fury they range the wilds and forests, accompanied by those more powerful owls and hawks, which, like the bears, are equally remarkable for their strength and their impenetrable covering. At those times many of the smaller animals are dashed lifeless to the earth by the storm, or shrouded in the snow, and upon these the bears make an abundant supper—a supper of days, and even of weeks, before they retire to their long rest. So also, when the storm begins to break, they

find a plentiful collection of the carcasses of such animals as have perished in the snow, and been concealed from sight and preserved from putrefaction under it.

Independently of its size, its colour, and the ferocity of its disposition when roused, this bear may be readily distinguished from every other species, by several well-marked characters. The line of its forehead and muzzle is straighter than in any other species, and its claws, especially those of the fore feet, are much more produced, and far more crooked, though its general habit is not that of a climber. The snout is black, and movable, the central furrow being distinct; the lips are partially extensile; the eyes very small, having no third eyelid, and the irides being of a light reddish-brown. The ears are short and rounded, and the line of the forehead thence to the eyes is a little convex, but it continues straight to the point of the snout. The hair on the face is very short; but on the body generally, it is long and very thickly set. When young, its general colour is not unlike that of some varieties of the brown bear of Europe. Like that too it is subject to considerable variations of shade, not only from age and season, but also in different individuals. But when full grown, the prevailing colour of the body is a mixture of white, brown, and black, from which they have received the epithet of grisly; but the legs, the feet, the shoulders, the throat, the belly, and hinder parts of the thighs, are darker and more inclining to black than the rest of the body, while the snout, so far as it is covered with hair, is paler. The tail is very short, and in the living animal, completely hidden by the hair.

On the fore-paws, the claws are rather slender, but long, as well as crooked, and sharp at the tips, though the sharpness is rather that of a chisel, by being narrowed at the sides, than a point. This structure gives the tips of them great additional strength, and accounts for the severe gashing wounds which are inflicted by their stroke. The toes of these paws are furnished each with a sub-oval naked tubercle, and the anterior half of the palm is also naked, and of an oval shape, placed lengthwise across the palm; while the anterior part has a rounded naked tubercle. The interstices of these tubercles, and also between them and the claws, are covered with thick and strong hair. The soles of the hind feet are also in great part naked; and the claws on them are considerably smaller than those on the paws, though much more crooked; and their trenchant points form very terrible lacerating instruments when the animal closes with its enemy in hugging. They are sufficient to tear the abdomen of even a large animal to shreds, while the fore-paws are at the same time compressing its thorax to suffocation.

The individual on the plate is shown in the act of strangling a mountain deer, to which these bears are described as being formidable enemies; though it is probable that, for great part of the year, they follow the habit of other bears, in feeding upon vegetable matters and carrion.

BIRDS OF PARADISE.

APODA—REGIA—RUBRA—MAGNIFICA.

Birds of Paradise are singular creatures, and they inhabit a very peculiar part of our globe. In their natural characters they belong to the conical-billed division of Cuvier's great order of Passeres; and they are nearly allied to the crow tribe, and still more nearly to the rollers. But in appearance they differ from all birds, in the singularly produced feathers which originate in their shoulders, their flanks, and other parts of their bodies, and give them, when flying in the clear and bright atmosphere of the eastern islands, very much the appearance of brilliant meteors streaming through the air.

Paradisea Apoda, the first which is figured on the plate, is the great or common bird of Paradise, which is held in considerable estimation as an ornament for female head dresses upon gala days. The whole skin is used for this purpose; and as the people who procure the skins remove the feet, it was once supposed that the birds were footless, and hence the name *apoda*—"wanting feet." The length, from the front of the bill to the extremity of the tail, is about a foot; but the produced feathers of the flanks, which are beautifully light and flocculent, extend about a foot more. The general colour of the plumage is cinnamon brown; the feathers on the forehead black, of a very soft and close texture, and with green reflections. The crown of the bird and upper part of the neck are pale yellow; the hind head and lower neck purple brown; the chin is golden green; the rest of the under part maroon brown; and the bill and feet black. The colours can hardly be described, however, and they vary much in different specimens. The habits of the bird, and indeed those of the genus altogether, are but little understood. Their head-quarters are near or about New Guinea, a country which has been but little explored.

P. Regia, or the "King" bird of Paradise, is not one eighth of the volume of the common one, being only from five inches to five inches and a half in length. It is also less royal in its habits; for while the other is found chiefly in the air, or on the tops of lofty trees, and on its migrations sails majestically in company with its associates, this species is a dark bird, seldom found on a very elevated perch, and solitary and shy in its habits. That it does migrate is understood, because the food of such birds is seasonal in the places which they frequent, and this species feeds principally on berries; but it is seldom seen on its migrations; and as its produced feathers are not of the same floating character, its style of flight cannot be so peculiar. The upper part of this species is reddish brown, of velvety texture and gloss, the pouch and part of the head rich orange of the same, with a small black spot at the

1 Paradisea Apoda
2 Paradisea Regia
3 Paradisea Rubra
4 Paradisea Magnifica

inner angle of the eye. The chin is of a rich nut brown, forming a large spot upon the upper part of the throat, and passing into a margin of pale and yellowish brown; and that again passes into a gorget of very intense golden green, with metallic reflections. The rest of the under part is leaden grey. The feathers of the flanks are not much produced; but there are two curious feathers issuing from the rump, which end in discs of a golden green colour.

P. Rubra, the "Red" Bird of Paradise, is between nine and ten inches in length, from the extremity of the bill to that of the tail. The upper part, the sides of the neck and the breast, are yellow. The feathers at the base of the bill, which cover the openings of the nostrils, are velvet black; and those on the top of the head, which have the same soft texture, but are much more produced, and parted in the middle so as to form a sort of double crest, are of a fine golden green, and they partially extend over the nape and sides of the neck. The lower part of the breast is brownish, and the flying feathers of the wings and tail brown. The flanks are furnished with numerous produced feathers, which are detached from each other, and bare and flocculent on their neck, in the same manner as those of the species first mentioned; but their direction is much more across the axis of the body, their curve more downwards at their points, and they are very differently coloured. They are of a deep and full red, or the character which may be considered as blood red, or the nominal or primary tint of that very varying colour; but still their tone is subdued, and more inclining to that of venous than of arterial blood. From the sides of the rump there proceed two thread-like feathers, of an intense black.

P. Magnifica, the "Magnificent" Bird of Paradise, is a small species, and less magnificent than some of the others. It is only about six inches in length, and, except the ruff on the neck, and two long filaments in the tail, it has no produced feathers. The upper part is of a rich and brilliant brown. The feathers over the nostrils and on the head short, but very thickly set, and of a rich reddish brown. The top of the head green, with metallic reflections Around the neck there is a double ruff of produced feathers. The first, or nearest the head, and shortest one, is composed of straight feathers, of a reddish colour, and with black spots on their extremities. The second, and larger one, is straw yellow, with the colour darker towards the extremities of the feathers. The ends of the feathers of both are squared and abrupt, as if they were trimmed by a pair of scissors; but the webs of that part have the same velvety texture which characterises all the produced feathers upon birds of this genus. The primary quills of the wings are of a fine crimson colour; the coverts yellow on the upper sides, and brown on the under. The secondary and tertiary quills brown. The throat and breast are clouded with green and blue on the middle, passing into brownish green on the sides of the breast, and the belly is bluish green.

HYÆNAS.

There are few animals upon whose characters common opinion has been so severe as upon hyænas; and yet it does not appear that there is any very good grounds for this opinion. The usual epithets bestowed upon a hyæna, are, "ferocious and untameable." Now there is no doubt that when in a state of confinement, they are ferocious, for naturally they are ranging animals, and all ranging animals are impatient of restraint,—a dog when put on the chain becomes a ferocious animal, however gentle he may be when he is at large; but the moment that he regains his liberty, his joy and his gratitude to his liberator are shown in the most lively manner, and he actually inspires with the same feeling those who attend to his gambols. Then as to hyænas being untameable, the case is so much the reverse, that they are not only tamed and employed as dogs both in Africa and India, but they retain for a very long time their affection for those who have been kind to them. Colonel Hodgson presented to the Zoological Society of London, a specimen which he had obtained young and tamed in India. Of course it was shut up in a den in the Menagerie of the Society at their exhibition gardens—that Golgotha of tropical animals, at Regent's Park; and in this situation it was a snarling and snappish animal. But, after the lapse of a good many months, its old master visited the gardens, and was speedily recognised by the hyæna, which, being let loose, gambolled about him in an absolute frenzy of delight—not surpassed by the most attached of the spaniel tribe. So much for the untameableness of the hyæna.

It must be admitted that, according to the ordinary mode of judging in such matters, the hyæna has teeth of a more carnivorous character than any others of the dog family; but to be carnivorous is not to be ferocious, unless when the animal is in want of food; and as it requires more resource in an animal to kill living prey than to eat substances which have no power of escaping from it, carnivorous animals are really much more susceptible of taming than any others. In wild nature, the hyænas are carrion feeders to a great extent, and they dig into the ground in quest of such animal substances as may be buried there, to which they are of course guided by scent, a sense which in them appears to be very keen. In accordance with this habit, they are, in the long run, confined to countries in which the seasonal rains are heavy, and the accumulations formed by the floods bury the remains of many animals—the digging of which and of the rubbish appears to be at least one of the uses of the hyæna; and the fact of the bones of the hyænas being found, not in solitary specimens but in vast numbers, in England and other countries where periodical floodings are now mild, would lead us to suppose

Spotted Hyæna

Brook's Hyæna.

Striped Hyæna

that in former times the seasons in those countries were very different from what they are now.

The Spotted Hyæna is a stout animal, about the size of a mastiff; but with the head shorter in proportion, and the motions less stiff. It, and all the genus, are obviously less fitted for running down animals in chase than dogs of any sort, except those which have been dwarfed and enfeebled by artificial modes of treatment for a succession of generations. But in point of sagacity and fidelity, they, when tamed, resemble dogs much more than any other animals do. In many parts of the Cape colony, and also of India, they are used as dogs by the country people, both for watching and for tending the flocks; and they are much better adapted to the climate, not being so liable to injury either from the great heats or the heavy rains. The hyæna is altogether a more rough and shaggy animal than any of the breeds of dogs; and all its teeth are much larger and stronger. The tongue also is intermediate, in the texture of its covering, between the tongues of the dogs and the cats, being covered with rough papillæ, well calculated for grinding all the soft matter from a bone, as the teeth and jaws are well fitted for breaking bones asunder. The noise of the hyæna is by no means like the barking of a dog: it consists of a rather unpleasant kind of bawling, or rather groaning, more a voice of lamentation than anything else. The usual colour is an obscure fawn, with dull brown on the fore part of the body, and the extremity of the muzzle nearly black. "Brooks's hyæna," figured in the plate, is merely a coloured variety.

The Striped Hyæna, though it agrees with the spotted one in the general character, is rather differently formed; and though but little of the habits of either in a state of nature is known—they being both nocturnal animals—yet the striped one must be much more of a leaping animal than the spotted. The spotted one is higher at the shoulder than at the crupper, while the crupper of the striped is higher by one fourth of its measure, being two feet, while that at the shoulder is only about a foot and a half. The upper parts are yellowish gray, with transverse stripes of blackish brown; the mane is gray spotted with black; the muzzle, the sides of the face, and the ears, are purple brown; the woolly part of the covering is thin; and the coarse hairs are long and red olive. The manners do not appear to differ much from those of the spotted hyæna; for both prefer putrid flesh to animals recently killed. This last seems to be more generally distributed than the other; it varies a good deal with climate; and it appears to be the species which was known to the ancients.

PHLOX.

PHLOX DRUMMONDII.

Several members of the genus phlox have long been held in estimation by the cultivators of flowers. They are plants with long trailing or climbing stems; some perennial, and others annual. They prefer rich and rather humid soil, which is a very general habit among climbing plants, as, although the stems are in general tough, they are long and flexible; and from the various directions into which they are liable to be turned, they need greater stimulus at the roots than plants which have more of an upright growth. The members of the present genus are not all climbers in any sense of the word, and none of them twine and climb with the same pertinacity as the convolvulus and many others. Some, too, are very small plants, appearing among stems, and displaying their corymbs of flowers in not an inelegant manner. Others are of far more vigorous growth, and, with the protection of a conservatory, have been known to extend their growth to the length of two hundred feet in the course of one summer. These more vigorous ones are, for the most part, natives of warmer climates than the smaller ones are, and cannot be grown to perfection in this country without some shelter; but the others grow in the open air, in which they thrive best in rich, moist and shaded situations. These annual ones are natives of countries which have alternations of humid and dry seasons, and they disappear during the latter, leaving only their seeds, which germinate as soon after the setting in of the rains as the temperature will admit. They serve as a variety among those annuals which are sown upon the borders in gardens; and though they are not the most showy of the flowers which are sown for this purpose, the appearance of many of the varieties is pleasing. Their flowers are of various colours, some red, others blue, and others purple, various shades of which are the prevailing colours; but the same species is not always constant to one colour, for one flower may be very pale red, another approaching to crimson, and a third purple. The flowers are always produced in corymbs or bunches, at the end of slender stalks; and in some, the number of flowers in one bunch is often very great—more than a hundred. It appears probable that culture would have considerable influence in increasing the number and the size, and in brightening the colours of these plants; but some of the more valuable species or varieties are only of recent introduction, and have not been much subjected to experiments—and indeed the temptation to make experiments on them is not very great, as the greater part of the character which they are capable of receiving appears to be pretty fully developed in the ordinary condition in which they are found.

There is of course no means of propagating the annual ones but by seed; but if the situation is favourable, the seeds can be ripened without difficulty, and they are rather abundant. In bringing them forward for seed, they must not however be too much exposed to the direct light of the sun, for although light is essential to the flowering and fruiting of most plants, and some cannot have too much of it, the case is different with at least some members of the present genus, which flower better when they have some shade and moisture.

The seeds of the perennial ones are not so easily procured, as they are neither so numerous in proportion, nor are they so easily ripened. This is of the less importance, however, as they can be propagated either by cuttings or by the division of the roots. In the last case the progress is an easy one; the roots are spreading, and all that requires to be done is to stretch them out till they have begun to throw out stem buds, and then to remove the new plants. Cuttings are not difficult to strike, they require moisture, only care must be taken not to give them so much as shall rot them. They root best in a light loamy soil, under the protection of hand-glasses, and shaded from the sun.

Drummond's Phlox is an annual, and was brought by the late Mr. Drummond (whose untimely death every lover of nature, and more especially of vegetable nature, must deplore) from the country of Texas, between the territory of the United States of America and Mexico. That country is peculiar on its surface, and also in its seasons, and there is a corresponding peculiarity in its plants. It is not a tropical country, though it lies at no great distance to the north of the tropic, and it is cut off from direct tropical influence by the high land of Mexico. Still its seasons cannot vary much of wet and dry, and during the drought great part of the herbaceous vegetation disappears. When Drummond's Phlox is sown in this country, the plants grow to the height of about fourteen inches, with slender stems, covered, but not very closely, with long hairs. The bunches of flowers appear on the extremities of the main stems, and also on the lateral ones, which always branch off at the axilla of a leaf. The flowers, as may be seen from the figure, are rather handsome, and the bunches contain a variable number, but seldom fewer than five. As the flowers do not all come to maturity at the same time, a patch of the plants continues ornamented for a good many days.

Some of the species or varieties are more showy than this, as the colours are more intense, especially those which are of a brilliant red. One of the most handsome of the whole is grandiflora, which has the bunches of flowers very large and also compact, of a delicate pale purple, with the lip of the tube forming a well-marked white eye in the centre.

VULTURES.

This plate presents the effigies of three of those long-winged scavengers.

The Condor is the celebrated vulture of the mountainous parts of South America, of whose size, strength, and daring, so many marvellous tales have been told, that had there been any such animals as elephants in South America, it is highly probable that we should have had an account, "by eye-witnesses," of the condor flying clear over Chimborazo with an elephant in its claws. We have no room to go into its history, and it is not necessary, as it may be found anywhere, since Humboldt brought it within reason and reasonable dimensions. It is only a little larger than the mountain vulture of the Alps, and its habits are nearly the same; but the appendages to the naked part of the bird bring it within another section. The colour is blackish, with great part of the wings ash, and the collar on the neck silky and white. The male has one large caruncular membrane above the bill, and another below; but these are wanting in the female. The female is nearly of a uniform grayish brown; and the young in their first plumage are ash brown, and without the collar of feathers upon the neck. Even after all the exaggerations are discounted, the condor is a bird of no small interest. It is the most lofty-dwelling bird of the whole class; and the regions of storm and earthquake which it inhabits are of themselves well calculated to give it a very peculiar importance.

The Bearded Vulture, *Læmmer-geyer* or *Lamb Vulture* of the Alps, is the typical bird of the vultures with feathered heads, or griffons as they are called. It is a sturdy mountaineer, inhabiting, but not abundantly, the summits of the most wild and elevated ridges, and nestling in the inaccessible cliffs in a manner similar to the eagles. It has been perhaps more exaggerated than any other bird, except perhaps the condor. It is in all probability the *roc* of the Arabian tale; and some describers have assigned it an extent of eighteen feet in the wings, which appears to be about double the real quantity; and the length is about four feet, the tail being long and strong. The upper plumage is black, with a white line on the middle of each feather; the neck and all the under part of the body a clear fawn colour; a black band across the head; and the band or tuft of hair, which projects from the gape, black. It stands accused of carrying off lambs, goats, chamois, and even the hunters, when they are benighted and sleep on the mountains. It is also accused of hovering over the villages, and carrying off children. It is further said to drive animals over the precipices, in order to feast on their mangled remains;—all of which must be taken *cum grano salis*. Still it is a formidable bird, as well on the mountains of Africa and Asia as on those of Europe.

The Egyptian Vulture is also, from its abundance in Egypt, called

"Pharaoh's chicken." It is about the size of a raven. The cheeks and throat are naked; the general plumage of the male bird white, with the quills black. The female and the young are brown. This species ranges pretty discursively over the eastern continent; and it is the only species of vulture which is recorded as having occurred in Britain, even as a rare straggler. They follow the caravans in the deserts in large flocks, in order to feed upon the camels and other animals which perish on those hazardous marches, which are fatal to the lives of so many, not only from the heat and drought, which one could readily understand, but from the piercing cold of the night which, at some seasons, follows a burning hot day. The ancient Egyptians paid divine honours to these birds, and we find them often represented in their sculptures and paintings; and, though the Mussulmans of the present day do not actually worship them, they treat them with much respect, as very important birds in a country where cleanliness is so essential, but so much neglected. It is probable that in so wide and varied a country as these vultures are scattered over, there are many varieties, some of which have been named, and described as species.

The general characters of the vultures are: the eyes flush with the head, and not enfonced under a brow, or standing prominent to command a horizon; the tarsi are not covered by protecting plates, but reticulated, covered with small scales let into a sort of network, as they generally are in the wading birds; the beak is long, nearly straight in the greater part of the length of its cutting edges, and hooked only in a portion toward the tip; a greater or smaller portion of the head, and even of the neck, is bare of feathers, and if not absolutely naked skin, covered only with thin, short, and soft down: the power of their talons is by no means in proportion to the size of the birds, and they are not much used as weapons; the bill is the member upon which they chiefly depend, and it has more the character of a cutting than of a killing instrument; their wings are so very long, that they are obliged to carry them partially expanded when they walk; they are loosely made and cowardly birds, and feed chiefly upon carrion, and rarely upon living prey. After they have gorged themselves with food, their craw forms a large protuberance beneath the furcal bone, a flow of fetid humour distils from the nostrils, and they are often in such a state of stupidity and inaction, that they are incapable of escape or defence, and one may catch them, or knock them down with a stick. Their office in nature is a foul one, and when they have performed it, they are foul and offensive birds—but not upon that account the less in character.

GLADIOLUS.

GLADIOLUS NATALENSIS.

THE IRIDACEÆ, or flowering flags, consist of a considerable number of genera, having bulbous or tuberous roots, and more remarkable for the peculiar shapes and gay colours of their flowers than for any use to which they are applied. The most splendid of these plants are natives of warm climates, and there are very few which are natives of the temperate climates, and such as are found in the colder parts are very plain in their colours, and generally inhabitants of the banks of streams, and other marshy places; and they are not found at any great height above the level of the sea.

Among the numerous genera which compose the family of the Irideæ, Gladiolus holds by no means an inconspicuous place, and their colours are, generally speaking, well contrasted and brilliant in themselves. One of the hardiest, and on that account the most commonly seen upon open borders, without any particular regard to situation, is the common corn-flag, which is not rare as a wild plant in the warmer parts of Europe; and which in Greece, Asia Minor, and about Constantinople, makes the fields and waysides gay, but unprofitably gay, with its red flowers. The one which is represented in the plate is of more stately growth and more imposing appearance. As its name imports, it is a native of the coast of Natal, in southern Africa. This coast is on the south-east of the continent, where it begins to trend toward the west, within the limits of the Cape colony. The seasons in Natal have thus not quite the same extreme of drought and rain as in the Cape country; and thus the plants of Natal are rather better adapted for garden culture in this country.

All the members of the genus Gladiolus, not excepting even the common one, which, as we have said, is an abundant weed in the warmer parts of Europe, are showy plants, and in point of brightness of colour they have not very many rivals on the borders. They are also hardy plants, more so than many other of the bulbs, even those of them which are natives of much colder climates. The finer ones are not very apt to perfect their seeds in this country, at least in open borders; but then they have the advantage of multiplying freely at the roots, if they are placed in favourable stations, and not disturbed. They may be grown in pots, in a greenhouse, or in a border; but if the situation is favourable, that is, under a south wall, and shaded in every other direction, they perhaps grow to the greatest advantage.

The soil in which they are placed must be such as that the roots can work freely in it, and perhaps a mixture of very sandy loam, with leaf mould or peat earth, is as favourable for them as any that can be chosen. Such a com-

post has very little tendency to bind and cramp the roots, and, while the sand keeps it open, the leaf mould or peat has a tendency to retain that moisture which is essential to the proper action of the roots, upon which that of the upper parts of such plants in a very great measure depends.

The roots of this gladiolus—and the same remark applies to most of the Cape bulbs which can be grown in borders—must be placed in a pit of the compost alluded to, and carefully protected both from the rain and the frost, as it is difficult to say which is the more injurious; but if protected from these, they cannot have too much exposure either to the sun or the atmosphere, as no exposure which they can have to these in a climate like that of Britain can come up to what they enjoy in their native country; and, in the culture of any plant, the nearer that we can approximate both the natural soil and the natural climate of that plant, the chance of our success in the culture comes the nearer to a certainty.

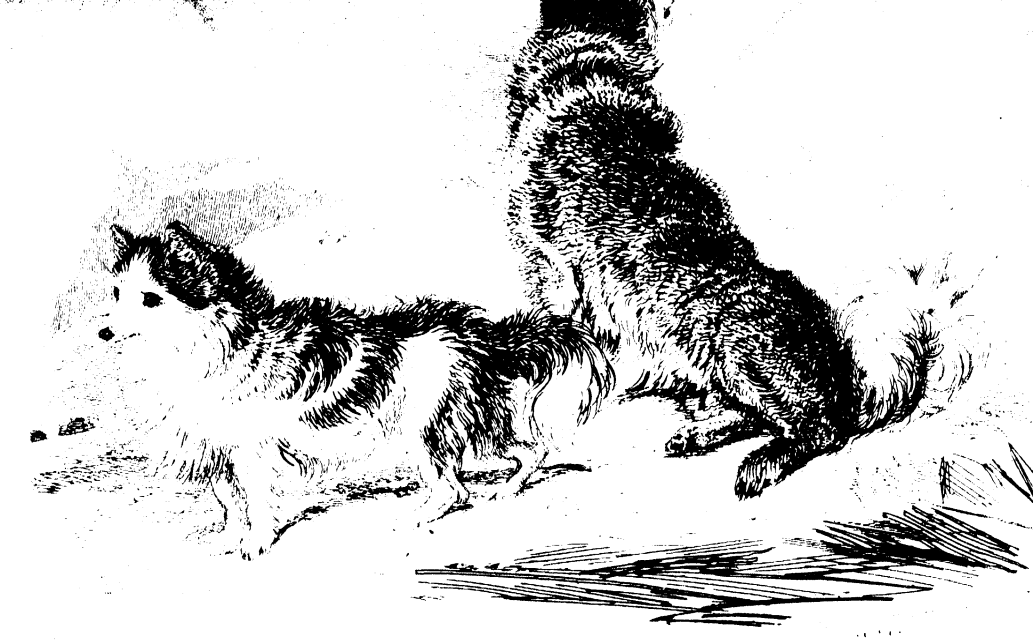
The simple treatment now mentioned may enable any one who is so inclined to cultivate in an open garden many of the Cape bulbs, even of the very choice and beautiful ones. They must always be under a wall which faces the south or the south-west, and measures must be taken, while the bulbs are in the ground, that neither the frost nor the rain in too great quantity reach them. In their native climate those plants are exposed to uninterrupted drought during the whole time that their leaves and flowering stems are gone. During part of this time they should, with us, be taken up and dried; but they must be re-planted pretty early, and thus some precautions are necessary against both the winter and the spring; for these, in our latitudes, and especially in Britain, where they are so variable, are very different from what the plants experience in the places where they are natives. When the bulbs are planted in the earth, it is not always possible to protect them sufficiently from the rain in winter and early spring by any surface treatment, and therefore sand put under the bulb, or some other mode of under drainage, should be resorted to. If the plants are in pots, great care should be taken that the pots get no water, from the time that the stems decay until that at which they begin to act again, and even then the supply should be limited. The plants have a disposition to work along with us in this matter, and accommodate themselves so far to the climate; but it would be too much to expect that a Cape bulb should completely naturalise itself to our very variable climate. A knowledge of the country of which any plant is a native is always essential to its successful culture; and the more that the circumstances of that country differ from those of the country into which the plant is brought, the knowledge alluded to is the more indispensable.

DOGS.

MACKENZIE'S RIVER—ESQUIMAUX—THIBET—PARIAH.

THE four species of dog represented in this plate are the animals, as they exist in a rude state, or are in the country of rude men, but none of them can be said to be absolutely in a state of nature. The nearest approach which we have to this is in the *Dingo*, or wild dog of Australia; and as that one is quite anomalous to the native mammalia of the country, and has a considerable resemblance to the dogs of the Malays, there seems every reason to believe that it has been introduced into Australia by some of the Malay adventurers, who are in the habit of resorting to the northern shores of Australia for the purpose of fishing. As the natives of Australia have no history, and not even any tradition, beyond the memory of their immediate fathers, and very limited even to that trifling extent, it is not to be supposed that they can possibly give any information as to whether the Dingo, or any other animal found in their country, is aboriginal or imported. The case is very much the same in most other countries where dogs are found without any immediate masters, unless it be in situations where they have obviously wandered from a state of domestication during the troubles of those countries in which they had, in earlier and happier times, been the faithful associates of men.

This is especially the case in India, and in the countries immediately to the north, across which the march of the successive invaders of India lay. During the wars in that unhappy country—unhappy by the spoliations of man, notwithstanding the ample share of the bounty of nature which it enjoys—many districts of considerable extent have from time to time been depopulated, and very speedily after this all traces of human cultivation and human abodes are obliterated, and the surface becomes so overrun with wild vegetation, that it has all the characters of a primeval desert, which had never been under the care of man. In these disasters, the dogs of course were left in the wilds, and as there was abundance of food for them there, they multiplied, and the descendants of these are, in all probability, the dogs which are found in a state more or less wild, from the mountains of Thibet to the southern extremity of the Indian peninsula. They have undergone climatal changes, from the different characters of the several parts of so extensive a range of latitude: and though the history of North America previous to the time when Europeans visited the country is a perfect blank, yet it is not improbable that the wild dogs which are found there may be all originally of the same stock, though what that stock was we have no means of ascertaining, and therefore any inquiry into it would be futile. Among those dogs of North America which are either found roaming wild in a state of nature, or in the possession of



Thibet Dog.

Wild Indian Dog.

people but little advanced in civilisation, those which inhabit far to the north are in general more aquatic in their habits than the more southerly ones. This we might expect, as even the ruminating animals of these northern parts, the wapiti and the elk, are so far aquatic in their habits, that at certain times they feed upon those plants which are under the water.

The four varieties of dogs represented in the plate all belong to those which may be considered as being in a semi-barbarous state.

The MACKENZIE RIVER DOG is the common wild dog of the continent of North America, only it is more shaggy in the fur than those which inhabit regions in which the cold of the winter is less severe. Its expression is agreeable, and its manners not very savage; but little is known of its history, and that history varies with the locality. In climatal varieties it probably extends from the shores of the Arctic ocean to the confines of Mexico, and from the Allegany mountains to the Pacific.

The ESQUIMAUX DOG is very similar to the last mentioned, and in all probability identical with it; but its habits are changed by being in a state of domestication. To the Esquimaux, in their inhospitable climate, this dog is a very valuable animal. In the summer it is their associate, and partially their assistant; and in the winter it is turned to nearly the same use as a working animal that the rein-deer is in Lapland. A team of dogs harnessed to the sledge draw it over the ice, or the hardened surface of the snow, with considerable velocity; and although they are apt to quarrel with each other in the performance of their task, they are the only animals for draught which can be kept alive during the winter in those dreary regions.

The THIBET DOG appears to be a different breed from the wild dogs to the south of the Himalaya, and in some of his characters he resembles the mastiff, while in others he approximates the shepherd's dog. He is a shaggy animal; but that may be expected, as almost all the mammalia in that country have long hairs in addition to the fur which clothes the skin.

The remaining dog on the plate is the DHOLE, or wild dog of India, which, as has been said, assumes different characters, and is also known by different names, in different parts of the country. Generally speaking it belongs to that type of the dog which has the muzzle lengthened; but the probability is that that these dogs are a mongrel mixture of many breeds.

BRAHMINNY BULL.

The bull is a sacred animal among the Hindûs; but as the horse, though abundant in that country, is not very well adapted for being a beast of draught and burden there, one of those nice distinctions by which mankind contrive to make the ceremonies of their religion and their worldly interests go hand in hand, without doing any injury to piety or to purse, has been resorted to by the Hindûs. There are several members of the genus *Bos*—the ox—in that country, among which the Indian buffalos are very strong and hardy, and comparatively active animals; and the oxen, properly so called, are soft and indolent ones. Accordingly, the buffalo is bound to the yoke, and employed in ordinary labour; while the ox is allowed to enjoy his ease, and not only protected, but pampered in the streets of the sacred cities, and in the courts of the temples of the gods.

The Brahminny Bull is the chief object of this religious preference, though no *rational* ground can be shown why this should be the case. The engraving, which is both correct and expressive, will show that there is really nothing godlike, or even superior among animals, in the form or the aspect of this sacred beast. On the contrary, the shape of the animal is very clumsy, and the expression dull and feeble; and as the gods of the Hindû pantheon are no more remarkable for the mildness of their dispositions than they are for the morality of their reputed conduct, the anomaly is the more striking. The most plausible reason that can be assigned for making this animal the living type and representative of the bull Nundi, is, that he can be allowed to wander and loll about without any personal danger to the devotees, who thus far agree with the Brahminny bull, that they are quite harmless and quite useless.

From the indolent life which these animals lead, and the abundance of food with which they are supplied, they are in general much fatter than any other animals that are met with in India. In that country, and in all other countries which have climates equally hot, animals do not accumulate soft fat, especially not on the surfaces of their bodies, that is, in the cellular membrane between the skin and the muscles. Even the pigs in India are lanky animals, however they are fed, and the fat which they do accumulate is all in the inside. The hump and the dewlap are the places in which the fat of the Brahminny bull accumulates; and this fat consists in great part of stearine, or hard fat, which does not melt under the heat of an Indian sun, and is not easily reduced even by the operation of boiling. The hump consists almost entirely of this substance, and has very little increase of the spinous processes of the bones for its support. Still, in large specimens of the animal, this lump of hard fat on the shoulder sometimes weighs as much as fifty pounds.

Brahmin Bull

The coat of the animal is short and smooth, and the form of the body somewhat intermediate between that of the ox and the buffalo. The neck is short and thick, and the apparent thickness is increased by the size of the dewlap, which extends as far as the under jaw. The horns are placed much farther back than in the common ox, and still more so than in the buffalo, and they are small, and turned backwards; and the ears are long, narrow, and pendulous. The eye has none of the fierce expression which is shown in the common bull, and still more in those species which are in a state of nature. Mildness is the air of the animal, and, as has been said, it is also the character.

It is in the valley of the Ganges especially that these animals are so numerous and so much protected; and there are few places where they abound more, or have more attention paid them, than in and about the city of Benares. They are not confined to the fields, but may be seen lounging and lolling in every street, and in the courts of the houses of the rich and pious Hindûs, many of whom retire to Benares on account of its former sanctity. These lazy animals are carefully fed, not merely with the ordinary provender of cattle, but with small cakes and other dainties; and whatever they do, or wherever it is done, is never a nuisance, but rather an act of devotion; and the sacred bull receives equal gratitude for his influence with the gods and his gifts to the earth. We are apt to look upon these superstitions with ridicule bordering upon contempt; but if we were calmly and candidly to set down a full catalogue of our own idols, we should probably find some of them more offensive, and not more rational, than the Brahminny bull.

As a contrast to the sacred bull, there is subjoined a figure of the Indian buffalo, which, though a shaggy animal as compared with the other, is expressive of far more strength and energy.

CATS.

LION—TIGER—LEOPARD.

To be called "a cat" can be no disparagement to the imaginary king of beasts, for cat is sometimes a title of honour among men. Thus the Duke of Sutherland, as head of the Clanchattan, is "the Great Cat," in their vocabulary of honour; and when a female holds the rank, she is "the Great White Cat." In irrational nature, the lion, the tiger, and the leopard, are the most conspicuous of the cats.

The LION is found only in Africa and the south of Asia, and the numbers appear to be much fewer than they once were. Though there is certainly physical power and physical grandeur in the action of this "animal monarch," there is not any moral good or moral evil. He is a powerful beast, certainly, but still he is only a beast, acting his part in the physical economy of nature without merit or demerit, and when the days of his years of alternate indolence and slaughter are numbered, perishing like the humblest of those beasts of which fancy has made him the sovereign. It is the nature of the lion, as well as of all the other members of the genus that are strong enough for killing large prey, to feed heartily when he does feed, and to fast long in the intervals: so much is this the case, that those animals of similar habits at the gardens of the Zoological Society which had only one meal in the day were found to thrive much better than those which had the same quantity of food divided into two meals. The life which such an animal leads is naturally an indolent one; and by far the greater part of it is spent in lolling and repose, at which time there can be but little waste of the system, as the waste in the system of all animals is in proportion to the activity. In prowling for his prey, the labour of the lion cannot be very severe; and although the capture of it is attended with very great excitement and energy, the time of its continuance is but short. The lion is thus upon the whole an indolent animal, and when let alone it is comparatively a peaceable one. In those places where lions are most abundant, they are seldom seen during the day; and even when seen, if they are not hungry, or attacked, or otherwise annoyed, they do not exhibit any pugnacious disposition, but rather remain in their squatting places, or even slink out of the way. Lions are not indeed, in any sense of the word, fighting animals, which use their powers, formidable as these are, for the purpose of showing off.

All the power of the lion, great as it is, is concentrated in the fore part; and though the stroke or the clutch of the paw, at close quarters, is rather a serious matter, the lion in free nature is, like the birds of prey with their stoop, truly formidable only in his spring. The roar of the lion, for the production of

which there is a very peculiar organization of the throat, is very terrific,—deep, solemn, and heard afar, and startling to all the animals of the wild.

The Tiger is, next to the lion, the most formidable of the cats; and as it is a much more generally active animal than the lion, and consequently a much more frequent feeder, it is much more destructive and also more dangerous. The danger is increased by the nature of the places that the tiger frequents, which are nearer the inhabited grounds than the haunts of the lion are. The countries around the Bay of Bengal, with the larger islands, and the Malay peninsula, are the principal habitations of the tigers, which appear to be large in size and powerful in action, in proportion as the ground which they inhabit is fertile.

The cry of the tiger, even upon ordinary occasions, is much more appalling and even horrid than the lion's. There is grandeur in the deep and full tones of the latter animal; but there is neither majesty nor music in the voice of the tiger. It begins with deep, slow, and melancholy growlings; these gradually become more acute and hurried, till they terminate in a piercing cry, of which no description can be given, and this cry finishes with a convulsive jarring, as if the rocks around were shaking to pieces. This voice is very loud, and when it is uttered in the forests, it is so repeated in echoes, that the roaring of one tiger is heard as though the place were surrounded by numbers of them. These cries are generally uttered during the night; and, blended as they are with the yelpings of jackals and hyænas, and the alarmed cries of all those beasts and birds which are terrified at the sound, they render night in the tropical forests anything but a season of repose.

The tiger has many more points of resemblance to the domestic cat, both in form and in manners, than the lion has; and in the few instances which we have of tame tigers, they are represented as playful animals. They are not, of course, very safe play-fellows, as, if they are irritated, they become quite unmanageable; but still there have been instances in India of full-grown tigers being led about in chains, though, as is usually done with bears so led, they have been kept muzzled.

The Leopard generally has the spots pretty uniform, rather small and close; and the skin is beautiful. The animal is remarkably lithe and flexible in all its motions, and as it is considerably less than either the lion or the tiger, it is much more feeble and more mild in its expression; but, as it lives upon smaller prey, it is more frequently on the hunt, and perhaps kills a greater number of animals than its more powerful congeners. It is said to be found only, or chiefly, in the larger islands of the Oriental Archipelago, and probably in the Eastern Peninsula. It is a very symmetrical animal, and as its expression partakes as much of mildness as of fierceness, it is among the most handsome in the whole genus.

PRIMROSES.

DOUBLE CRIMSON—DOUBLE WHITE.

The family of the *Primulaceæ*, to which these plants belong, contains various genera, some of them herbaceous, and others arborescent; but the *Primulidæ*, or sub-family of the primroses, properly so called, are all herbaceous, and even stemless plants, sending up only flowery stems, which, with the leaves, spring immediately from the root. The chief garden species are, the primrose and polyanthus, and the auricula, the primrose being considered as the typical plant, and the polyanthus being a slighter departure from it than the auricula. With the exception of the snowdrop, and perhaps of the coltsfoot, the flowers of which come before the leaves, the primroses are the earliest wild flowers of the spring; and this circumstance gives them an interest beyond what they would be entitled to if they came in the season when all their brethren are in flower around them. And it must be admitted that, when one wanders out by grove or dell to catch the first freshness of the young year, there is something very pleasing in the aspect of the simple primrose. Primroses do not grow in cold and bleak situations, but in rich soil; and where they have both warmth and shelter; and though they are partial to rich situations, they are never found where water stagnates, or where the air is tainted with unwholesome effluvia, or the earth has any tendency to be of a marshy and mossy nature. Wherever they appear, we may be sure that the air is kindly, and that the soil is such that it would amply repay the labour of the cultivator. Therefore there is more of sentiment in the appearance of the primrose, than the assurance that the winter is gone, and that nature is awakening to the activity and the beauty of another year; for these flowers, simple as they are, bring promises of health and plenty in their train. In some places they are so abundant that their leaves carpet the surface, and their flowers strew it with beauty. That beauty is, indeed, of a very subdued and simple kind; but it is, upon that very account, only the more in harmony with the characters of the season.

Generally speaking, the native primroses of Britain are of a very pale and delicate lemon yellow, though there are some pale lilac ones, but they are very rare; and the writer of this article has looked for them in vain in those places where it is stated that they are not only found but common. The habit of the wild primrose, which distinguishes it from all the rest, is that of not putting up a flower-stem with the individual flowers in a tress upon the summit of it; but sending each individual flower up upon its own particular stem, as if it were an individual production of the root. But it is not an individual production; for all the flowers which blow about the same time on a plant are

really united by their footstalks at the crown of the root, whether the common base in which they are united rises in a general flower-stem or not. Sometimes this common stem of the head or tress of flowers does rise, even in the wild primrose, but it is not often: and it does not appear that this rising of the common stem is the part of the plant to which cultivation addresses itself; for it is not more frequent among the cultivated ones, as for instance among the two varieties that are represented in the plate, though in the form and colour of the flower they are both far removed from the common type of the wild one.

It is from the fact of the common stem of the flowers not rising, unless in particular and rare instances, that the primrose gets the name of *acaulis*, or stemless; and both the cowslip and oxlip, which very much resemble the primrose in other respects, have always an ascending stem. Linnæus and others have inferred, from the great similarity of the plants, and the fact of the primrose sometimes having a stem to its flowers, that the three are nothing but varieties of one and the same original plant; but there are no very satisfactory data for the decision of this, nor can we even guess why the one should in all cases have a common stem to the flowers and the other not. If we can produce a certain change by culture, then we can have no hesitation in pronouncing the individual so changed, or the succession produced from it, to be a mere variety; but in nature the case is very different; and there are very many instances in which it is impossible for us to draw the line of distinction between what is a distinct species and what is a variety.

The two which are represented in the plate are both stemless primroses, and they are among the finest of all the varieties that have been produced by culture, though it would not be easy to say what part of that culture caused them to differ from the original type of the wild plant, or from each other. Whatever it may have been, these highly cultivated varieties are not so able to maintain the artificial character which has been impressed upon them, as the wild plants are to maintain their ground. They thrive better in pots, and when they are sheltered from the winter, in a cold frame or otherwise, than when they are kept exposed in the open ground. Rich loam and leaf mould, with a little peat to keep the compost open, is the best soil for them; and in this they will, with proper care, flower early and abundantly. They are too double for producing much seed; and therefore the roots are to be resorted to for the purpose of culture; and the method is either to take the offsets, or to divide the roots, taking care that there is a crown or heart in each division, otherwise it will not of course produce any plant. This dividing of the roots is most necessary in the white variety, as it does not produce offsets so freely as the red one.

BUSTARDS.

GREAT BUSTARD—LITTLE BUSTARD.

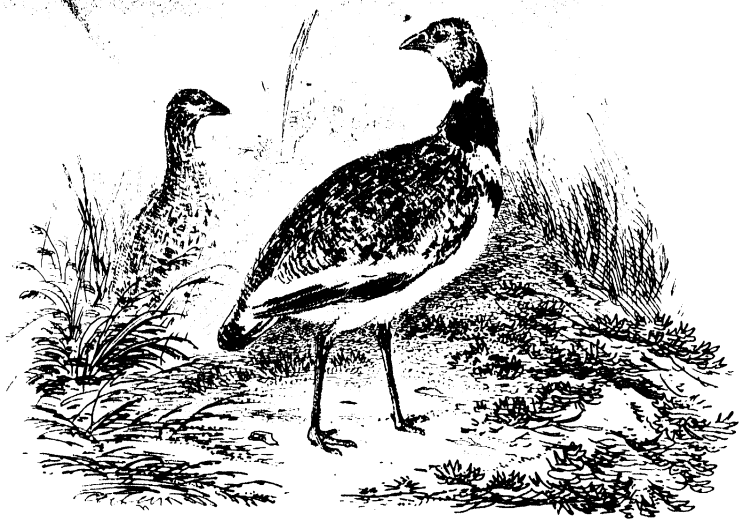
The bustards are a very interesting genus of birds, partaking in part of the characters of the gallinaceous or poultry birds, and also of those of the running birds. They have no hind toes to the feet, but there is an elastic bud on the under part backwards, and the whole foot indicates that the bird has the habit of running upon surfaces which are comparatively dry and bare. They can fly well, but they are rather reluctant in taking the wing.

The Great Bustard is truly a magnificent bird, the largest of all the native birds, not only of the British islands, but of Europe. The male bird when full grown is at least four feet in length, and not less than nine in the extent of the wings,—so that it is really a well-winged bird for its size and weight; not equal to many of the air birds certainly, but still well-winged as compared with the majority of low-flighted birds, whose natural place of abode is on the level surface of the earth, and which use the wing only when they are raised by terrestrial enemies, or compelled to shift their quarters for want of food, or any other cause.

The bill is of a sort of ashen grey colour; but the legs, which are covered with reticulated scales, and not feathered down to the tarsal joints, but have a garter or naked space above it, are black. The tarsus is about half a foot in length; the tibia is also long and comparatively free, and well supplied with muscles. There are only three toes, all turned to the front; and there is an elastic pad on the lower part of the tarsus which answers as a heel,—this structure of the toes being well adapted for giving a spring to the foot when raised in walking, and also for receiving the weight of the bird when the foot is planted without any concussion to the body. The march is thus firm and stately, and performed with the alternate foot without any hopping.

The colours are not gaudy, but the plumage is warm and rich, and the markings very beautiful and even elaborate. The head is silver grey, with a very well-defined streak of black along the middle. In the male bird there descends from near the angles of the gape, or rather from the ear-coverts, two pendent tufts of black silky feathers, which hang for eight or nine inches down the sides of the neck. These pendent tufts of feathers play backwards and forwards on the sides of the neck as the position of the head is shifted, and alternately display and conceal two patches of naked skin on the sides of the neck, which are of a violet colour, more intense in the pairing time of the birds.

On the fore part of the neck, in the male, there is a membranous sac or pouch, having its opening under the tongue, and capable, when distended to its full stretch, of containing at least two quarts. This pouch is not covered



Little Bustard. Male.

Great Bustard.

with feathers, but with a naked elastic skin of a bluish black colour. This pouch, and also the naked skin on the sides of the head, are wanting in the female.

Bustards were once not rare in various places of England, where the country is bare and open, and not very cold, but they are now reduced to a very smal remnant, which is found only in Norfolk and the adjoining counties, which bear the same character, and they are very scarce even there. Open countries where there are few trees or enclosures are their favourite haunts in the breeding season, and generally till the harvest comes on; and after that they retire to the fields of turnips. They are much more abundant, and also more migrant, on the continent of Europe than they are in England; but they always prefer dry flats to marshy ones, and in those places which are subject to heavy periodical rains they shift their quarters.

Bustards often take long migratory flights, for we have well-authenticated accounts of straggling bustards being found at the distance of four or five hundred miles from any place where they are known to be resident,—as for instance there was one shot in the lowlands of the county of Moray, in Scotland, in the year 1823, though it is pretty clearly made out that there could not be any resident ones in the island at that time nearer than the county of Norfolk; and it is very probable that the straggler found in Moray came not from Norfolk, but from the continent, and that it must have crossed the German Ocean upon one stretch of flight.

The Little Bustard is much smaller than that species of which a very short account has been given. It is not much more than one-third of the length, and its wings are shorter in proportion, but it is a stouter and weightier bird in proportion to its lineal dimensions. The upper part is brown, mottled with innumerable small spots of black; and the general colour of the under part is white, also with black markings. The male bird has glosses of a rosy tinge on the breast, which are most conspicuous during the breeding season. Though rare in Britain, this species is met with plentifully in the dry and warm parts of southern and eastern Europe.

DEER.

MALAY RUSA—MARIANA RUSA.

THESE are large, and, as the figures will show, handsome species of deer, inhabiting the Asiatic isles, and probably the south-eastern parts of the continent, though the fact in the last respect is not absolutely ascertained. They belong to a peculiar section or group of the deer, of which there are other species both in the islands and on the continent. The characters of the group are the following: the horns round, with a brow antler and a single snag near the tip, but without any bas-antler or branch on the middle; they have a broad muzzle, and large lachrymal sinuses. The males have canine teeth, and rugged manes; the tail is also longer than in any of the European deer; and some of them at least are of larger size. They are the upland or woodland deer of India, and the larger islands of the East, and in their manners they in general more resemble the stag than any other of our species of deer. There are several species of them named in books; but some of them are known only as museum specimens. It is certain, however, that the animals are very plentiful in the tangled and unfrequented parts both of India and of the islands. Indeed, it is probable that some of the species may inhabit the southern side of the mountains considerably to the westward; for one is mentioned by Aristotle, of the size of a stag, and with a mane on the withers, and a horn resembling the roebucks.

The MALAY RUSA is a large species; and though the specimens hitherto brought to Europe have been obtained from the Sunda Islands, there is every reason to believe that it inhabits the Malay peninsula, and probably also some parts of India. When full grown, it is described as being of the size of a horse, with the horns tapering, and the second snag, which is turned to the rear, very small. The horns are of a very bright reddish brown; both sexes have canine teeth; and the frontal bone is much flatter than in most species of deer. The colour is greyish brown, paler on the under part; rust colour on the haunches, and the tail; the insides of the legs whitish; the muzzle black; and the chin white.

A specimen, only two years of age, shown some years ago in London, was four feet high at the shoulder, and more at the crupper. The eyes large and dark, and of mild expression. The upper parts were dark brown, and the under blackish ash, with the hair on the mane and throat very long, and the whole covering of a hardened wiry character. The horns were dark-coloured, rough, and robust. The anterior antler and posterior snag were both short and obtuse, but from the size of the first, or brocket horns of the animal, being nearly eight inches long, it is presumed that they become, if not much

Malayan Rusa.

Rusa of the Moluccas

CHRYSANTHEMUM.

EARLY BLUSH—TASSELLED YELLOW.

The Chrysanthemums are composite flowering plants, belonging to the section of *Asteraceæ*, or star-like, and nearly allied in appearance and habit to our native wormwoods, milfoils, and tansies. None of the plants in this very numerous and hardy family are possessed of any deleterious quality, but on the other hand they are tonic bitters, though in many of them, as in the common wormwood, the bitter is so strong that the plant is by no means agreeable.

Chrysanthemum is literally the Greek for "golden flower," and hence the presumption is that the plants had yellow flowers when first introduced into Europe, and before culture had broken them into the very great variety in which they are now to be seen. They are natives of the east of Asia, of China, and especially of Japan; and, as was the case with the Camellia Japonica, Europeans had been familiar with their forms in Japanese paintings long before the plants themselves were introduced into the gardens of the western world; and, like the camellia and various others, it is probable that they were not then regarded as real plants, but merely as creations of the rude fancy of the artist. In China and Japan the plant is a great favourite, both in house and in garden culture; and from what we know of it in this country, we need not wonder that it is so. It was introduced into the British islands not earlier then the year 1790; and considering the great commercial dealings which the British have with India as compared with the French, it would, if we had not many collateral instances, be somewhat singular that we should have obtained this plant from France. This however seems to be no wonder, when we take into consideration the widely different motives by which, at least till very lately, the French and the British have been actuated in their intercourse with remote nations. Commercial advantage was for a very long time the sole inducement which the British had to the visiting of foreign parts; and the adventurers cared little or nothing for the natural productions of the countries to which they paid their visits, neither were they competent to profit by them if they had. But the French, whatever may have been their other objects, always attended more or less to the natural history; and this is the reason why we have received from them many foreign plants and other foreign matters, which it would be much more natural to suppose that they should have received from us. Those days are, however, at an end—peace to their manes!

There are many circumstances which tend to make the chrysanthemum a favourite with cultivators of flowers, on what scale soever they may cultivate. No plant is more hardy or more easy of cultivation; for chrysanthemums will grow in any soil, and almost in any exposure; and they may be moved about at any period of the year without much injury. They are also the last flowers of the season, and come into bloom when the dahlia and all the other beauties

of the autumn are gone; and the frost must be severe indeed before they are materially injured by it. The greater number of them are fragrant, and some are highly so; and, like the geraniums, their fragrance is not confined to the flower, but extends to the whole of the plant, and it is of the most refreshing and exhilarating nature, without any of that narcotic property which is possessed by many flowering plants.

The culture of the chrysanthemum is the easiest that can be imagined, and may be done by dividing the roots, by layers, by cuttings, or by seeds. Breeding from seeds is the means by which new varieties are obtained; but if the same root is wished to be continued, the plan is to breed from the plant. The roots increase very rapidly, and the successive stems begin to show themselves before the old ones are in the least decayed, and often before they come into flower. Thus an abundant increase may always be obtained by dividing the roots, to which operation the month of March is the season usually recommended; but it may be done at any time, even when the plants are in flower. Breeding by cuttings is also a very easy matter, and one which is more certain of success than in the case of almost any other flowers; for one has only to cut off the requisite number of stems any time in the summer, dress the leaves from a parcel or two at the lower part, and plant them; and unless they are burnt up by heat and drought, they will grow freely and flower the same year in as much perfection as the mother plant from which they are taken. The chrysanthemums are instinct with the germs of life in almost every nameable part of their structure. The roots as they extend are constantly putting out new shoots, and shoots make their appearance at all the joints of the lower parts of the stems. They cannot indeed be very seriously injured by any sort of culture, whether high or low. If they are nourished and protected, they show finer flowers; but they will grow almost under any treatment; and their growth is so very vigorous, that they are in but small danger of being shaken by winds. In point of vigour and endurance, there does not seem to be any great difference in the varieties; for those which have been procured by the skill of the cultivator, and are in request, until other new ones come to usurp their place, are just as hardy as the ones which have been cultivated till every body is tired of them; and the rapidity with which the seedlings come into flowering, makes the succession more frequent, and the novelty of any one variety of more brief duration, than in the case of most other plants.

Those which are figured in the plate are two of the choicest varieties. *Early Blush* has a fine cream colour, though at the same time it is very delicate. It is a good sort for potting. *Tasselled Yellow* is a more lofty variety, and has a tendency to shoot up and straggle in the individual stems, which, though tough, are flexible. It is an excellent sort for training upon a wall; and if it is so trained in a southern aspect, the flowers are large and very handsome.

DEER.

WAPITI, OR GREAT STAG OF NORTH AMERICA.

The Wapiti is peculiar to the northern parts of the American continent, though it has at times been confounded with the elk, which occurs also in the north of Europe. It resembles the common stag in the proportions, but the size is far superior, being four feet eight inches. The hind is similar to the stag, but of smaller size; the colour of both in the summer season is fulvous brown on the back; a black spot on each side of the corner of the mouth descends on the under lip, round the eye brown, and down the face darker; the neck also is darker than the body, being mixed with a purplish brown tint on those parts; the limbs are dark on the fore part, and lighter from behind; under the horns long hairs form a sort of dewlap, also darker in colour; the buttocks and tail are pale fawn colour, separated from the brown of the thigh by a dark streak; the tail is short, but varies from two to four inches in length; the suborbital sinus, or slit, is long, open, and naked next the eye; the ears are long, lined with white hair within, and dark-coloured externally; inside of the limbs and on the belly the hair is close and buff-coloured.

The following is the description of a male of the species which was killed near the Missouri, to the eastward of the Rocky Mountains. He was three years old, four feet six inches high at the shoulder; the nose and legs sepia-black, turning on the neck and back to dun brown; the croup and tail nearly white; the body short and thick like the trunk of an ass; the legs shaped as in a calf, very perpendicular on the buttocks, with appearance of callosities on the knees; the croup somewhat more elevated than the withers; the neck much arched and adorned with some long hair, the full expansion of that part not taking place till the fifth year; the muzzle broad and black; the eyes dark, and the aspect mild; the horns were greatly deformed. On the 17th of February, another sketch was taken of the same animal, his horns were beginning to shoot anew, the cicatrix of the former not quite healed, and their form resembling a flattened globe; his face was covered with woolly hair, extremely thick; on the side of the hinder legs, near the true heel, a gland imbedded in hair secreted an unctuous fluid, which seemed to cause uneasiness, and we were informed that while the horns are expanding the animal frequently rubs the points of the antlers against them; the colour of his fur was a sepia-grey, extremely shaggy.

In Canada, during the winter the wapiti feed on some buds of coniferous trees and on grass; and in summer on aquatic plants, which they seek under water while sheltering themselves in that element from the bites of flies. "It

was in the act of feeding in this manner," says Hamilton Smith, "that we had a view of the Canadian stag. We were in a canoe ascending the Chaudiere, at a point where the river bends suddenly on opening into a small lake. A hunter among us made a warning sign for silence and pointed a-head, but nothing appeared on the surface of the water; the bateau men however understood the sign, and grasped their muskets, but with so much precipitation and noise as to alarm the game, which now again put his head above water, and seeing the canoe sprang forward towards the bank with his mouth full of weeds. At this instant he was fired at, but he gained the shore very near us, and dashed with elevated antlers into cover, as was thought, unhurt; he appeared quite black, with large expanded horns, but no further observations could be made. We were then informed that at this period (August) they are often killed while feeding under water, but the canoe must be so placed as to glide with the current and without noise close to them; the game only raising its head to breathe from time to time, takes no notice of an object which appears motionless."

"The horns of this species," says Col. H. Smith, "acquire a surprising development, expanding with such rapidity that at one period their growth exceeds an inch and a half per day. In the Long Island specimen, of six antlers, each measured above three feet in length, and the bur and beam were exceedingly large, but in some individuals they are asserted to exceed six feet. One specimen, of which we have a drawing, shows them nearly five feet long. The base and tertian, or brow and royal antlers, are invariably the longest in both the varieties. These seem to be instruments of use, for with them, when a small dead pine, or a bar of a split fence sixteen or eighteen feet long, lies in their way, they will lift and toss it clear over their heads."

The horns are indeed immense; and the animal is equally strong and pugnacious. A male at the Zoological Gardens ran a female fairly through the body with his antlers; and when strangers approach the enclosure, he runs against the fences with the force of a battering ram.

From the character of its native country, there is little doubt that the wapiti might be added to the ornamental animals of this country; and though it wants the majesty of the stag, the beauty of the roe, and the softness of the fallow deer, yet its size and the grandeur of its apparel would render it a highly interesting variety in the more extensive parks; but from what has been said it would be rather a dangerous ornament.

The Reindeer, which is of so much value in Lapland, is also found in the extreme north of America, where it is called the Carabou.

DOGS.

ALPINE SPANIEL.

THE Alpine Spaniel, or Dog of St. Bernard, as he is called from the eminent service which he renders to travellers who wander and are benighted in the snow, near that lofty, and in the snow season, dangerous pass, is one of the most handsome and also the largest of all the spaniels. Along with his superior strength and size he possesses all the kindly affections of the smaller spaniels, which are so faithful to those who are attached to them; and thus he is a dog of more than ordinary interest. A full-grown one stands full two feet high at the shoulder, and measures six feet from the nose to the tip of the tail. The following is a condensed account of his labours and services:—

"The convent of the Great St. Bernard is situated at the top of the mountain known by that name, near one of the most dangerous passages of the Alps, between Switzerland and Savoy. On these regions the traveller is often overtaken by the most severe weather, even after days of cloudless beauty, when the glaciers glitter in the sunshine, and the pink flowers of the rhododendron appear as if they were never to be sullied by the tempest. But a storm suddenly comes on; the roads are rendered impassable by drifts of snow; the avalanches, which are huge loosened masses of snow or ice, are swept into the valleys, carrying trees and crags of rock before them. The hospitable monks, though their revenue is scanty, open their doors to every stranger that presents himself. To be cold, to be weary, to be benighted, constitute the title to their comfortable shelter, their cheering meal, and their agreeable discourse. But their attention to the distressed does not end here. They devote themselves to the dangerous task of searching for those unhappy persons who may have been overtaken by the sudden storm, and would perish but for their charitable succour. Most remarkably are they assisted in these truly Christian offices. They have a breed of noble dogs in their establishment, whose extraordinary sagacity often enables them to rescue the traveller from destruction. Benumbed with cold, weary in the search for a lost track, his senses yielding to the stupifying influence of frost, which betrays the exhausted sufferer into a deep sleep, the unhappy man sinks upon the ground, and the snow drift covers him from human sight. It is then that the keen scent and the exquisite docility of the admirable dogs are called into action. Though the perishing man lie ten, or even twenty feet beneath the snow, the delicacy of smell with which they can trace him offers a chance of escape. They scratch away the snow with their feet; they set up a continued hoarse and solemn bark, which brings the monks and labourers of the convent to their assistance. To provide for the chance that the dogs, without human

Alpine Mastiff

help, may succeed in discovering the unfortunate traveller, one of them has a flask of spirits round his neck, to which the fainting man may apply for support, and another has a cloak to cover him. These wonderful exertions are often successful; and, even where they fail of restoring him who has perished, the dogs discover the body, so that it may be secured for the recognition of friends; and such is the effect of the temperature, that the dead features generally preserve their firmness for two years. One of these noble creatures was decorated with a medal, in commemoration of his having saved the lives of twenty-two persons, who but for his sagacity must have perished. Many travellers who have crossed the passage of St. Bernard since the peace have seen this dog, and have heard, around the blazing fire of the monks, the story of his extraordinary career. He died about the year 1816, in an attempt to carry a poor traveller to his anxious family. The Piedmontese courier arrived at St. Bernard in a very stormy season, labouring to make his way to the little village of St. Pierre, in the valley beneath the mountain where his wife and children dwelt. It was in vain that the monks attempted to check his resolution to reach his family. They at last gave him two guides, each of whom was accompanied by a dog, of which one was the remarkable creature whose services had been so valuable to mankind. Descending from the convent, they were instantly overwhelmed by two avalanches, and the same common destruction awaited the family of the poor courier, who were toiling up the mountain in the hope to obtain some news of their expected friend. They all perished. A story is told of one of these dogs, who, having found a child unhurt, whose mother had been destroyed by an avalanche, induced the poor boy to mount upon his back, and thus carried him to the gate of the convent. The subject is represented in a French print."

All the spaniels are dogs of mild disposition, and remarkable for their attachment to mankind. The sporting dogs, which are not employed in packs but which go out only with their masters, and point or raise the game according to the kind of their sports, all partake more or less of the character and disposition of the spaniel, whose leading trait is extreme docility. The following cut represents one of the smaller spaniels.

EAGLES.

HARPY—SEA EAGLE.

Though none of these is the characteristic eagle of the mountain tops, yet that which is called the sea eagle seems to be the eagle which is best known on many of the rocky shores of Britain. The other is an American, of large size and shaggy aspect, but much more formidable in appearance than in reality.

The Sea Eagle, called also the White-tailed eagle, is found in Iceland, in the Faroe Isles, in Shetland, in the Orkneys, in the Western Isles, and on the wild and rocky shores of the west of Scotland generally. It sometimes ranges into England, but it is not numerous so far to the south. In summer it haunts and hovers over the fresh water pools and morasses, where water fowl breed in great numbers, and is very destructive of them; and it also attacks the smaller quadrupeds, and, as is said, even sheep and deer, especially in the early part of the season when they are sickly and weak. As these birds are of strong wing, and capable of enduring hunger for a long time, they extend their winter excursions often to a great distance from their breeding places. Those which appear in England—and although they are not numerous they are found in the most southerly parts as winter visitants—are understood to leave the north when the sea is too stormy for them, and they are frozen out on the northern lands. It has sometimes been said, that the appearance of these eagles in greater numbers than usual is accompanied by more than the usual supply of wild fowl.

The general colour of these birds in the young state, or before they have acquired the mature plumage, is dark brown, with the margins of the feathers of a lighter tint. But as they approach maturity, the feathers on the head become paler in their tint, and the bill alters to a straw colour; the cere and irides acquire a tinge of red; and the pale margins of the feathers on the upper parts and the throat fade off, rendering the brown more uniform and unbroken. The mottlings also disappear from the under part of the bird, which becomes a deeper brown than the upper. The most remarkable change, however, is in the tail and tail-coverts, which, from being the darkest parts of the bird in the early plumage, become pure white in old age.

This is the species of which so many marvels are told by the people of the north, about its carrying away children, and an endless number of other adventures. In these tales there is probably little truth, but on a bold rocky shore the sea-eagles are quite in their element, and have associates of more aquatic character to assist them in filling up the picture. Gannets, and shags,

Harpy Eagle.

Sea Eagle.

and cormorants, plunging headlong into the waters, divers driving about through the restless surges, gulls wheeling and wailing on the wing, and ever and anon dipping down to catch those smaller fishes which come near to the surface, and skuas driving at the gulls, making them disgorge their booty, and catching it ere it falls into the sea. Meanwhile the sea eagle sits on the rock, eyeing the tumult of nature, but now and then descending and making a clutch at the waters for her share of the booty.

The HARPY EAGLE is also a fishing eagle, and belongs to different pastures from the sea eagle, the osprey, and the other long-winged fishers. It is a very large bird; and its beak and claws, which are invariably larger in proportion as these birds have more of the fishing habit, are very formidable in appearance. The general aspect of the bird is, however, somewhat feeble, and not at all in accordance with its size; and there is a restlessness about it which is not characteristic of the more powerful eagles, the habit of which is repose, in all cases where they are not under the excitement of seeking their prey. From the figure of it given in the plate, and the following description, some judgment may be formed of the appearance, and partially at least of the character, of this large bird. Its predatory habits are denoted by its very robust legs, and the extraordinary curvature of its beak and talons; the upper mandible suddenly curving downwards with a strong arch or hook towards the point, which is exceedingly sharp. By this structure, and the shortness of the wings, it is readily distinguished from the other eagles. The usual length of an adult specimen, as that in the Zoological Gardens, is three feet and a half from beak to tail. The head is covered with thick downy plumage of slaty grey, with a crest of black and grey feathers rising from the back part of the head, which the bird raises considerably when excited. The back and wings and fore part of the neck are black; the feathers of the back terminating rather lighter; from the breast backwards is pure white; and the plumage of the legs is white with blackish bars. The tail is ashy, banded with black; the beak and claws are black, and the legs, which are partly feathered, dusky yellow. Such is the description of a specimen which was kept for some time in the gardens of the Horticultural Society of London, and afterwards transferred to the collection of the Zoological Society. No very satisfactory account of the native habits of an eagle can be procured when the bird is confined, so that instead of showing its style of flight, it has not room to spread its wings. It is probable, too, that some of the accounts given by travellers of the formidable nature of this eagle are very much exaggerated; and that its real habits are destitute of the grandeur of the eagles of the open air over the wilds, of which it certainly has none of the expression.

VERBENA.

LAMBERTI AND MILINDRES.

THE family of the *Verbenidæ*, or vervain-like plants, is an interesting one on various accounts. It comprises very humble herbs, and also shrubs and even trees of the most lofty growth and the highest value as timber. As an instance of the latter, we may mention the teak of India (*Tectona grandis*), which is one of the most stately and graceful of trees in its growth and appearance, and superior to every other, not excepting the native oak of England, for the purposes of ship-building. Its wood is not very heavy; and it is hard and tough, and equally proof against the worm and the rat, neither of which can now be predicated with certainty of any oak obtained from the English forests, as there is no knowing that the tree obtained from them may not be a planted one, and thus have had the essential qualities of its timber spoiled by being fenced and pampered in the nursery in the early stage of its growth; an evil from which the tree never recovers in its quality, whatever may be its appearance.

In the mean time, however, we have to do with the more humble members of the family, the herbaceous verbenas, which are esteemed, and justly esteemed, for the beauty of their flowers. The common vervain (*Verbena officinalis*), which is a native of Britain, and found upon poor thin soils, which are dry and exposed, has acquired some celebrity in the annals of human superstition. It was accounted a sacred plant among the Greeks, and, if we can believe the traditions, it was among the Celtic Druids second only to the mistletoe for sacred nature and majestic virtues. It was never gathered without the performance of rites and incantations, which were supposed to have the effect of securing its virtues. The doctrine of the mystic virtues of different plants is a very noxious portion of human superstition; and it is not unworthy of remark, that the plants were accounted the more sacred the less they were available for any useful purpose in the practical economy of life. De Theis says, that the name of this plant is derived from the Celtic *'ferfain*, the sound of which cannot however be represented by the letters of our alphabet with the powers which use assigns to them; and though etymologies are in general ropes of sand, there seems to be something in this one which harmonises with the superstition, if the two did not originate together. The term which we have quoted may be literally interpreted "holder of the winds;" and when we come to consider the allegorical application of the term "winds," or wind, among rude nations, we find that it accords well with the virtues ascribed to vervain. It was a conservative plant, and restrained equally the malevolence of evil spirits, and of those who had

Verbena Lambertii.

Verbena melindres

leagued themselves with such spirits for the purpose of doing harm to their neighbours. The term for a spirit in all languages is a synonyme for the wind, if not the appropriate name by which that is called in common discourse; and accordingly, the Celtic *fian*, from which by the way the collector of what are called the Ossianic fragments has compounded the name Fingal, is no exception to this, as it means the winds, the spirits, the giants, the witches, and indeed all supposed powers which are beyond the common understanding and experience of human beings. These imaginary virtues of the plant show why the following rhymes have been applied to it,

"———— *Vervain* and dill,
Hinder witches of their will."

The God of Love is equally omnipotent, because his rites are equally necessary, in all stages of human society, whether rude or refined, and Solomon yielded to his sway as completely as Sardanapalus. Hence love matters were most prominent ones in the witchery system, and one of the merits of vervain consisted in its smoothening the course of true love, nathless the malevolence of the wizards. It was probably upon this account more than upon any other that vervain was admitted into the materia medica, and that it still holds its place in some of the pharmacopœias. As the vervain was believed to remove all impediments from the course of true love, so another member of the family, the *Vitex Agnus castus*, was understood to restrain all improper wanderings of the same erratic, and by merely human means, ungovernable passion.

It is not with the vervain as a matter of diablerie, however, but with some of the exotic verbenaceæ as ornaments of the garden, that we are concerned in the mean time. Some of them are very handsome in this respect, at least in proportion to their size. They are all natives of dry places, and therefore in the artificial culture of them care must be taken that they are not exposed to too much humidity. It will be seen by those figured in the plate that there are two distinct forms of the leaf—the one endive, as in Melindres, which has the scarlet flowers; and the other divided into three lobes, as in Lambertii, the purple or lilac one.

Verbena Melindres is a native of the dry places of South America; and though it is but a small plant, it is showy, on account of the richness of its colour; but it does not look so well as a single plant as when there are a number together, forming a bed or patch, in which case an additional effect may be produced by grouping different colours, as the plants are readily broken into many tints, and the same culture which answers for one answers for all. With due care they grow and flower freely, and they may be multiplied to any extent by earthing them up so that they may take root at the joints. As they are natives of dry and warm countries, they require with us artificial protection from the cold, and more especially from the rain of the winter.

DEER.

ELK.

THE ELK is the largest of the living deer, though some of the fossile stags appear to have equalled if not exceeded it in dimensions. It is found in both continents, immediately to the south of the reindeer in its locality. The elk was once pretty numerous in the more northerly central Europe; and though it is now rare in that quarter of the world, it is still not unknown. In America it is much more abundant, and inhabits further to the south, its head-quarters being the vicinity of the great lakes, and the forests on both sides of the St. Lawrence; the whole of Canada in fact, with New Brunswick, and also westward, at least as far as the Rocky Mountains, which come down upon the northern ocean, or rather the Polar Sea to the westward of the debouchure of Mackenzie's River, in about 135° west longitude. It is not mentioned that the animal has occurred to the westward of those mountains, and, though not impossible, it is not by any means so probable as that the reindeer should be there; for, besides the elk having a less polarly situated locality, its habits are different. The reindeer is adapted to the dry lichen-clad hill in the summer, and to the snow in the winter; while in summer the elk is more in the marsh, and sometimes actually in the water, feeding on the submerged grass, and ever and anon blowing somewhat like a whale; but in winter it is more in the forest. There is no reason to suppose that there is any specific difference between the elk, or moose deer, as it is called in America, and the elk of the eastern continent. No doubt black elks and reddish elks, and sometimes also white elks, have been described; but the elk is subject to very considerable changes of colour with age, the very old ones being apt to turn almost black; while the young ones are chesnut-coloured, and there is little doubt that the white individuals are albinos.

During the Canadian winter, the elk resides chiefly in hilly woods, in snowy weather seeking the covers, and in clear the open spaces. In summer it frequents swamps on the borders of lakes, often going deep into the water to escape the sting of gnats &c., and to feed without stooping. Its usual food in winter consists of the buds and bark of button-wood, spruce, and juniper pines, birch and maple, and under the snow it seeks stink-wood (*Anagyris fœtida*) and mosses, but this is always with difficulty, for then it is obliged to spread the fore legs, or even occasionally to kneel. The branches of trees it turns down with the horns very dexterously; but to get at the ground, we have been assured by Huron and the Canadian hunters, when the snow has fallen only a foot or two in depth, that the herd, led by an old male, shovel it back, and throw it over their heads, the snow falling on either side, as it slides from the inclined planes of the back of their horns; meantime the fore feet of all are equally engaged in striking it from under them.

ELK

For at least a part of the year the herd consists of an old female, two adult females, two young females, and two young males; but during the snowy periods, at least in America, one or more adult males are certainly among them, very old males alone keeping aloof until the rutting season, unless the winter be very severe. Several of these families keep near each other, and in very cold weather they seek cover together, and remain closely pressed against each other, or trot in a circle till they have beaten the snow down. When the rutting period commences, which is about the beginning of September, the old males seek the females, and expel the young, which are obliged to keep aloof while the animals remain in heat. At this time, they will swim rivers in pursuit of the females, or after them, to remain concealed in some of the Lake Islands. The males are then very pugnacious, they bellow often, and sink in flesh. The gravid females bring forth about the middle of May, at first one, but ordinarily two calves, of a brown-red colour. These are so simple and void of fear that in the first months they are easily taken, and if in the water, where they willingly go to avoid the flies, they will suffer persons in a canoe to come up to them and take them by the head without appearing in the least frightened.

While their horns are sprouting, the animals remain mostly in willow covers, returning to the evergreen woods when the horns are restored; their period of life does not exceed twenty years. They are hunted in North America, chiefly during the early part of winter, and towards the spring. While the snows are not deep, they are not easily attacked; but when they begin to harden, and the hunters run on snow-shoes, they endeavour to turn the game towards ravines, or where it is drifted deep. An elk killed in Sweden is said to have weighed 1200 pounds, but this must have been a very extraordinary animal; their height is about six feet. A white specimen from Swedish Lapland, in the Munich Museum, five years old, is six Rhinland feet at the shoulder.

The annexed cut represents an Indian species,—the Spotted Axis.

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The annexed cut represents an Indian species,—the Spotted Axis.

prolonged, at least very bulky: his second horns were about fourteen inches. This species resembles the Bengal Rusa in many particulars: both have the forehead flat, and the face straight; the muzzle small, with spots of black on the under lip, and a ring round the nose; the ears naked inside; the horns short, stout, and similarly formed; the same mane and dark breast. In fact, the only obvious differences are, the presence of a disk on the buttocks of the present which does not appear on the former; and that of dimensions: but even in this particular, there can be no great disparity. It may be, therefore, that ultimately these two will be marked as only varieties of one species.

The Mariana Rusa inhabits the group of the Mariana or Ladrone islands, which lie between twelve and twenty degrees north latitude, and a hundred and forty-four and a hundred and forty-eight east longitude. There is every reason to believe that it is not originally a native of those islands, but has been imported from the continent of Asia, probably from China. A specimen was brought to Paris, by Quoy and Gaimard, of Freycinet's voyage of discovery, of which the following is a description:—"It is more robust, but not much taller, than the roebuck, with round divergent horns standing on a low pedicle, having two antlers, the basal nearly vertical, and at its junction with the beam a small process, not unlike a trilobed tooth; the other is posterior and internal, and compared with the size of the head, the horns are large and heavy, being about thirteen inches long; their colour is ashy, and they are extremely rugged. Between the horns the skull has a longitudinal eminence, and before the orbits, near the base of the nose, are two longitudinal convexities, very remarkable, and the species is destitute of canines, by which character it approaches to the true axis; the face is almost black, with a streak running down from the horns, between the eyes, to the nose; the muzzle small and black, and the colour of the whole body dark brown, slightly mixed with grey, at least such are the colours now discernible, the specimen being in a bad state of preservation; the tail is about four inches long, and black. A fawn brought from the same island in the above museum is fulvous-brown, without spots; the throat is whitish; a white spot at the end of the lower jaw, and one at the base of the ear. The inside and anterior border of the thighs and buttocks are white, and the legs buff." This species, like most of those of the islands, is described as being very tame and gentle in its manners, which gives additional ground for supposing that it is not an aboriginal animal, but has been carried to the islands from continental Asia.

SQUIRRELS.

Squirrels are all tree animals, remarkable for the activity of their motions, and the distances which they can leap from one tree to another.

The Malabar Squirrel is the largest animal of the whole genus, being as large as an ordinary-sized domestic cat. The top of the head, a band along the cheek, the middle of the back, and the flanks, are very bright reddish brown; the shoulders, the rump, and the thighs, are pure black; and the muzzle, the lower part of the neck, the breast, and the belly, the under sides of the hind legs, and nearly the whole of the fore legs, are bright yellow. It is one of the brightest in the colours of all the squirrels, though, like most of the rest, it is subject to considerable variations. It occurs in several of the richly wooded districts of India, but it is said to be most plentiful on the west or Malabar coast, to reside chiefly among the palm trees, and to be particularly fond of the milk of the cocoa-nut.

Flying Squirrells, as they are called, do not fly, they merely extend a fold of the skin between the fore and the hind legs, which acts as a parachute in supporting them when they leap. All squirrels have this in a greater or less degree.

Grey Squirrel.—Buffon confounded the Carolina grey squirrel with the common squirrel in its grey state, under the common name of *petit-gris*, and as he has been followed by the compilers, there is in books no small quantity of error upon this as upon many other points of natural history, where they have arisen from the same source, and been propagated by the same means Now, if it had been once considered that it is only in high latitudes, and during the cold season of the year, that the common squirrel is grey; and that Carolina has almost a tropical climate in the summer, and that this squirrel is then grey, it would have shown that there must be a greater difference between the two animals than any that could arise from exposure to climate. There are, however, still greater differences of appearance; the Carolina squirrel is subject to more variations of colour in the same individual, at the same season and in the same place, than the common squirrel is at considerable differences of season and latitude. Sometimes it is whitish grey; at other times it is much clouded with yellowish; and at other times again the flanks are almost wholly of a yellow colour; so that if there is any resemblance to any known squirrel of the eastern continent, it is to the alpine one and not to the common, at least so far as colour is concerned. In confinement too its colour changes very much, which is not the case with the common squirrel. The ears are also without tufts; the long outer hair and the soft wool which compose the fur are nearly in equal proportions; and the insides of the fore legs are covered with the same kind of hair as the whiskers. It is also, sometimes at least, much

DUCKS.

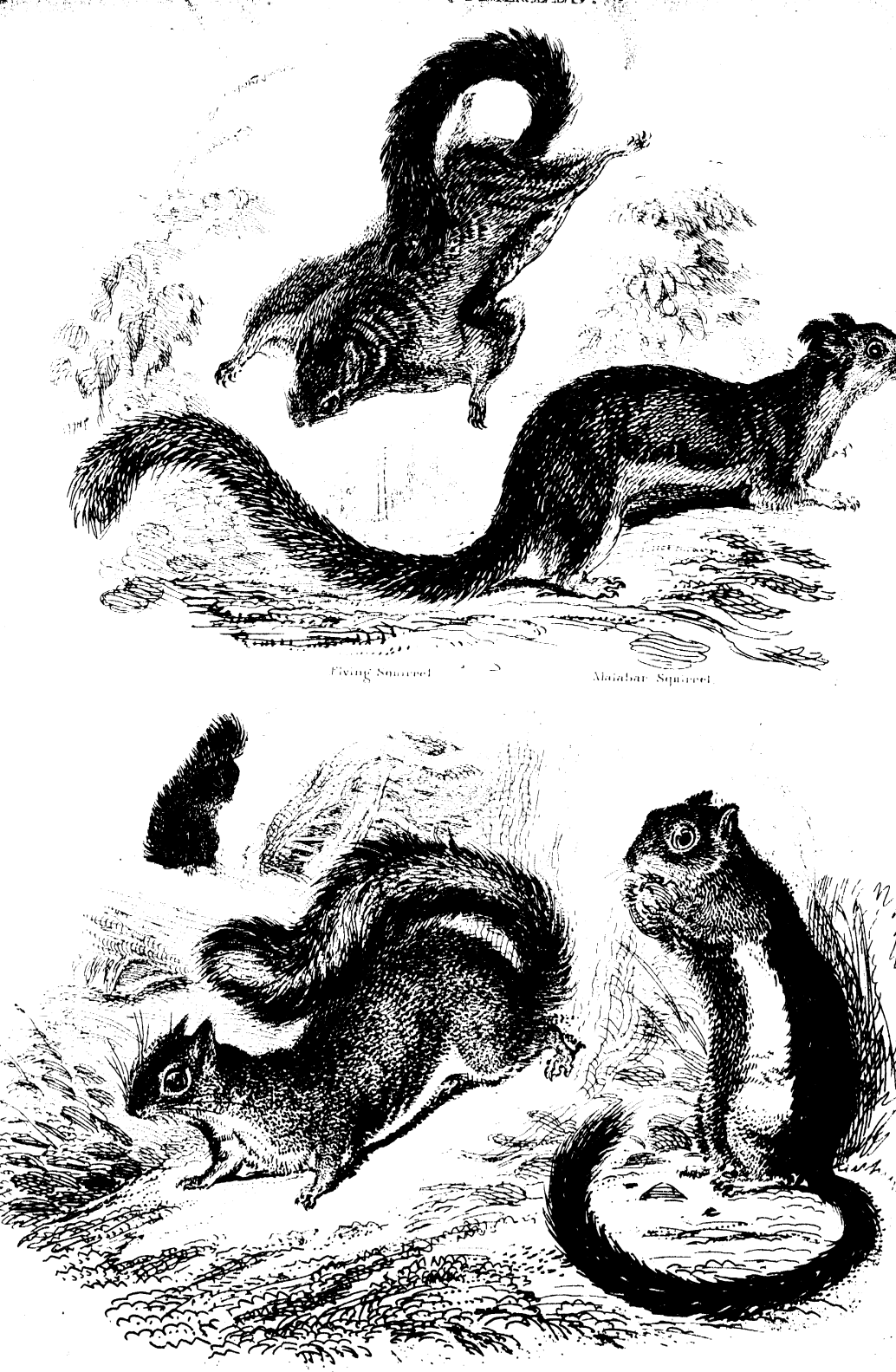
HARLEQUIN—URAL—LONG-TAILED—SUMMER.

THE ducks are perhaps the most interesting, and certainly the most valuable, of all the aquatic birds. Upon all of them the plumage is very close and compact; and in not a few the colours and the metallic glosses are exceedingly rich. The northern latitudes are their chief breeding places, whence many of them migrate southward as the winter sets in.

The HARLEQUIN DUCK is named from the similarly contrasted colours of its coat. The harlequin inhabits the same parts of the world as its congener, the golden eye, but it inhabits more northerly, and does not appear in the low latitudes of either continent in even the severest winters. This does not arise from its being a scarce bird in the high latitudes, but from its polar habits. It is abundant on the shores of the Arctic Ocean both in America and in Siberia, and also in the islands to the south of Behring's Strait. Indeed, excepting as an occasional straggler, it appears to keep, at all seasons, as near to the polar ice as the water is open. In Britain we believe it has never once appeared in the south, or even on the main land of Scotland, though it may at some times be driven upon those inhospitable shores near Cape Rath, which are not very accessible to observation during the winter storms. It is sometimes seen in the more remote isles of the north, though only a straggler. On the coast of America it is a little more common, because that coast lies nearer to the Arctic countries, in which it breeds; but even there it is very rare on the shores of the midland states, and quite unknown on those of the southern.

The URAL DUCK, or Siberian duck, is an inhabitant of the north-east of Europe and the north of Asia. The general colour is blackish brown, with the top of the head, the cheeks, and the upper neck, white. The bill is large, with an elevation at the base; and it is blackish above and reddish below. The feet are greenish yellow, with the webs between the toes black. The length of the male bird is about a foot and a half. The female is smaller, and more of an ash colour.

The LONG-TAILED DUCK is in many respects analogous to the pochards; it is a diving duck, and makes its appearance at the same season, and it is, like them, common to the colder regions of the whole northern hemisphere. It has sometimes been confounded with the pintail, principally we believe because both agree in having their tails longer than any other ducks; but still they are different in their habits, and belong to separate divisions. This species has the bill very short and black, with a transverse red stripe; a large patch of

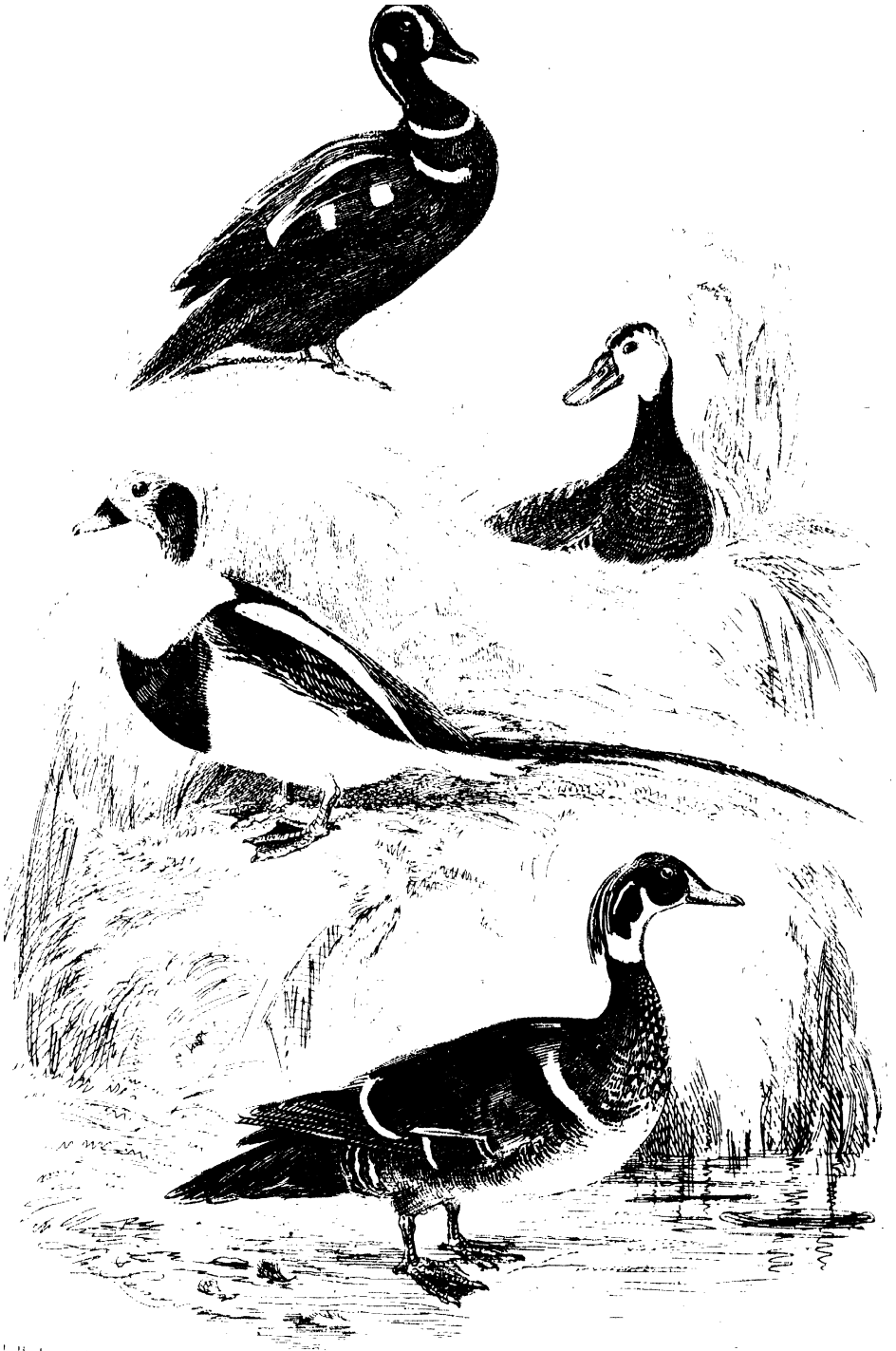


Flying Squirrel.

Malabar Squirrel.

Gray Squirrel.

Rafflesian Squirrel.



1 Harlequin Duck.
2 Teal Duck
3 Long Tailed Duck
4 Summer Duck

larger than the common squirrel, three times the size according to some of the authorities, which has led to the supposition that those very large ones may be a different species from the smaller. In a state of confinement, this species is very active at some times; but it is fond of constructing a round nest of hay or straw in the corner of its cage, in which it lies quietly for great part of the day. The woods of the Carolinas are very extensive and very difficult to explore, so that there may be many varieties, species, and perhaps even genera, of wild animals in them, of which at the present time we have obtained no knowledge. We should bear in mind how it stood with the natural history of most parts of Europe when they were as little known in their topography as the wilds of America are at present.

Raffles' Squirrel was discovered on the island of Sincapore; but it is probably found in many of the adjacent places. It is greyish brown above, with cross bands; white on the head and the whole of the under part, and with a rusty-brown streak along the side, as in the preceding species; the tail is dark coloured, quite round, rather thicker at the middle than at the origin, and tapering to a point. The hair upon it is loose, but it is not well adapted for acting as a parachute, and there is no enlargement of the skin of the sides to assist in the performing of that operation. The body and head are about nine inches in length, and the tail is an inch or an inch and a half shorter. Little or nothing is known of their habits; but it is supposed that all the round-tailed squirrels are more or less ground animals.

The annexed cut represents the common squirrel.

chestnut brown on the sides of the neck. Length from twenty to twenty-one inches, owing to the elongation of the middle tail-feathers; but the bird is only about the size of a pigeon. This bird inhabits Europe, Asia, and America; frequenting both the interior lakes and the sea shores of those quarters of the world. The birds of this species do not, like many other of the tribes, entirely quit their northern haunts in winter, but considerable numbers reside permanently in the polar regions. Numerous flocks, however, spread themselves southward in the winter, from Greenland and Hudson's Bay, as far as New York, in America; and from Iceland and Spitzbergen, over Lapland, the Russian dominions, Sweden, Norway, and the northern parts of the British isles, in Europe. The bands which visit the Orkneys appear in October, and continue there till April. About sunset they are seen in large companies, going to and returning from the bays, in which they frequently pass the night, making a noise, which, in frosty weather, may be heard at the distance of some miles. They are rather scarce in England, to which they resort only in very hard winters, and even then in small straggling parties. They fly swiftly, but seldom to a great distance, making a loud and singular cry. They are expert divers, and supposed to live chiefly on shell-fish. The female places her nest among the grass, near the water, and like the eider-duck, lines it with the fine down of her own body. In the northern parts of the American continent, these ducks are found in vast numbers during the summer; but as they are more marine in their habits than most of the species, they do not move farther to the south in winter, at least in their more numerous masses, than they are compelled to by the freezing up of the shoals and shallows, where they seek their food. Their nests are described as being hid in the grass or other coarse herbage; but never at any very great distance from the sea. On their southward migrations they seldom resort to the inland marshes, but take short flights from channel to channel in the broken parts of the shores. Their style of flight is rapid, and they utter a singular, and when in numbers a very loud, cry while on the wing. Their flesh is rank in flavour, and little esteemed; and thus they are apt to take their flights and carry on their fishing without being much disturbed.

The Summer Duck is one of the most beautiful of the whole family of ducks, of gentle manners, and tamed without much difficulty. It inhabits the warm parts of North America, and many of the West India islands, and remains during the breeding season. It is a very neat and compact little species, and has been introduced into the Zoological Society's gardens by the late able and enterprising naturalist who met with so dreadful a death in the trap for wild bulls in the Sandwich Islands. These birds have bred readily in the gardens, and there is no doubt that they might be generally introduced into this country. Their chief value, however, would be as ornamental birds on the waters of pleasure-grounds, for their flesh is described as being of very inferior quality.

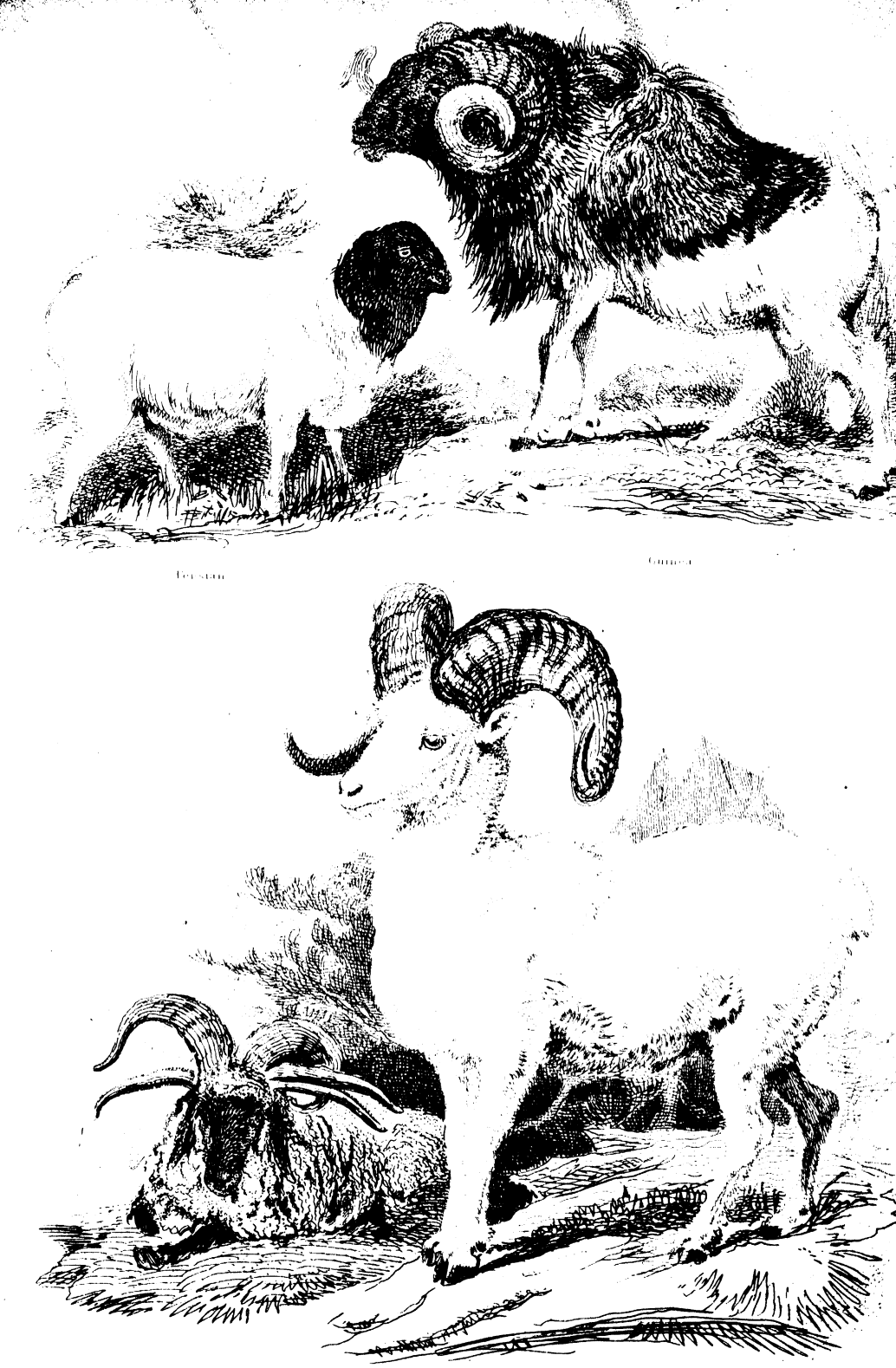
SHEEP.

Notwithstanding the great value of sheep in an economical point of view, and the interest which is in consequence attached to them, there are many uncertainties about the breeds, and as to what and where the domesticated ones originated. It has been recently ascertained that the wild sheep of the mountainous parts of the Mediterranean islands breeds with the domestic sheep, and consequently that they are the same species; but whether the wild sheep there be or be not the parent stock of the domesticated sheep of Europe, is a point which has not been, and probably cannot be, settled. In cultivated countries too, especially in those which have been frequently overrun by the foot of conquest, there is no possibility of ascertaining from what stock the domesticated sheep have descended, though upon the mountains there are still wild breeds in many parts of the world; but it is not very easy to establish any obvious relation between them and the sheep of even the nearest plains.

The Persian Sheep are without horns, of mild expression, and generally with white bodies and dark heads. They all have a tendency to accumulate upon the tail a quantity of hard fat, something similar to that in the hump of the camel or the dewlap of the ox; and thus, though in all of them the tail is not equally large, they share a connexion with the broad-tailed sheep which are common in central Asia.

The Long-legged Sheep is one of the chief breeds in the northern and central parts of Africa. The general characters are: The legs long, and the form of the body stout, but the flank not so plump as those of the European breeds: the profile of the forehead is arched; the ears stick out nearly at right angles to the central line; the neck is short; but the tail is proportionally longer than in the common sheep: there are two kinds of covering on the body; on the fort part it is long and shaggy, and on the hind part it is woolly; on the breast especially it is very long, and pendent almost to the knees; the horns curve round the ears, and form a greater or smaller portion of a spiral, according to age and variety. This seems to be pretty nearly allied to the bearded wild sheep of Africa, of which mention has already been made. One variety of this breed is what is figured on the plate as the Guinea sheep, but there are differences—some of the Guinea sheep being without the hair on the fore part of the body, some having long wool on the hind part, and some being almost naked.

The Many-horned Sheep, which inhabit as far to the northward as Siberia, appear to be the most northerly of the European ones. They are found in Sweden and Norway, in the Feroe Isles, and in Iceland. The breeds in most if not in all of these places are, however, very much mixed in consequence of



Barbary

Guinea

Many horned

Rocky mountain

the importation after inclement seasons, which are very fatal to sheep in those inhospitable countries, of supplies from other quarters. Those sheep of the extreme north of Europe are rarely if ever white, but rather of different shades of a rusty brown. They are rather a small race, but very hardy; and instances have been known of their existing for a considerable length of time buried up in the snow; and even in Iceland some of them are left to shift for themselves during the winter, at which season they are said to scrape up the snow for lichens, much in the same way as the reindeer in Lapland.

Wild Sheep of America. This is often called the "rocky mountain sheep," though it is by no means confined to the summits of them. The figure will give the reader some notion of the general appearance of the animal. By some the goat of the Rocky Mountains has been confounded with this animal; and it has also been called an antelope, though it is neither the one nor the other, but truly and properly a goat. The characters of this species, or probably variety, are very apparent, and at once prevent any possibility of confounding it either with the antelopes or the goats, though of course, as all sheep do, it approximates more closely to the latter of these than to the former. The body is remarkable for its thickness and roundness in proportion to its length; the legs are very long; the outline of the forehead, seen in profile, is nearly straight; and the muzzle is almost exactly that of the common sheep. The horns of the male are very thick and large; they advance in front of the eyes, and form nearly an entire turn of a spiral. They are flattened laterally like those of the domestic ram, and have similar transverse furrows and ridges. These furrows and ridges are very conspicuous on the basal half of the length of the horn, but much less so on the terminal half; and of the three lateral faces the front one is the largest. The horns of the female are much more slender than those of the male; they are compressed, nearly straight, and without furrows; there are, in some instances, plates or folds of skin under the throat, especially in the male; the tail is very short in both sexes; the colour in summer is generally greyish fawn, with a reddish or yellowish line down the back, and a large patch of the same colour on the buttocks; and the under part, and the insides of the legs, are either russet, yellowish, or of a white sand colour; in winter the colour of the upper part is more reddish, and the throat and breast are more inclining to white; but the patch on the buttocks remains much the same at all seasons.

PICOTEES.

MISS MILLER—EMPEROR OF CHINA.

All the varieties of pinks and carnations, whatever may be their names, or the degrees of estimation in which they are held, are understood to have been bred out of the common wild pink, or clove gilliflower, of which the scientific name is *Dianthus Caryophyllus*,—made the name of the order *Caryophyllæ*, which, besides the pink tribe, includes the Sweet William, and a number of other beautiful flowers, besides many troublesome weeds. The wild pink is common in Italy and some other of the warmer parts of Europe; and it occurs also upon the walls of some old castles in England; but the probability is that it is not a native there, but merely a remain of the former flower-garden which had been attached to the castle. Old walls themselves are not *natives;* and therefore any plant that is found upon them and nowhere else cannot be considered as native.

The carnations are the choicest flowers of the genus; and the more common sorts are so easily cultivated that they may be obtained by anybody, in any place where there is moderately rich mould, and a supply of air and light. Carnations are distinguished into the three sections of Flakes, Bizarres, and Picotees,—to the last of which the two varieties which are represented in the plate belong. Flakes have, in general, only one colour on a white ground; and that colour is scarlet, pink, rose-red, or purple. Bizarres have two colours on a white ground, of which the predominating ones are usually the same as those of the flakes; and they are called scarlet, or pink, or purple, or crimson, according to the colour which predominates. Picotees have smaller flowers, and are weaker-growing plants than either of the other two sections. They are as it were immediate between the true carnations and the pinks; but when finely marked they are plants of great beauty. Their colours are in general more broken than those of the other two sections; and their character partakes more of prettiness than that of stately beauty.

Those which have yellow grounds are the rarest in Britain, and on this account they are the most esteemed. They are much more plentiful on the continent; and indeed all the carnations are grown to greater perfection there, as the climate more nearly resembles that which is native to them, and no culture can wholly subdue the partiality of a plant to its native climate. British growers, who of course obtain new varieties of these, as they do of all other plants, from the seed, sometimes succeed in obtaining one with a yellow ground; and then if its other properties are good, it becomes a favourite and is eagerly sought after. Miss Miller is a plant of this description. It was obtained from seed by Mr. Pinder, of Croydon. Its form is good; and its

markings, especially the crimson ones, are decided, and at the same time delicate. We believe that it is also true to its colours; and may be multiplied by cuttings or layers without any very great difficulty. Emperor of China is a foreign variety, and was obtained from Germany by Mr. Hogg, of Paddington, one of the most assiduous and successful professional florists in the vicinity of London. It combines the characters of the carnations and the picotees; the height of the flower stem and the extension of the petals partaking of the characters of the carnation, and the slender grass (or leaves) and the peculiar colour of the ground allying it to the picotee. It is a valuable flower on account of its beauty, and still more on that of its peculiarity.

The breeding of new varieties of carnations, or indeed any of the choicer kinds of florist's flowers, can be successfully carried on only by those who devote themselves to it as a trade, or can afford to follow it as an amateur profession. Much care is required in the preparation of a fit soil for the seeds, and the young plants need a good deal of attention. This must all be bestowed while the cultivator is in utter ignorance as to what may be the result; and when the blooms come to show themselves, there may not be one choice variety in ten thousand. The breeding of them is therefore a lottery, and partakes not a little in that peculiar kind of interest which belong to all games of chance; and it is really this, more than the hope of mere mercantile gain, which carries the cultivator through his labour. But it is a virtuous, and, if the expression may be allowed, an ennobling species of gambling; for it possesses all the interest and none of the vice: what the florist gains, he gains not at the loss of another, but to the advantage of all who are fond of fine flowers.

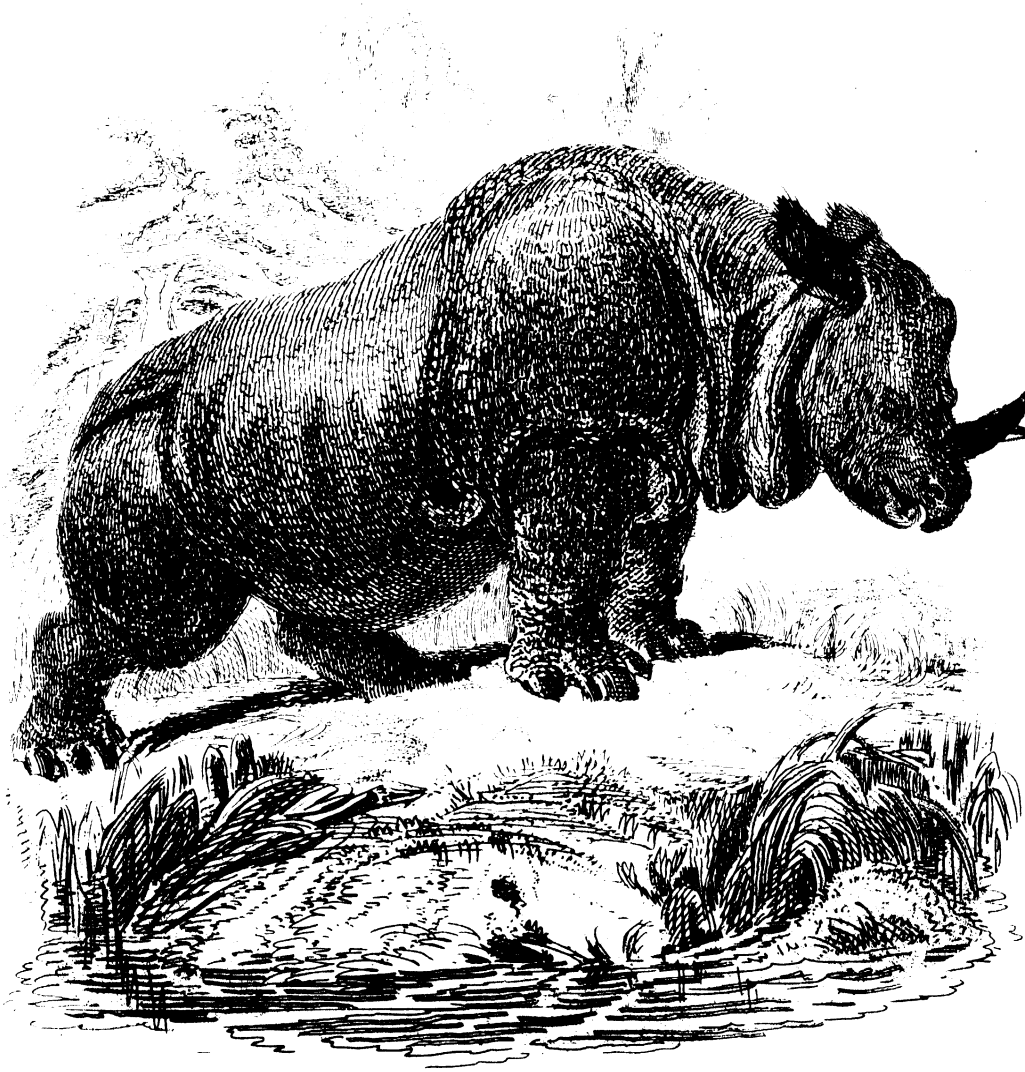
The multiplying of every sort of carnation or other flower which can be bred from portions of the mother plant, has none of this uncertainty in it; and, in the case of the carnations in particular, it is not only very easily performed, but the plants themselves actually invite their owners to the performance of it. When the flower stems have attained their height, and the flowers begin to make their appearance, offsets begin to acquire a considerable length at the base of the stems. If these are allowed to remain, they impoverish the flowers; and as the season advances, the lower parts of them form into above-ground roots, and this plant has an unsightly appearance, as if the very ground were ejecting it. The remedy for this—and it is also the sure means of obtaining as many plants as there are suckers, which will flower in the ensuing season—is either to remove the offsets at a joint, trim the leaves from another joint or two, and plant them as cuttings, shading and protecting them till they strike, or laying them down, which is the surest mode if there is room around the mother plant. It is indispensable that all the cuttings should be made with a sharp knife.

RHINOCEROS.

The name Rhinoceros literally means "having a horn on the nose;" and though the rhinoceri are very singular animals in many other respects, the horn on the nose is certainly their greatest peculiarity. This horn is a very curious production. It has no core, and is not in any way connected with the bones of the animal, as is the case with all those horns which grow on the upper parts of the heads of animals. The horn is a mere appendage to the skin, a bundle of hairs or bristles soldered together, and which are split, and worn away by the using of the organ. In a state of captivity, the rhinoceros, indeed, keeps working at its prison-house with the horn until it is abraded down to a mere hump. There are several species of the genus, of which the one represented on the plate is

The Indian Rhinoceros. This powerful animal is not distributed over the breadth of continental India, but confined to the marshy jungles in the lower valleys of the great rivers, especially the Ganges, and its affluent the Burhampootra. The country there has a peculiar character among even Indian countries. The rains come with both monsoons, the north-east as well as the south-west, and they come in very great quantity; so that, for the greater part of the year every where, and the whole of it in many places, the country is a swamp; a swamp which remains under the shade of that most luxuriant vegetation which it produces, despite the great heat of the sun. This is the grand residence of the rhinoceros; and it points out what must have been the character of vegetation in those places from which the rhinoceros has vanished, when that animal was alive in them.

The characters of this one are:—A single horn on the nose; the skin is marked with deep furrows or plaits behind the shoulders and the thighs; and there are also deep folds under the throat. The skin is indeed folded and furrowed in many places, as if it were too large for the owner. The hairs on the skin are hard and smooth; but they are so few as scarcely to make any appearance, excepting a few on the tail and the margins of the ears. The head is short and triangular; but the nasal bones are well developed, and form a strong vault, on the summit of which the base of the horn rests. The eyes are very small; and there are two strong incisive teeth in each jaw. When in health, the skin of the animal is blackish grey, with a slight tinge of violet. When full grown, it attains the length of eight or nine feet; but it does not stand much more than half the height of the elephant. It is a strong and powerful animal, and easily excited, in which state it is equally bold and persevering in its attacks. What the natural enemies of the rhinoceros may be it is not easy to say; though its proneness to make the attack, which has no reference whatever to the finding of its food, would lead us to suppose that this pugnacious instinct has not been given to it in vain.

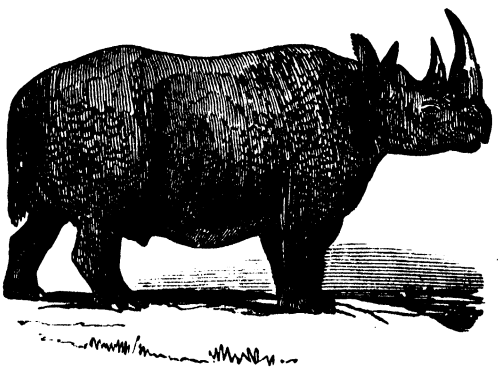


Rhinoceros

In consequence of its boldness and strength, the hunting of the rhinoceros is one of the most splendid and hazardous of the wild sports of the East. It is to be sought for in the jungles, and is often found in parties of about half a dozen, led on by the biggest of the whole, as is the case with the herds of elephants. In the tall vegetation of the Indian jungle, the sportsmen cannot hunt for this animal unless they are mounted on elephants; and they find it necessary to go in bands, so that while some of the elephants are receiving the charge of the rhinoceros, the others may take aim and wound them. A single one is said, in the first instance, to seek safety in a retreat into a closer part of the jungle; but, if again roused, it advances to the attack. Its object appears to be to get at the elephant on the side; and passing the horn in below it, to wound it in the belly, or fairly rip it open. The elephant is also said not to attempt using the tusks, which would not of course be able to toss so weighty an animal. What may be done in a state of nature we have no means of knowing, for nobody has recorded, and probably nobody ever saw, a battle between a rhinoceros and an elephant in a wild nature, nor probably between a rhinoceros and any other creature. But in cases of hunting, the elephant does not appear to have any means of warding off the attack; but wheels round, and receives it on the hinder part of the body, on which the horn has not much effect in the way of laceration; but the impetus of the animal is such, that it hurls the elephant to the earth; and this it will continue to do again and again for some time. It is not unlikely that the elephant, if free in wild nature, would continue to receive these attacks till its opponent were exhausted, and then have recourse to its own mode of warfare with advantage.

There is a smaller species of one-horned rhinoceros in the island of Java, and probably in some of the adjoining islands; but, except in size, it does not appear to differ much from that of continental India.

The largest and most powerful of the whole is the African species, which has two horns, and the skin, without those folds which are so conspicuous in the rhinoceros of the East. Some idea of it may be formed from the annexed cut.



OSTRICH.

The male and female of the ostrich are represented in the plate. The ostrich is the most remarkable of the feathered race, both for the vast size and swift motion upon the ground which some of them possess; and for the fact that the whole of them without exception are destitute of flight; and in some the wings are so very rudimental, as not apparently to be capable of any purpose in the economy of the birds. In Cuvier's arrangement, they form the first family of *Echassiers*, or stilt birds, and they differ greatly from all the rest both in their structure and their economy. There are several genera of the family, and each genus has a separate locality, no two of them being found in the same part of the world. They are, the ostrich properly so called, a native of Africa, and of the adjoining parts of Asia; the American ostrich, which is not found except on the dry plains of South America; the *Emu*, of Australia, which occurs only in that country, and chiefly, or at all events most abundantly, in Van Diemen's Island; the *Cassowary*, which occurs only in the south-east of Asia; the *Apteryx*, which is confined to a peculiar district of New Zealand; and the *Dodo*, which, if not quite fabulous, had its locality at Madagascar, and probably on some of the other islands to the eastward of Southern Africa. If the last mentioned one ever really existed, it appears now to be extinct, and to have been so ever since the visitors of distant lands paid much attention to subjects of natural history. That birds so singular in their structure should be distributed over parts of the country so widely separated from each other, all different in their generic characters, and each genus consisting only of a single species, is a very curious fact in natural history.

The ostrich has long been one of the most celebrated birds in the whole annals of the feathered race; and, like all birds and other animals which have been famous from remote antiquity, much that is marvellous has been recorded of it. It is the swiftest footed of known animals; the one which lives most habitually in the desert, and it is remarkable for its proneness to swallow a vast number of substances, and also for the great vigour of its digestive powers, though in the latter respect many tales are reported of it which are totally without foundation—such, for instance, as its power of digesting, that is of converting into animal nutriment, all sorts of stones and metals. Now this is not true; for the greater part of every stone or metal is composed of elements quite unfit for entering into the composition of any animal substance.

It is a majestic bird in its appearance, and stately in its gait, from the length of its legs and the stretch and bounding elasticity of its step. When in its full-grown state, standing with its neck at the full elevation, the total height of the ostrich is about seven or eight feet, and, if in good condition, it

Female Male

sometimes weighs as much as eighty pounds. But though it is thus the giant of birds by way of eminence, it is one of the most harmless and inoffensive of the whole race. It offers no voluntary attack upon any animal; and its fleetness is such, that no enemy save man can master it in those open wastes which form its principal habitation. The eggs of the ostrich are contained in very strong shells, and they are of such dimensions, that a single one weighs about three pounds. It has often been said that when the female ostrich lays her eggs, she abandons them to their fate, without giving herself any more concern either about them or about her young. Nothing can be more unfounded as a general trait in the character of the ostrich than this. Like all birds which subsist upon vegetable food, which they procure exclusively by walking on the ground, ostriches are social animals, fond of the company of each other; and we are acquainted with no social animal which deserts or neglects its young, and its doing so would be in direct opposition to the social propensity, and thus the character of the animal would be inconsistent with itself, which never happens as a general habit in any one animal whatever.

Though ostriches are confined to the dry and open plains, their range is very wide. They occur from the dry grounds immediately behind the mountains of Atlas in Northern Africa, southward to the country of the Cape. In longitude their range is still greater. It stretches from the western extremity of the African desert, through the dry and naked parts of Arabia, Persia, and the Indian deserts, nearly to the banks of the Ganges. Of course there are many places within those limits quite unadapted for the pasture of ostriches. There are marshes, woods, and cultivated grounds, and the birds are not adapted for either of these, and not found upon them. But within the range mentioned there are ostriches upon every suitable pasture; though Africa, and especially the margins of the great desert in Northern Africa, are the headquarters where they are found in the greatest numbers, and of the largest size.

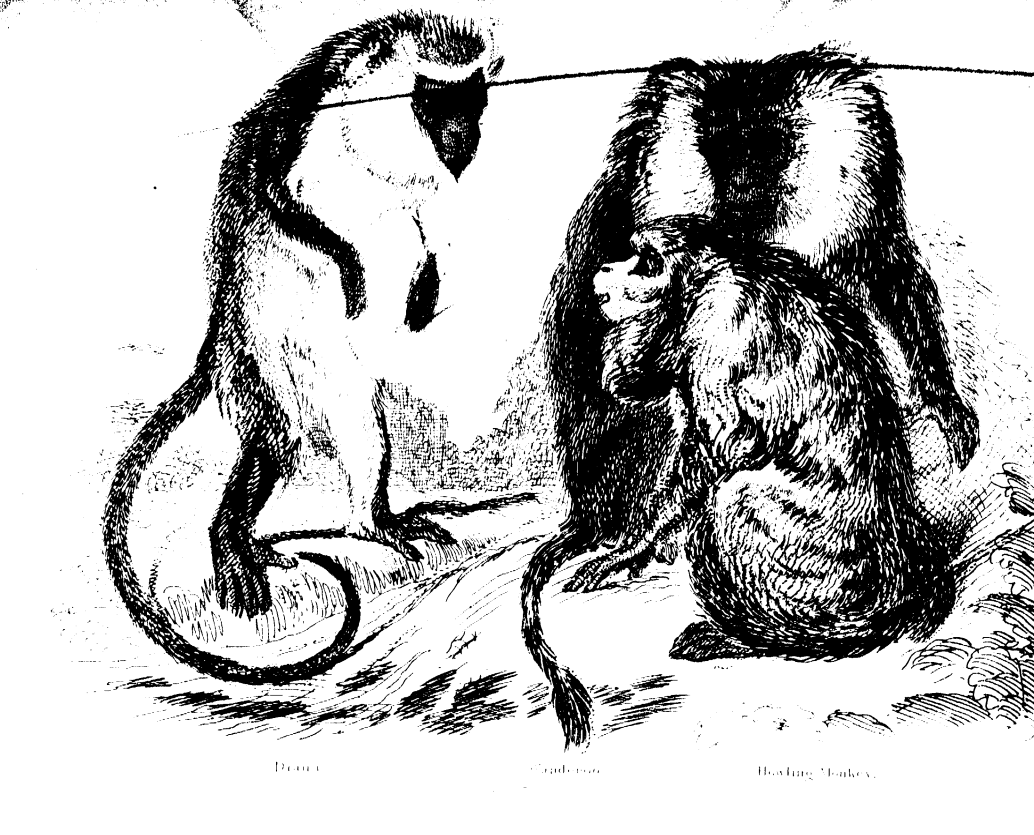
MONKEYS.

The species of monkeys are very numerous; and in all the tropical parts of the world, with the exception of Australia where there are none, the individuals are beyond all counting; and their motions are so lively and their noises so incessant, that they keep the whole forest in activity and din.

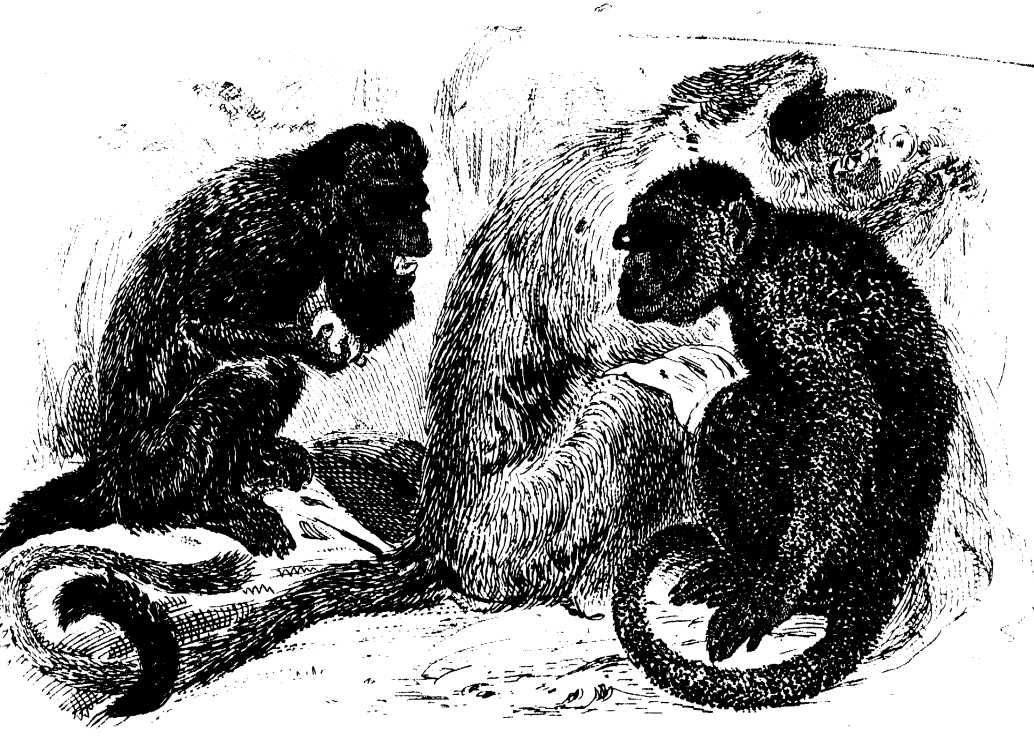
The Diana Monkey was so called by Linnæus, in consequence of the slight resemblance which a white spot on its forehead has to a crescent which was the emblem of the fabulous divinity, whom the ancients made the patroness of hunters, though monkeys are anything but hunting animals. This species is an African; but it inhabits nearer the equator, and is chiefly found in the woods. The length of its head and body is about a foot and a half, and that of its tail about two feet. Its general colour is a mixture of black and white on the upper part, passing gradually into ash colour on the head, neck, and lower part of the body. On the middle of the back the black predominates, and so it does also in the tail, the tip of which is entirely black. The crescent of white above the eyes, the points of which extend nearly as far as the ears, is its most remarkable feature, and the one by which it can be distinguished from every other monkey. This species has been frequently brought to Europe; and though, from being a native of very tropical countries, it feels a great uneasiness during our winter months, yet if it is kept warm enough it will live in our climate. It feeds chiefly upon vegetables, of which it prefers nuts and sweet fruits; but it also eats bread, and even eggs, though it does not eat flesh, or attempt to kill any warm-blooded animal for the purpose of eating it. It is, however, an ill-natured and snarling animal, always showing its teeth when a stranger approaches it, and biting severely if it can get within reach. It seems that, in a state of nature, it produces great part of its food by the scent; for when confined, it smells very carefully at every object, and at the same time turns it round to examine it; so that, if food is given to it in a dish, the first thing that it does is to turn the dish upside down. It drinks a great deal; and, for its size, its appetite may be said to be voracious.

The Wanderoo is also an inhabitant of the East, and remarkable for the produced hairs which surround the face.

The Howling Monkeys, so named on account of the loudness of their voices, form a very natural and well-defined genus. Their limbs are of mean length, with five divisions on them all, and the thumb on the fore ones about half the length of the second finger. One of the most remarkable parts of their organization is the structure of the *os hyoides*, or bone of the tongue, and of the instruments of sound with which the remarkable enlargement of this part is connected. This may be regarded as a sort of enlargement of the larynx, which appears externally like a great swelling or goitre, especially when the



Proboscis Gradation Howling Monkey.



Capuchin Proboscis Negro

animal howls. So large is this indeed, that it gives a singular appearance to the profile, by throwing the muzzle higher up than what appears to be the centre of the face, an aspect presented by no other race of animals. There are many species, all natives of the warmer parts of the American forests, which are rendered absolutely dismal with their cries.

The Capuchin Monkey has also been called the hard-drinking monkey; and in doing this it seems particularly careful not to wet its beard, which it holds to one side while it carries water to the mouth with the other hand. The hair on the head is turned up in a large tuft upon each temple; the face and forehead are naked; and the beard is of immense length. The colour is brownish red, the beard darker; the eyes are large, and very deeply set in the head; and the nails on all the fingers are bent, but they are not so on the thumbs.

The Proboscis Monkey, from the extraordinary production of the nose, standing out from the line of the face like a great beak, has been made the type of a genus under the name of *Nasus;* but it is doubtful whether the structure of the nose, curious as it is, warrants the separation of it from the semnopitheci, with which it agrees in its more active and important organization. The face of this monkey bears a considerable resemblance, in all respects except colour, to that which exhibitors give to the standing hero of street pantomime, the venerable and far-famed Punch. Whether the monkey or the mime has the more grotesque visage is a point not worth determining; but the monkey certainly has a supply of nose worthy of the immortal pen of Slaukenbergius himself, and doubtless has been at "the promontory of noses." When the animal stands at its greatest height, elevated on the hind feet, it does not exceed three feet, and yet the nose stands full four inches out from the line of the face, and the chin also is pointed. The nostrils are in the under part of this curious proboscis near its extremity, and of an oval form.

The Negro Monkey is the middle-sized black monkey of some authors; but, though it has got the name of the negro monkey, it does not inhabit the country of the negroes, but the eastern isles. Java is the island in which it has been principally observed by Europeans; but there is little doubt that it extends over the other islands.

CAMPANULA.

PENNILA—GARGANICA.

If we take all the circumstances with which they are associated into consideration, there are few flowers of so simple a character in which there is so much interest as in the harebell, which may be regarded as the typical plant of all the campanulas. In the garden, excepting upon artificial rock-work—which is in the majority of instances so very artificial, so exceedingly unlike nature, that it were better omitted—this simple tenant of the wilds is completely out of place, and therefore out of keeping with all around it. But when even in its peculiar place, our feelings towards it are very different, and there is scarcely a wild flower in the uplands of Britain that ever meets with so hearty a welcome as the harebell. In the early summer, before any of the heaths come into flower, the known mountains of the northern parts of Britain are sadly monotonous. The air is indeed delightful, and the shapes of the mountains are sublime; but when one leaves the glen, and the river, and even the last scattered and stunted birches on the margin of the moor, there is something peculiarly lonely in the bronzy tint of the bloomless heather, which is deepened by the fact of there not being so much indication of life as the hum of an insect. But when one comes to one of the "rest-and-be-thankful" stones, which very often are met with on the tops of the knolls, just in the places where the eye may best scan the wide horizon; while the limbs are enjoying a little rest, that stone generally contrives to collect at some side of its base a portion of more kindly mould than the surface around, and upon this there is a tuft of harebells, the delicate azure of which is delightful, as varying the brown and dingy gloom of the rest of the scene. There is generally also some solitary bee ranging from cup to cup, seeking for her laborious meal in the nectaries, and bending the slender peduncle of the flower even with her light tread. At a more advanced time of the year, when the heather has put on its purple, and every gale wafts honey, the mountain bees are equally plenty, busy, and blithe; but the harebell is gone at that time: and though there is more beauty and more activity, there is a good deal of monotony in it, and one searches for the shelter stone, the harebell tuft, and the solitary bee, as subjects which can be singled out for individual contemplation.

Our mountain harebell, the "Bluebell of Scotland," *Campanula rotundifolia*, is a very graceful little flower. Its slender stem is very elastic, and if the slightest breeze stirs—and they are never very long at rest upon the tops of those knolls which are secondary to the more lofty mountains—every bell in the tuft is playing in it with the most graceful undulations. Nothing can exceed the simplicity of this flower, and there are not very many equals to it in

symmetry; the curve of its general outline is so graceful and so true, and the divisions of the lip are so uniform. But simple as the flower is, the root takes very deep hold on the ground; and if it were not a sort of sacrilege to root up such a flower in such a place, the root is very pleasing to the taste, the milky juice which it contains being both rich and bland. One of the species, the *Rampoin*, is cultivated as an esculent root in France and Italy; and although from the small size of the root of the harebell it is probably not worth cultivation, yet it is certainly not inferior in taste.

The species which are figured in the plate are of very humble growth, but they are very neat miniatures of the plant of which we have been speaking. The white and the blue, which are shown at the bottom of the plate, are merely varieties of the same plant, and this change of colour is found also in the common harebell of our mountains; some of these being of a rich and pure azure, some with a very decided tinge of purple, and some almost or altogether white. Some difference in the soil no doubt produces this difference of colour; but what it is, has not been ascertained. The species figured is *Campanula pumila*, or the dwarf heathbell. It is a native of elevated situations on the Alps, and like the harebell of our northern mountains, flowers about the middle of summer, or at all events before the heath comes into bloom. It is a very diminutive plant, not attaining the height of more than about three inches; but it is a very copious flowerer, and the flowers continue in succession for a considerable time. Its diminutive size is rather an advantage than otherwise in the cultivation of it as a garden plant; because we stand more in need of dwarf flowering plants than we do of plants of a taller growth. Plants which are natives of high mountains enjoy a very peculiar kind of climate there, a climate very different from that of any country near the level of the sea; and therefore they are always difficult to deal with in cultivation. A plant brought from the warmest parts of the world is far more easy to cultivate than one which is fetched from the top of a lofty mountain, probably not two miles in a straight line from the place where it is attempted to be reared by art. The reason is apparent; we know what the tropical plant wants, and we can supply its want; but we do not know what the mountain plant needs, and therefore it in many instances defies our culture.

The other species shown in the plate was discovered upon Mount St. Angelo, anciently Garganicus, and hence the origin of the name that has been given to it. The bell in it is deeply cleft into five segments, which gives the flower a different aspect from that of our campanula; but the essential characters are the same in them both.

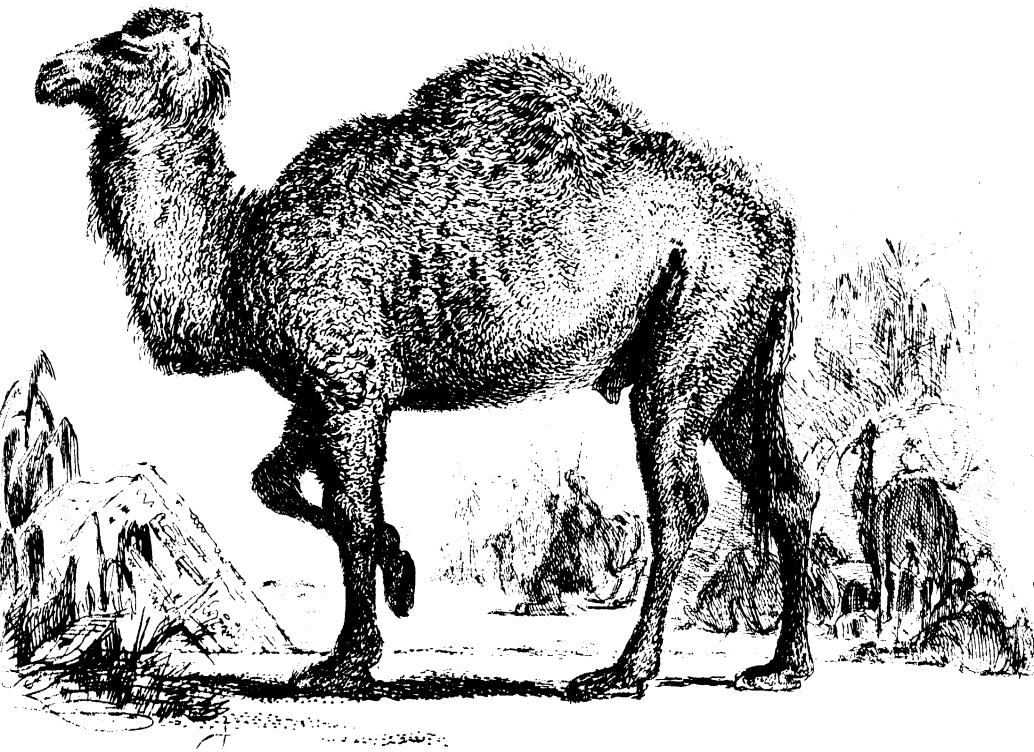
CAMELS.

ARABIAN CAMEL—LAMA—ALPACA.

CAMELS are ruminating animals, which take their food unprepared into one stomach, and return it from another into the mouth to be chewed, after they have ceased feeding, and are resting themselves. The typical ones are capable of subsisting on very coarse and dry food, and they are patient both of hunger and of thirst. There are two genera of them, the one in the south of Asia and the north of Africa; and the other in the mountainous parts of South America. There are two species of the eastern ones, both in a state of domestication, and there are several species in America, some of which were partially so at the time when the Spaniards first invaded the country.

The camels are useful animals; they are employed as beasts of burden; their flesh and their milk are wholesome as food, and their hair, which they cast every year, is valuable in the arts.

The ARABIAN CAMEL (*Camelus Dromedarius*) may be considered as the camel *par excellence;* as it is the one which is best known and employed on the most difficult, and therefore the most important journeys. To the Arab in the desert, especially those parts of it in which neither sheep nor goats can be kept, the camel is an exceedingly valuable animal, and in this respect approaches nearer to the ox, where kept for draught and burden as well as for food, than perhaps any other animal. The flesh of the camel is eaten; and the milk is applied to all the common domestic purposes. Their hair is manufactured into clothing, and also covering for tents. The hide, which is very thick and strong, is used for making sandals, saddles, pitchers, shields, and various other articles. The owner, with his family, and all their little appointments, are carried from place to place on the backs of the camels. When the camel kneels down for repose during the night, his side forms a pillow; and when the sand drives before the storm in the desert, the rider takes shelter in the lee of the kneeling camel. Upon occasion, the camels are sometimes ranged round the encampment, forming both a shelter, and at least a temporary means of defence during the night; and those countries which are separated from each other by wide extents of desert, could have no communication with each other but by means of the camel. The camel and the desert thus appear to be made for each other; and though the appellation of "the Ship of the Desert" no doubt partakes a little of the high hyperbole of eastern speech, yet that animal is the only ship by means of which the desert can be navigated either with certainty or with safety. An Arabian camel can carry a load of between 700 and 800 pounds, and travel with it at the rate of about two miles and a half in the hour. When less heavily laden it can travel faster, though



not above three miles in the hour; and in the deserts it is not customary to load the animals very heavily, or drive them more than about eight hours in the day.

There is little difference between the BACTRIAN and the Arabian species, other than that the former is proportionably longer in the body and lower on the legs, and has two humps. It is generally understood that the two breed together, but the fact as to whether the progeny will again breed with each other has not been ascertained.

The hump on the camel is an accumulation of a peculiar species of fat, which is not liable to be melted, or very much acted upon by the great heat to which the animal is exposed. It is not a deformity produced by servitude, as has been foolishly said, neither is it in itself of any use in the economy of the animal. It is a store of nourishment, most wisely provided by nature against the day of want, to which the camel in a wild state would be often exposed, and from which he is not entirely exempted in a state of domestication; and a camel can exist for a considerable time upon its own hump without any other food, nor does it die of want until that hump is entirely absorbed.

The LAMA is the most interesting of the American camels. They are domesticated; and, like other domesticated animals, they are of all varieties of colour, from nearly a dull white to almost entirely black. They vary considerably in size; the largest being about five feet long in the body, and nearly four feet and a half at the shoulder. The neck has a bend downwards at its junction at the back; but it is long, and when the head is raised, the muzzle is at least six feet from the ground. The head is thick in proportion to the length; the lips are thick, the tip of the ears (which are much longer in proportion than those of camels) are rather rounded. The legs are stout, the hoofs on the toes pointed, and capable of separating from each other so as to take a firm hold on the slightest inequality in the rock. Indeed the feet of these animals, unlike the round pads of the camel, are perhaps better adapted for keeping their footing on rocky places than those of any other family of ruminantia, except the goats. The back is straight, or rather bent down in the middle, and without any hump.

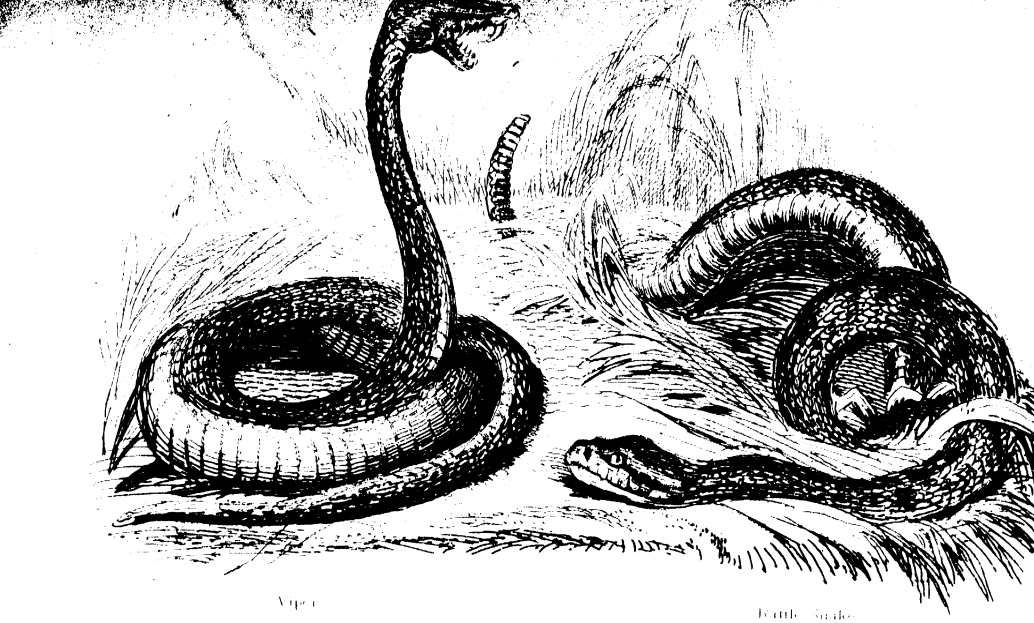
The ALPACA has the general colour of the upper part various shades of maroon brown, in some places inclining to black; and the upper part and breast are in general white, as also are the insides of the thighs. The hair along the back is very long and very silky, and almost as fine in the staple as that of the Cashmere goat. It is an animal easily tamed, and quite harmless and docile; but when teased it assumes an attitude of defence, and blows and spits at its enemies. Several specimens have thriven well in Europe; and there is no doubt that this is an animal which might be introduced with advantage in many places. We are, however, not so much acquainted with its habits, as to know whether it would breed as freely and as profitably as the ruminantia of our part of the world.

REPTILES.

In this plate there are represented the most formidable members of two of the orders of reptiles, namely, the most deadly of the poisonous serpents, and the most celebrated of the Saurian order, or those which have tails and feet, of the last of which the serpents are destitute externally, though some of the harmless ones have rudiments within the skin.

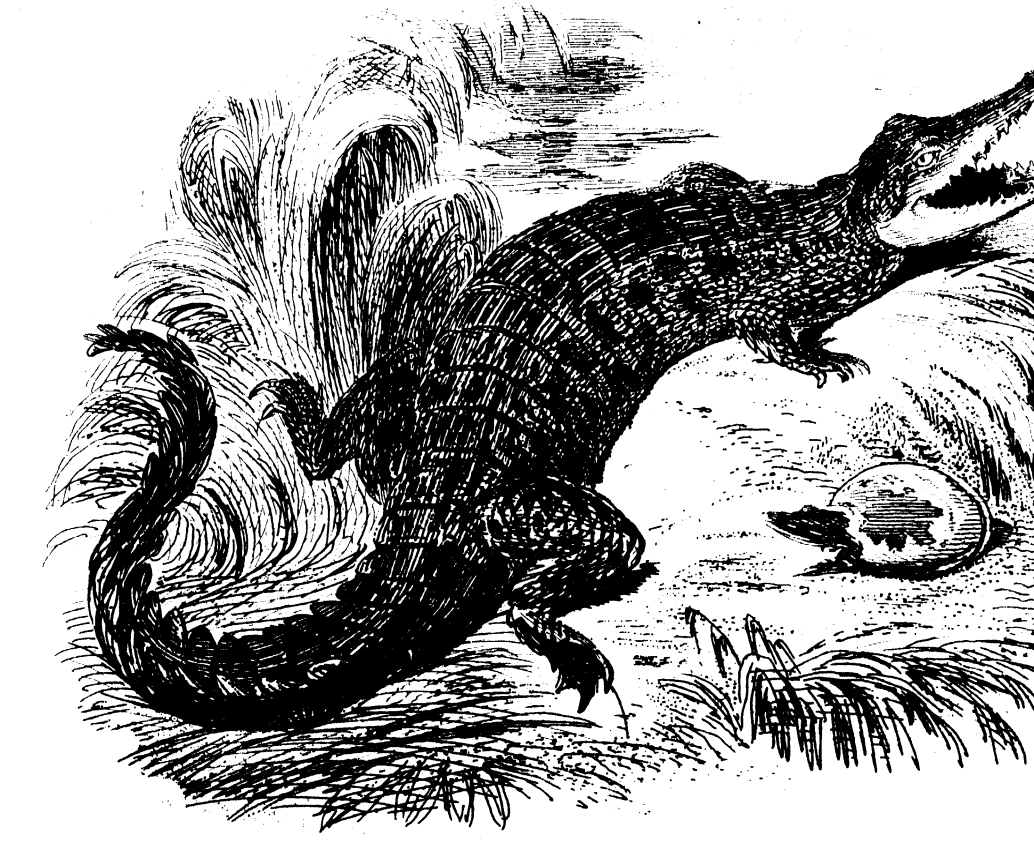
The species represented first in the plate, under the name of the "Viper," is not the common viper of Europe, which, though it inflicts a most painful and distressing bite, is not absolutely a deadly reptile to men, or to any of the larger animals, in our mild latitudes. It indeed represents the attitude of the viper, and generally of any of the poisonous serpents, when they are preparing to spring upon an animal they mean to attack. This is called the coil, and is formed by the animal winding itself in a series of circles, with the tail at the extreme circumference, and the head in the centre. When the reptile is at rest in its coil, the head is depressed to nearly the same level with the rest of the folds; but when the animal is excited, the head is always more or less raised, the mouth is opened, the poison-fangs are displayed as they are shown in the figure, the eyes glare, a hissing sound is uttered, and the whole body of the reptile seems in a state of the most violent agitation and excitement. Naturally these serpents are very dull and sluggish animals, dozing away their time in their hiding-places under the close herbage; and it appears to be a great effort in them to make their formidable attack, which, when done in style, is quite electric, and the mischief is affected before one is aware that the animal has moved. The species here represented is the "Bushmaster" of the thickets of Guiana, which attains the length of six or seven feet, and its bite, when irritated, is fatal. But its food consists of birds or small quadrupeds; and it never bites man, or any large animal, unless when it receives or apprehends injury from them. That it should do otherwise would indeed be contrary to the system of nature, in which nothing is done by any animal which is useless to it; and unless in self-defence, though the instinct of the animal may often lead it to a result very different from that at which we would arrive by the judgment of reason on the same case, there is no reason to suppose that any animal kills from mere wantonness that which it is incapable of eating. Now, no serpent, whether poisonous or not, can divide its food by biting. They are all swallowing animals, and thus they never attack and kill as food any animal which they are not able to swallow.

The Rattlesnake of North America, which is figured in the plate next to the Bushmaster, differs from that reptile in several particulars, among the rest in the shape of the head and in the "rattle," or sounding instrument on the



Viper

Rattle Snake



Crocodile

extremity of the tail, by means of which it gives warning that it is present, and in a state of activity. The rattlesnake is a very dangerous reptile certainly, though many of the accounts which have been given of it are a good deal exaggerated. The fascination which this and other serpents are said to practise upon birds, and other small animals which are their prey, is a very doubtful matter; for there is a disposition in many animals, and even in man, to run upon death when in great danger and excitement. The horse, and even the soldier, in battle, run upon the bayonet when they feel that they are wounded by it, and yet nobody would have the hardihood to say that there is any power of fascination in a piece of cold iron. The supposed fascination depends, in all probability, upon this principle, but how it operates we pretend not to say.

The Saurian reptile represented in the plate is the Crocodile of the Nile and of some other of the African rivers, and it is shown both in the mature state and as just coming out of the egg. In the lower part of the Nile the crocodile is not now a very dangerous animal, at least to human beings; and probably the ancient accounts of its terrible nature, in as far as they are not exaggerations, may have been borrowed from its character farther up the river, where it is still very formidable. In Senaar, and the countries farther to the south, the crocodile is still very formidable, and often seizes and carries off those who are engaged in washing or other operations close by the bank of the river. The crocodile has a very wide gape, and rather formidable teeth, but still these follow the general law of reptiles in being merely prehensile teeth, and not killing or biting ones. Accordingly, when the crocodile seizes a human being, or any other large animal, the prey is always drowned, not bitten to death; and some, probably all of these more formidable reptiles, bury their prey until it becomes so tender that they can shake it to pieces, and so swallow it. There is a valve in the throat of the crocodile by means of which it can cut off all communication between the breathing apparatus and the mouth, so that it can use the latter under water without any danger of suffocation; but, notwithstanding this, it usually goes to the bank to feed, especially on its larger prey. It is an unseemly animal, by no means agreeable to look upon, but, like other animals, it is not without its use in nature, whether we rightly understand that use or not.

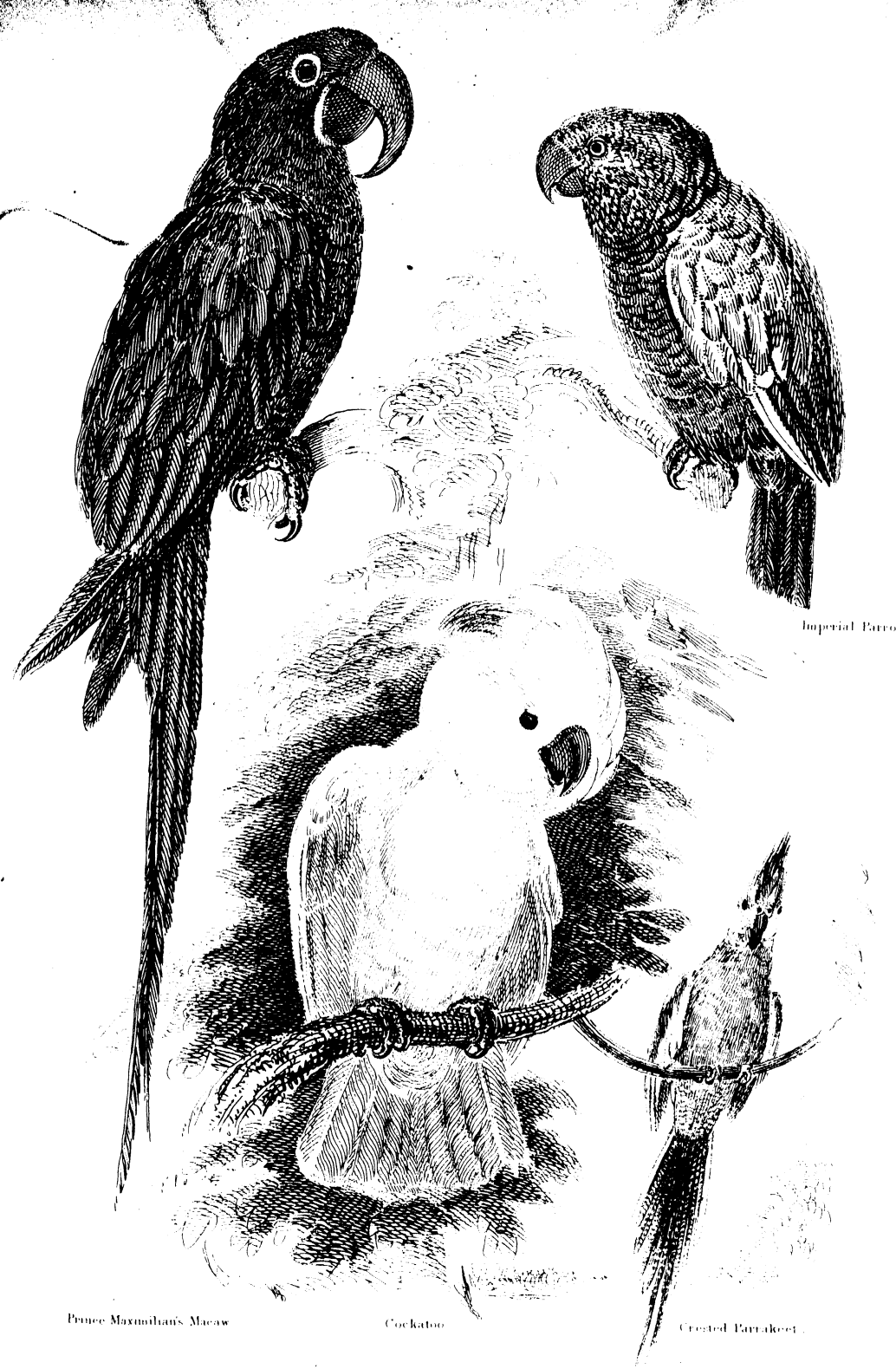
PARROTS.

Parrots are so numerous, and the shades of distinction by which many of them differ from each other are so fine, that the discrimination of the whole would occupy many volumes; and the descriptions of individuals, being little else than matters of size, shape, and colour, are susceptible of very trifling interest. A faithful representation, such as these in the engraving, conveys more at one glance than could be conveyed by the most elaborate written account.

With the exception of a single species found in North America, and which is represented as being much less abundant now than formerly, there are no parrots without the tropic in the northern hemisphere. It is different in the southern one; but still, though parrots occur in Australia, in Southern Africa, and in South America as high as the fifty-second degree of latitude, which answers to that of the middle of Europe in the northern hemisphere, the country there is tropical in its vegetation, and on this account we might be prepared to expect that it should be tropical also in the character of its vegetable-feeding birds, and indeed in the greater part of its living productions. That the vegetable and the animal kingdoms should be adapted to each other in every country, whatever may be the character of the country, is a law of nature from which there is never any deviation, unless in so far as man interferes with the natural state of things, by introducing artificial modes of culture.

The parrots are almost exclusively vegetable feeders; and the kernels of fruits, and the buds and flowers of trees, are the chief sources on which they depend for their nourishment. Thus they are fitted for a peculiar locality, namely, one in which there shall be for the greater part of the year a constant succession of food for them; and they could not naturally exist in those countries where the woods are for several months of the year not only flowerless and fruitless, but also leafless.

Perhaps one of the best arrangements of the parrots is that made by Kuhl, who divides the whole family into six divisions. These agree pretty nearly with the common names which have been given to the birds in English, which is always an advantage when it can be adopted. These divisions, according to Kuhl's arrangement, are maccaws which have the tail long and wedge-shaped, and the cheeks naked of feathers. The second division are the long-tailed parrots, some of which have a naked space round the eyes, and some not; and those which have such a space are not unfrequently styled maccaw parrots, as being, in this respect at least, and also in the general form of their bodies, something intermediate between the maccaws and the true parrots. The members of this division, which have the cheeks naked in part



Prince Maximilian's Macaw

Cockatoo

Crested Parrakeet

Imperial Parro

round the eyes, are, almost without exception, natives of South America, and especially of Brazil, the grand head-quarters of the maccaws; though one at least is found in Western Africa. Those which have the cheeks completely feathered round the eyes are, without exception, natives of the eastern continent, over which they take a very wide range, being found in Western Africa, in tropical Asia, in the Oriental islands, and in New Holland. The third division consists of birds which are of smaller size, having the tails very short, and either round or pointed. They are confined to the eastern continent and the isles of the Pacific. The fourth division consists of the parrots properly so called, which have the tails of moderate length, or rather short, and, generally speaking, squared over at the termination. Birds of this division seem more widely distributed than any of the rest. They are plentiful in tropical America; they occur also in Western Africa; they are found at the Cape of Good Hope; they are found in the West India islands; and also throughout the isles of the East. These are the parrots properly so called, or the true parrots by way of eminence; and, as we already hinted, they are found on richer pastures than any of the rest; they are perhaps not so elegant in their forms as some of the others, but, taking them altogether, they appear to be birds of greater resource, are more docile in confinement, and many of them can be made to articulate better. The fifth division in this mode of arrangement comprises the cockatoos, which have the tail squared over, the cheeks covered over with feathers, and a crest of feathers on the head, which they are capable of erecting or flattening at pleasure; they are almost, if not altogether, natives of Australia. The sixth division, according to Kuhl, have the tail even and the cheeks naked, and are without any crest.

The four varieties figured on the plate, are characteristic of four of the sections. First at the top there is a maccaw, of the long-billed kind, and these are among the most active and noisy of the whole, but the least docile. The second is one of the true parrots, which, from the plainness with which they can be brought to articulate, are more esteemed as pet birds than any of the others. The first one on the lower part of the plate is the common white cockatoo, which is a bird of gentle manners but not much of a speaker; and the last is a characteristic species of the smaller parroquets.

LEMUR—LORI.

Lemurs are four-handed mammalia, forming a sort of link between the apes and monkeys, and those mammalia which are without hands. The name was originally given to these animals by Linnæus, in consequence of their habits being nocturnal, though in other respects it is rather fanciful to call them "ghosts," which is the meaning of the word lemur. They are all natives of Madagascar, and found only in that island.

The Red Lemur is, generally speaking, all over of a maroon-red colour, with the exception of the hands, the tail, the head, the insides of the legs, and the belly, and these are black. There is also a half collar of white on the upper part of the neck. It measures rather more than a foot from the back of the head to the origin of the tail, and stands nearly the same height, taken to the most elevated part of the back. The tail is more than a foot and a half in length, and, though not prehensile, has considerable power of motion. It is very easily tamed, and of the most gentle and inoffensive disposition. In its waking hours it is remarkably nimble in its motions; but it passes the greater part of the day in a state of complete repose, during which it is rolled up, with the head placed between the feet, and the tail brought over. From this habit of indolence during the daylight, it is not so interesting in a collection as one might, from its gentleness and docility, be led to suppose.

The White-fronted Lemur is of a reddish-brown colour in the upper part generally, with grey on the hind part of the head and the shoulders. The face, as high as the eyes, is black in both sexes; but in the male a band of white crosses the upper part of it, though this band does not exist in the female. The female has, however, those parts grey which are white in the male. Of the habits of this species (and it may be said of all the species) very little is known in a state of nature; and, as we have already mentioned, no satisfactory conclusion can be drawn from specimens kept in a state of confinement. One which was kept in the French Museum brought forth a young one. Until it was produced, the mother was very gentle and familiar, fawning on the visiters, licking their hands, and showing many of the attentions of a dog. But no sooner was the young one produced than it occupied and even absorbed the greater part of her attention; and she became retiring and suspicious, and offered to attack those who approached her, especially if they attempted to touch the young one. As it grew up, however, her suspicions abated: and by the time that the young one was capable of finding its own food, which was at about the end of three months, all the gentleness and familiarity of the mother's character returned; clearly showing that the temporary change which had taken place in her disposition arose solely from affection for her young one, and not from any disposition to do mischief.

Ruffed Lemur

Slow pointed Lemur

White fronted Lemur

The Loris are also forest animals, but better adapted for climbing and worse for walking than the lemurs. They are natives of India and the Eastern islands.

The Slow Lori (called "Slow-paced Lemur" on the plate) is a native of India, and probably also of many of the Eastern islands. It is of a greyish-fawn colour, with a brown stripe down the back, and the space round the eyes also darker than the rest of the body. During the day, and indeed at all times if it is fed in confinement, it is a slow and indolent animal, and seldom moves; and when it makes an effort at running either from danger or to its food, that effort is a very feeble one. It is by no means a vicious animal, and though it is not easy to stimulate its instincts, it does not appear to be so stupid as it is slow. It remains in concealment during the day, but as the evening closes in it begins to move, grasping from branch to branch, and watching around it with apparent eagerness. It is said to prey upon the ground as well as among the branches; and when it spies a prize on a large branch, or on the ground, it creeps along perfectly motionless till within a short distance; then it elevates itself on the hind legs, advances a little quicker, seizes the prey between the fore ones, and speedily grasps it to death. Some which have been kept as curiosities have fed upon milk and ripe fruits, but they always preferred birds and the larger insects when these could be procured.

The subjoined cut represents another curious handed animal of the forests of Madagascar.

AYE-AYE.

ICHNEUMON.

Ichneumons are animals of Africa and the south-east of Asia. They belong to the weasel tribe. They are animals of small size, of prowling dispositions, but not remarkable for ferocity. The two species best known are those figured on the plate.

The Egyptian Ichneumon inhabits the banks of the Nile; and it has been scarcely less celebrated than the ibis itself. It is too weak and too timid for being able to attack adult crocodiles, serpents, and the larger lizards; but it is by feeding on their eggs and destroying the young that the ichneumon decreases the number of these obnoxious creatures. It is not an animal of a decidedly carnivorous appetite, though it occasionally lives on animal food. When urged by its natural instinct of destruction, it is often met with after nightfall cautiously prowling along the rough surface of the soil in search of its prey, and at the same time cunningly avoiding all appearances of danger. When it is fortunate enough to succeed in these researches, it does not stop with the gratification of its appetite, but goes on destroying every animate creature it can safely attack. It is particularly fond of eggs, which it seeks after with great assiduity, and the gratification of its palate in this way causes the destruction of a great many crocodiles. It is a mere fable that it enters the mouth of the crocodile when asleep; but such fables are very common in all countries in the age of superstition.

These animals possess a considerable degree of sagacity, and have a strong disposition to explore and scrutinise places which are new to them. The sense of smell appears to be of great use in guiding them to their prey: but their other senses are not so acute. They wait and watch with great patience, and also show much perseverance in search of prey. On these accounts, and from their comparatively gentle disposition, they are pretty generally kept in a state of domestication, in which they answer nearly the same purpose as domestic cats. In this state they readily know the houses of their keepers, and those persons who feed or otherwise kindly use them, though they do not show any sign of the watchfulness and attachment of the dog. They are, however, not insensible to caresses; and though they are apt to be sulky if disturbed when feeding, they never attempt to regain the wild state after they have been once domesticated.

The Indian Ichneumon is of a dull grey colour, arising from the marking of the hairs, which is an alternation of rings of black and white. The tail is of the same colour as the body, very thick at the basal part, but tapering to the extremity, a small portion of which is yellow. It is smaller than the African species, being little more than a foot in length, and five inches high in the most elevated part of the back; but the tail is very long, nearly equal to the whole

Indian Ichneumon

Egyptian Ichneumon

length of the body. It is quite common in many parts of India, and so far from shunning the habitations of men, it often takes up its abode in holes of the walls of houses, or in small burrows in the ground, which it digs with great readiness. It is easily tamed, and when fed it is playful; but the sight of those animals which form its natural prey excites it so much that it is apt to bite, if not released so as to be suffered to pursue them. It partakes a little of the habits of the cat; and one might expect as much from all the species, inasmuch as they have the claws semi-retractile, and use them partially in capturing their prey. It is exceedingly fond of birds, and very dexterous in seizing them. It jumps upon them like a cat, with far more rapidity than one would expect from the general appearance of the animal.

There are several other species, or at least varieties, found in the eastern peninsula of Asia, and in Java, and the other islands situated around the extremity of that peninsula. The chief difference among these is difference of colour, which renders it not improbable that they are all originally of the same stock. The one which inhabits Java is found most abundantly in the forests of large trees. It is an active and energetic animal, not indisposed to associate with man, but rather destructive of eggs and young birds in the poultry-yard. From the accounts that are given of it, it appears to be more sensitive to kindness than the other species; for it follows its master like a dog, stands up on its hind legs to be played with and caressed, and shows other evidences of being pleased with attention.

The annexed cut will show the contrast of the more characteristic weasels with the ichneumon.

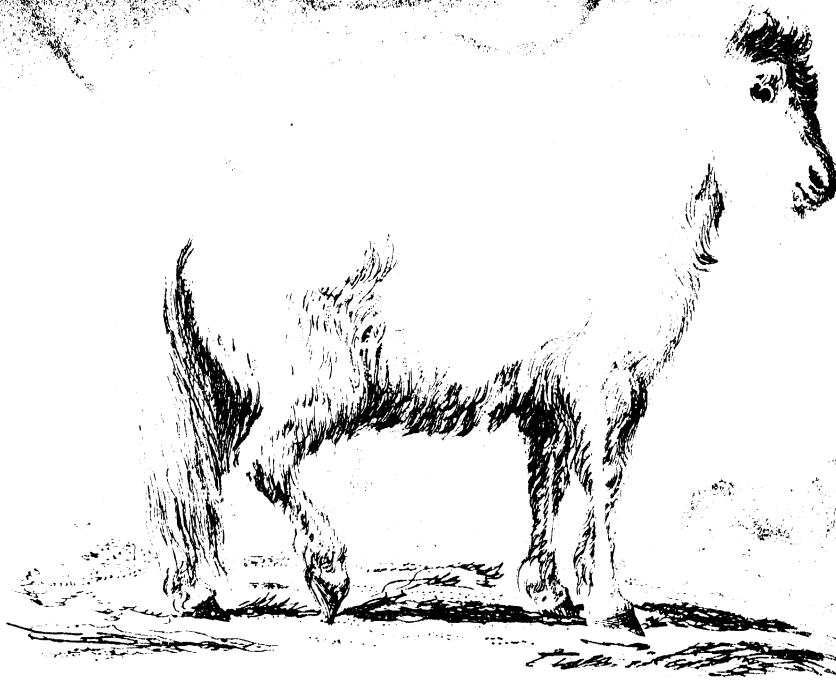
COMMON MARTEN.

HORSES.

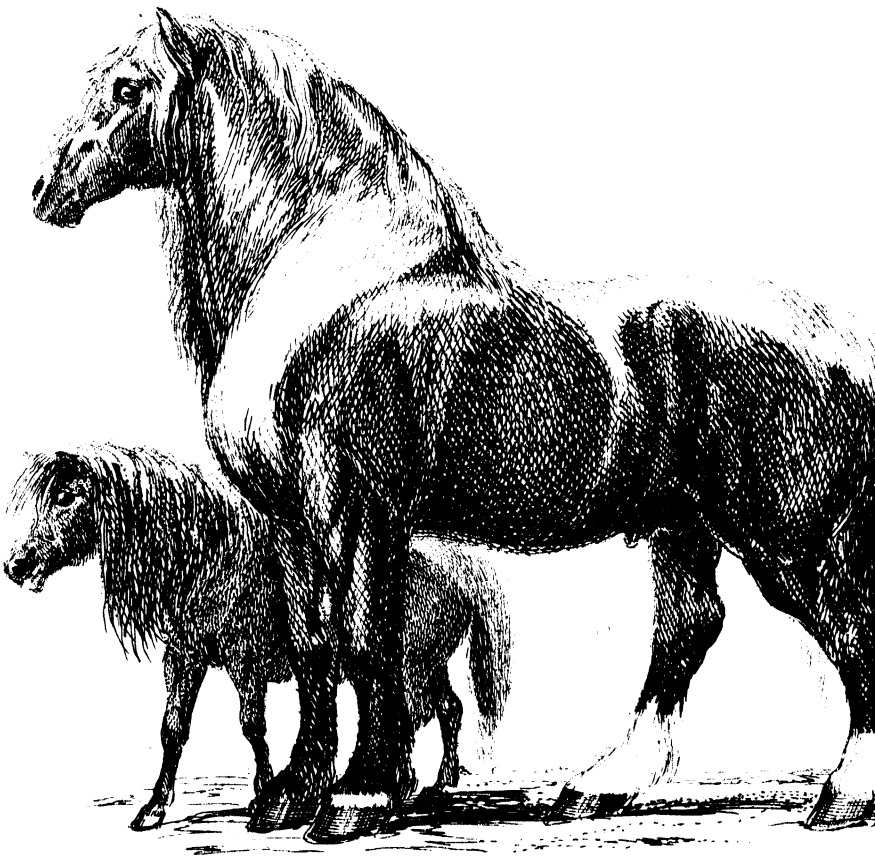
TARTAR—SHETLAND PONY—DRAUGHT HORSE.

To give a general description of the horse is unnecessary, neither would it be consistent with our present purpose to go into any details of the jockey-club points of excellence in a horse. On the plate there are given three remarkable varieties, in order to show the contrast of animals which are, in all probability, bred out of one common stock. At the top of the plate there is given the Tartar horse, remarkable for the straightness of the frontal line, the squareness of the nose, the wideness of the nostrils, the beard along the under jaw, the general shagginess of the coat, and the length and quantity of hair in the tail. This appears to be the original horse of eastern Europe, as well as of western Asia northward of the central mountains; for if the figure of its head is compared with those of the horses on the Elgin marbles, or any other Grecian sculptures of undoubted authenticity, there will be found to be a wonderful coincidence: nor are these characters entirely lost in the Shetland pony, shown in the under part of the same plate; and there is every reason to believe that this pony found its way to the Shetland Islands through Russia and Scandinavia. In the third variety on the plate, representing a draught or dray-horse, there is a remarkable difference in the outline of the head, which is far more convex than in the other; the body is different, too; for, though larger, it is not nearly so compact, and the animal is less strong in proportion to its size, and far less enduring.

The Calmuck, Cossack, or Tartar Horse, appears, from all the accounts we have of it, in the different districts which are inhabited by the various Tartaric hordes. It is very general in central Asia, and in the south of European Russia, and the east of Europe, where the breeds differ a good deal according to the nature of their pasture and food, and the kind of treatment they meet with. It is, with little alteration, the Greek horse of the present day; and the heads of horses on the ancient sculptures show that it was the Greek horse, at the time when they were executed. The forehead, as already observed, has still a good deal of the Arabian straightness of outline; but the shagginess of their coat points them out as natives of northern and central Asia, where this is a common character of very many of the mammalia. Their origin is not exactly known, but the probability is that they are originally the same race as the Arabians, only changed by a difference of climate. In all these varieties they are excellent animals, moderate in their feeding, and almost unwearied in their strength. The horses of the Cossacks, and indeed most of those in northern Europe, keeping to the north of the Baltic, appear to be more or less related to this breed, though, as we come nearer the shores



Clumber Horse.



Shetland Pony. Draught Horse.

of the Atlantic, they do not appear to be quite so shaggy, at least in their summer clothing; and they, as already hinted, merge in the SHETLAND PONY, the strength and spirit of which are far superior to its size.

The DRAY HORSE is the largest draught horse which is found in Britain. It is a portly animal, and capable of powerful effort for a short time; but it is not a good-winded horse, and on that account it is wholly unfit for continued exertion. It is understood that the first importation of this horse was from Zealand—though the females are styled "Flanders' mares," by which name Henry VIII. was pleased to designate Anne of Cleves, one of his royal consorts; and it is said, that allusions have been made to the same epithet in later periods of our history. Horses of this breed are sometimes known by the title of "fen horses;" and though they are, like most of the domesticated varieties, liable to break into different colours, and are not unfrequently iron-grey, or even pie-bald, yet the prevailing colour is black. They are more abundant in London than in any other part of the country; and they are chiefly used in brewers' drays and other carriages, where a very heavy load is dragged along with frequent stoppages. They are unwieldy, but, the entire horses especially, have very well-formed necks and ample chests; and, if their great size is taken into account, their forms do not want symmetry. There is a great appearance of power about them, but the reality does not come up quite to the appearance; and they are deficient in spirit. They are, however, very showy animals, and in some parts of the world they are highly prized. They are particularly so by the rulers of the native states of India, who, like other semi-barbarous people, esteem them as the chief element of power; and upon a late occasion, when Lieutenant Burnes was sent on a mission to appease the wrath of Runjeet Singh, the sheikh chief of Lahore, dray-horses were considered as the most acceptable present that could be presented to that personage. In that part of India they are known by the style and title of English elephants; and Runjeet Singh was so much delighted with the ponderous brutes, that he addressed to the British governors of India a letter, expressing his admiration of the animals themselves, and stating that the *sheen* of their ample shoes was so splendid, that the moon had been puzzled as to whether it should or should not enter into competition with them, and venture to shine after their arrival at Lahore.

It is understood that crossing between this breed and the "rips," or ragged horses, which are used in the country, and accustomed to stand all weathers, produces a breed possessing part of the weight of the one, and much of the hardihood of the other.

GOATS.

FOUR-HORNED—COMMON—CASHMERE—ROCKY-MOUNTAIN.

Goats are perhaps the most hardy of all the ruminating mammalia; and they are lively, bold, and adventurous animals, feeding upon pastures which are inaccessible to sheep. The flesh of the young is esteemed, but that of the old is rather harsh, and, in the male animal, rank. Their skins, and also their hair and fur, are remarkable for durability, and for retaining any colour they may be dyed.

Goats resemble antelopes more than any other animals, but they may be distinguished by the bony nucleus, or core of the horns, being, in part at least, cellular, and the cells communicating with the frontal sinuses of the cranium. The horns are more or less angular, or ridged, with transverse knots and wrinkles. Their usual position is upwards and backwards; they are found on both sexes; but on the female they are much smaller in size, and more smooth in their surfaces, than in the males. The line of the forehead is a little convex; the eye is very lively and expressive; the iris being generally brown or yellowish, and the pupil large and oblong, as in other grazing animals. There are no sinuses or openings under the orbits of the eyes, as there are in most of the deer and antelopes, neither is there any muzzle, the naked part being confined to a small space between the nostrils; the ears are narrow and rather rounded at the tips; the tail is short, usually naked on the under side, and frequently carried erect. In almost all the species the males have a long beard; and even in such as have the body covered with comparatively short hair, the hair on the throat and dewlap is long. The hair of goats is not coarse, but it is very strong, smooth, and straight, in the staple; and in almost all the species there is a fine woolly down upon the roots of the longer hair. This down, where it is in considerable quantity, is of great value in the arts; and indeed the whole covering of the goat is remarkable for its durability. The legs of goats are much stouter in proportion than those of the antelopes. They are furnished with a callous appendage at the joint, and the hoofs are high and solid. The females have two mammæ, forming an udder, in the groin; they go five months with young; the female is capable of propagating at seven months old; and the birth usually consists of two kids, which are perhaps the most sportive of all young animals.

Goats are animals of great interest, whether we regard their picturesque form, their vigorous action, or the readiness with which they can be domesticated, and the strength of their attachment to man when they are in that state. There is another point connected with the domestication of goats which is worthy of attention, and that is the great proneness which

Four-Horned and Common Goat

they have to break into varieties, according as their pastures differ. This tendency is one of the most remarkable evidences we have of the capacity of domestication in animals; and it is remarkable that the most domesticated variety differs from what we consider the unbroken natural species; it is always the more gentle in its disposition.

The Four-horned Goat on the plate is merely a variety of the Common Goat, an increase of the number of horns being one of the variations both of goats and sheep; and both are only varieties of the wild goat, which is still found wild in some parts of Asia, though it is doubtful whether it occurs anywhere in Europe.

The Cashmere Goat, or shawl goat, as it is called, is an animal well provided, by the nature of its covering, for enduring changes of the weather, and especially the falling of rain, and, from being thus qualified, it is not adapted for the burning drought which sometimes visits the central parts of southern India, above the Ghauts or passes of the mountains. Some specimens of this far-famed goat, which after all is merely a variety of the common one, have been brought to Europe, and both in England and in France they have bred freely. In 1828, a Mr. Tower obtained from the Society of Arts in London their large medal, for having produced a goat's-hair shawl equal to those of Cashmere, though both the growth and the manufacture of this country. This gentleman kept his Cashmere goats on a farm in Essex, and, from four first imported, his flock amounted, in a few years, to more than two dozen. We believe that these goats did not feed upon the rich pastures, or relish the vegetation of the ordinary grazing-grounds, whether native or exotic. The dry common was their favourite place of resort, and their most common food was furze, the prickly shoots of which they preferred to every other vegetable. Considerable attention was paid to the keeping of these animals, and the fine wool was obtained by combing their common, or longer hair, with an instrument not very unlike the currycomb used for trimming horses. We believe that the fine wool is procured in the East by a process nearly similar; and it is possible that the fact of its being perfectly ripened on the back of the animal may contribute to its superior strength. It does not appear that the long hair is cast at the same season.

The Rocky-Mountain Goat is, of course, a North American species, found among the cliffy parts of those mountains after which it has been named. Its form is well delineated on the plate; from which it will be seen that the long white hair is an excellent protection against the violent storms by which its haunts are visited, while the structure of the hoofs enables them to take a firm hold on the rocks, or the ice, or frozen snow.

HUMMING-BIRDS.

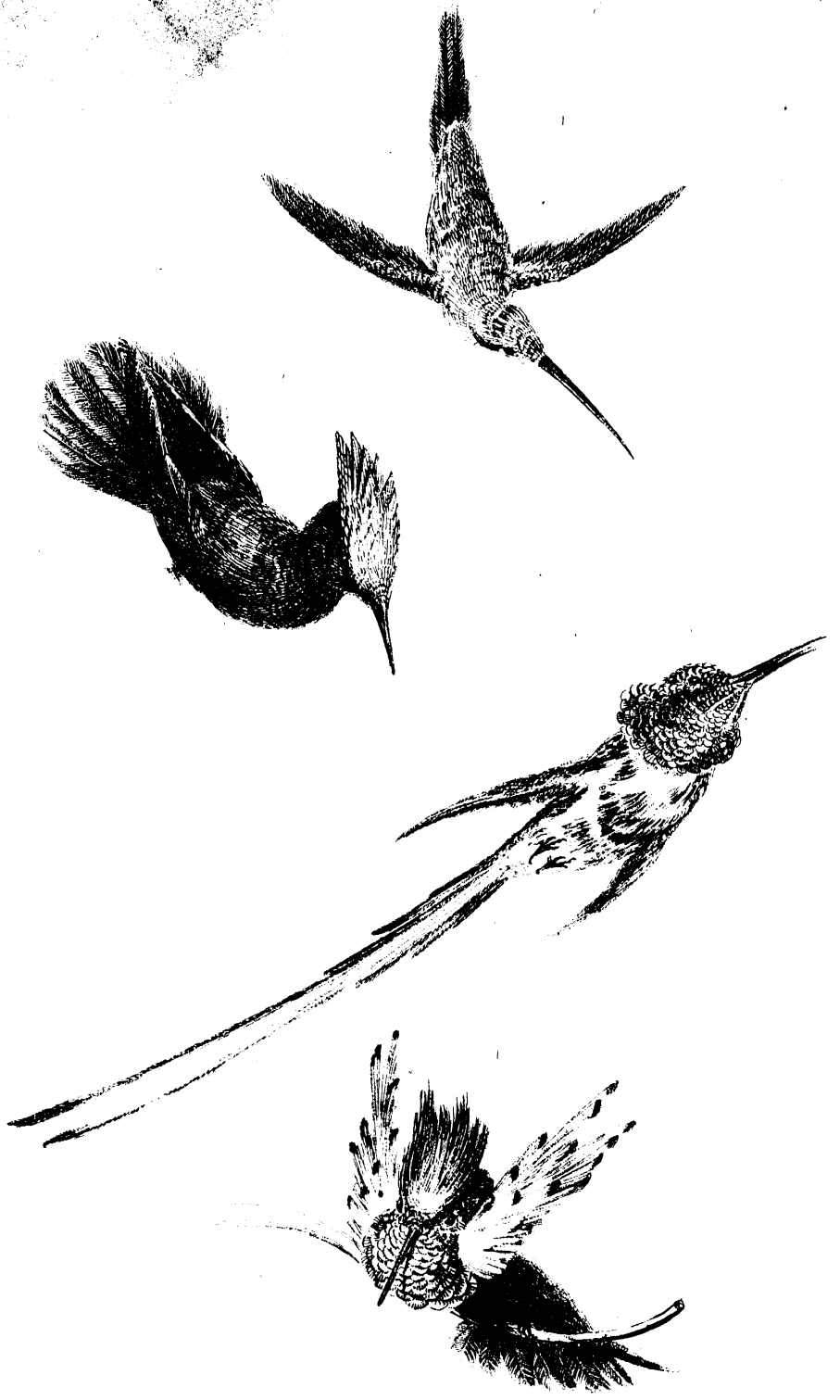
DAVID'S—THE CRESTED—CORA—THE EARED.

THE HUMMING BIRDS are the smallest of the feathered tribe, some being not much more than half an inch in length; they are the most beautiful in the texture and colours of their plumage; for no matter and no other substance can come up to the richness of their tints, or the glowing brilliancy of their metallic reflections. They are the most active of all known birds, exceeding in this respect even the swifts; they are still more powerfully winged, in proportion to their size, than these are; and there are no birds which have the sternum and the bones, which give firmness to the shoulder, more finely developed. In fact, the whole of their energy is concentrated upon this part of their organisation, and their different styles of flight are all equally vigorous. Suspended in the air, and hovering over a flower, their wings move with so much rapidity that they are not seen, except as gleams of light of different colours, but all radiant, as the beams of the sun take them at those angles at which they give out their different lustres; and while the rapid motion of the wings thus renders them invisible, except as gleams of light playing around the little body of the bird, they make a sound similar to that of the humming produced by the wings of bees and other insects; and it is on account of this that they get their English name of humming-birds.

They are exclusively birds of the American continent, and in the rich and warm districts within the tropics, they swarm as numerously as flies do in the forests of Lapland or Canada in summer. The known species amount to several hundreds; and as their native localities are not easily explored, the unknown species may be very numerous. Individually, they absolutely people the whole atmosphere with the most brilliant, though minute glories of the living world, which are at the same time in a state of wonderful activity.

The texture of their plumage is as worthy of attention as the tints of their colour and their brilliant metallic reflections; for though they are very little birds in all the species, and not larger than humble-bees in the most minute one, their plumage is exceedingly compact. Their wings also claim our attention, as they are most continually and most vigorously in use. Of the birds in our own country they most nearly resemble the wings of the swifts, but they are more curved than these, and the birds can perform more evolutions on the wing. They are also as brave as they are beautiful; and, taking them altogether, they are among the most wonderful of Nature's productions.

DAVID'S HUMMING-BIRD belongs to that section which have the bill long, tapering to the point, and arched, and the tail wedge-shaped, or staged, with the longest feather in the middle. The total length of this species is only three



1. Trochilus Davidianus.
2. Lophornis Cristatus.
3. Trochilus [illegible]
4. Trochilus [illegible]

inches, of which the bill and the tail occupy two, leaving only one inch for the body of the bird. The general colour is brown, mottled with paler on the head, the feathers on the top of which form a crest. The tail is broad and rounded. It is a native of the mainland of tropical America.

The CRESTED HUMMING-BIRD, has the upper parts of the body golden green, but with a tinge of brown or bronze; the head adorned with a crest of very brilliant green; the quills and tail feathers brown, with reflections of green and violet, except the two middle feathers of the tail, which are bright golden green; and there are green feathers surrounding the base of the bill. The under parts are blackish green, with a trace of golden lustre; the throat is ash-colour; and the feathers on the legs are brown. The total length of the male bird is three inches, and that of the female rather less; the colours altogether are duller, and the lower parts are ash-colour, and the lateral tail feathers are tipped with white. This species is found in the West India islands.

The CORA HUMMING-BIRD is remarkable for the length of the two middle tail feathers, which are longer than the body, being three inches, while that exclusive of the bill is only two; and the bill, which is very slender, is less than half an inch in length. The upper parts are green, the under parts whitish, the gorget brilliant purple red, and the whole plumage remarkable for its lustre. This is a Peruvian species, having been observed on the west side of the Andes, between the city of Lima and the shore of the Pacific.

The EARED HUMMING-BIRD is bright green in the upper part, and pure white in the under, with the exception of the vent feathers, which are greenish. A tuft of produced violet feathers, projects from each ear-covert; a black line extends from the gape across the eye; and the tail is wedge-shaped, with the extreme feathers white, and the four centre ones very dark green. The female wants the produced feathers, and has the under part greyish. This species is found generally in the northern parts of South America.

The four species which are represented in the engraving, and of which the above are very brief notices, afford but a slight specimen of these very beautiful little birds, and they cannot well be called a selected specimen. The whole tribe are so beautiful, that it is not easy to select one in preference to another, and their numbers, form, and colours, are so many, that language is inadequate to the description of them.

ELEPHANTS.

ASIATIC—AFRICAN.

THE history of the elephant has been often repeated; and most people are so familiar with its appearance that it hardly needs any description.

Of living elephants there are only two species, the Asiatic and the African, though there are several varieties, apparently climatal, of the former one. Of these there is not a vestige in any other parts of the world than those in which they are at present found, unless it be the accidental bones of one which has been brought from its native country for the purpose of exhibition, and which, perishing before the establishment of museums in which the bones of strange animals are now judiciously collected, had been buried by the wayside. There are some rather ludicrous instances of the bones of such elephants being dug up, after the appearance of the animal at the place had been forgotten, and gravely considered as the bones of antediluvian or other giants of the human race. The countries in which the two existing species of elephant are found, all have the tropical character; and as there is no evidence of the animal being naturally out of them, we must conclude that both species are adapted to the forests and marshes of such countries, and to them only.

ASIATIC ELEPHANTS differ considerably in size; but when full grown they are rarely less than seven feet in height at the shoulders, or more than twelve. [illegible] below seven feet they are not considered fit for hard service, [illegible] purchased for the use of the British army in India, which do not [illegible] measure. The females, which are the [illegible] are very seldom above eight feet; but the males are often considerably more. The following are the dimensions of a male measured in India, which was considered to have attained its utmost growth: from the line of the forehead to the insertion of the tail, fifteen feet eleven inches; perpendicular height at the shoulder, ten feet and a half; measure across the shoulders from the ground on the one side to the same on the other, twenty-two feet two inches and a half; and height of the crown of the head from the ground, set up as it is when the animal marches in state, twelve feet two inches. As the proportions of these measures to each other may be considered as pretty constant in adult elephants of all sizes, they will serve to give a general notion of the form of the animal.

Asiatic elephants are only found in continental Asia, south of the central mountains, and in Ceylon and some of the other large islands near the coast. There are no vestiges of them in New Holland, or in the smaller and more remote isles of the Indian seas and the Pacific.

The AFRICAN ELEPHANT does not, in its general appearance, differ greatly from the Asiatic one. Its leading characters are: the skull rather shorter

ELEPHANTS.

African Elephants. Male & Female.

Indian Elephant.

than in the Indian species; the forehead rounded, and protuberant in the middle rather than hollow; the enamel in the grinders formed into a sort of lozenges, which are larger and fewer in number than those in the teeth of the Indian elephant; the ears are also larger, rise up much higher above the general line of the head, and extend farther backwards, so far, indeed, as to reach and partially to cover the shoulders. The tusks of this species are perhaps larger in proportion than those of its Asiatic congener, and they are of more equal size in the two sexes, those of the female being nearly equal in size to those of the male. The tusks are also of more compact texture; so that African ivory is of more value than Asiatic, as being susceptible of a finer polish, and also stronger. We believe that there are some rare instances in which the strength of this animal has been pressed into the service of man; but they are exceedingly rare, and the animal must still be considered as a free tenant of the forest. It is found in all the rich and wooded countries, from the Cape of Good Hope to the Desert of Sahara, but not to the northward of the Desert, or in Egypt, or indeed in any part of the valley of the Nile, or at least of Sennaar, or to the northward of the Abyssinian mountains. The elephant indeed is but ill adapted for climbing heights, from its great weight; and therefore we may naturally suppose, that as a southern animal it must be bounded in its range by such mountains as those which we have mentioned; and, from the nature both of its haunts and its food, it is not an animal that would cross the Great Desert.

The African elephant is inferior in size to the Asiatic; but it seems rather more hardy. It is equally remarkable for the acuteness of its sense of smelling; and some remarkable instances are told of its powers in distinguishing enemies. As it is hunted for destruction much more than the Asiatic elephant, it is probably rendered more ferocious by this means; though it is not very easy to see upon what principle the destruction of one animal in hunting should make others of the same race more fierce towards the hunters. It is for the sake of its tusks chiefly that this elephant is hunted in the vicinity of the Cape; though the Hottentots eat the carcase with zest; and the ears, which are very strong as well as large, are made use of as a sort of sledge.

FALCONS.

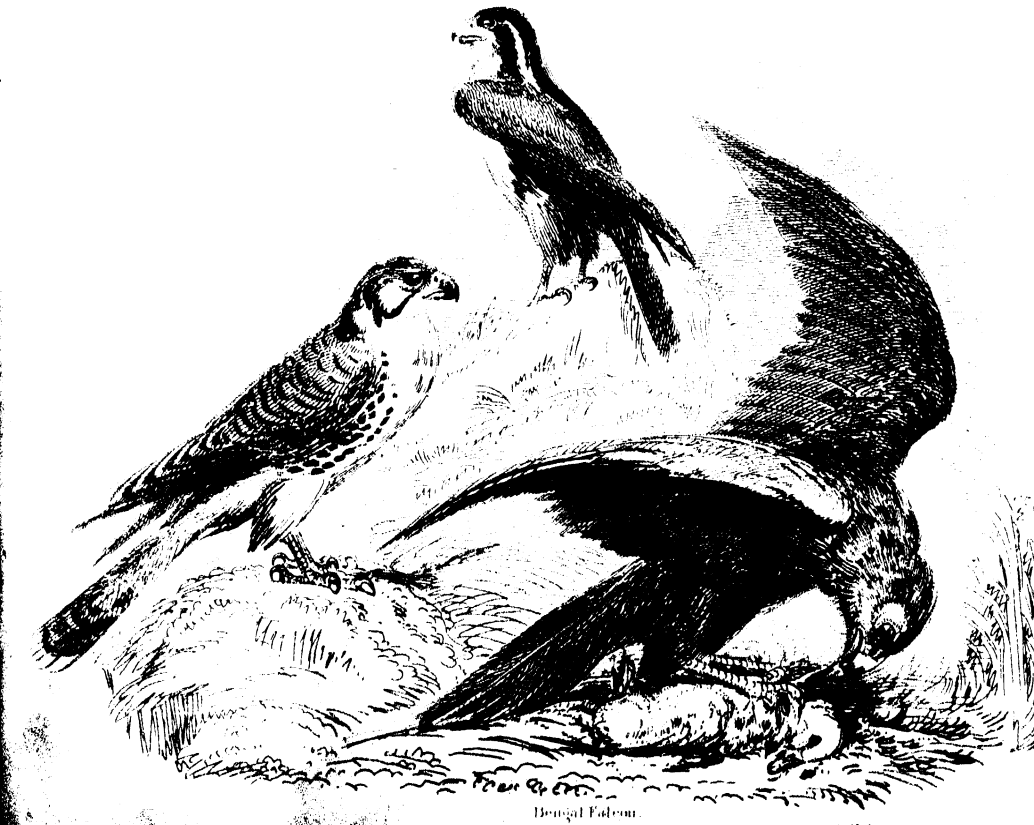
ASH-COLOURED—NORTH AMERICAN—BENGAL—RED-LEGGED.

The falcons are a very numerous race of birds, there being scarcely any country in which several species may not be found. They are most powerful in the cold climates, and in wild upland situations; but they are also met with in the low and rich districts, and in the tropical latitudes. They belong to that section of the birds of prey which find their food in the day-time, discover and follow it by the sight alone, and in general kill it in the air. For flight they are better formed and better winged than almost any other birds; and notwithstanding their boldness, they are capable of training, so as to be in so far obedient to those who know how to manage them. In the days of falconry, the superior ones were held in much esteem; but in modern times, the gun has almost wholly superseded the falcon as a means of procuring winged game. None of those represented in the plate were ever birds of the falconer. Still they partake of the character, and though the strength and spirit of the birds are always greater in proportion as their food is more difficult to be procured, they are all air birds, and attack their prey on the wing.

In mere size, the falcons are inferior to the eagles and vultures, and also, feathers included, to some of the owls; but they are, of all birds, the most symmetrical in their forms, the most elegant in the style of their flight, and the most courageous and daring in the capture of their prey. It is indeed impossible to imagine a more beautiful adaptation than that of the falcon to the air and the air to the falcon. Light and graceful in their forms, firm in their plumage, beautifully adjusted in the relative proportions of their different structures, the falcons are perfect models. Not the eagle itself has a keener or more beautiful eye, though the eagle has to look out for prey which is lurking on the ground; and not any birds, even those which are most constantly on the wing, have their organs of flight so finely formed, and so firm in their texture, as the falcons. Nor are their organs of prehension and of preparing their food at all inferior; yet the beak of the falcon is not a large beak; neither are the claws of as large a size as they are in other birds of prey, which are less dashing, and even less powerful in the style of their preying.

The peculiar characters of the true falcons are—the beak curved from its base, with a tooth, and sometimes two, on each side of the upper mandible near its point, and corresponding notches in the lower one. The point of the upper one is very sharp and much hooked, and that of the lower is rather sloping and convex, but acting with a powerful grinding motion against the concavity of the hook. The degree of toothing in the mandibles does not

Ash-coloured Falcon



Bengal Falcon

bear any relation to the absolute power of the falcons; because the beak in them is an instrument for dressing their prey rather than for killing it; and therefore the smaller species, which prey upon little birds, and have many feathers to pull in order to obtain a small quantity of food, have the mandibles most complete in this respect, while some of the most powerful of the whole have the tooth comparatively blunt. In the wings of the true falcons the second quill is always the longest, though the first is very little inferior to it in length. These two have their shafts and webs remarkably firm; and the others, as far as the tenth, shortened gradually, so as to form a pointed wing.

The Ash-coloured Falcon represented in the plate, has less of the falcon character than some of the others, is of lower flight, and feeds occasionally upon reptiles and carrion. The tooth and notch in the bill are less conspicuous, and the bird altogether is of softer aspect. Still it is both bold and voracious.

There are many American Falcons, both in the north and the south, as one might expect in a country which abounds so much in birds. The one represented is eleven inches long, and twenty-three inches from tip to tip of the expanded wings, the cere and legs yellow; bill blue, tipped with black; space round the eye greenish blue; iris deep dusky; head bluish ash; crown rufous; seven spots of black on a white ground surround the head; whole upper parts reddish bay, transversely streaked with black; primary and secondary quills black, spotted on their inner vanes with brownish white; whole lower parts yellowish white, marked with longitudinal streaks of brown, except the chin, vent, and femoral feathers, which are white; claws black.

Of Indian Falcons, there are also many species; and that represented on the plate as belonging to Bengal is equally common in other parts of India. It is a small species, and has many of the characters of the sparrow-hawk of Europe.

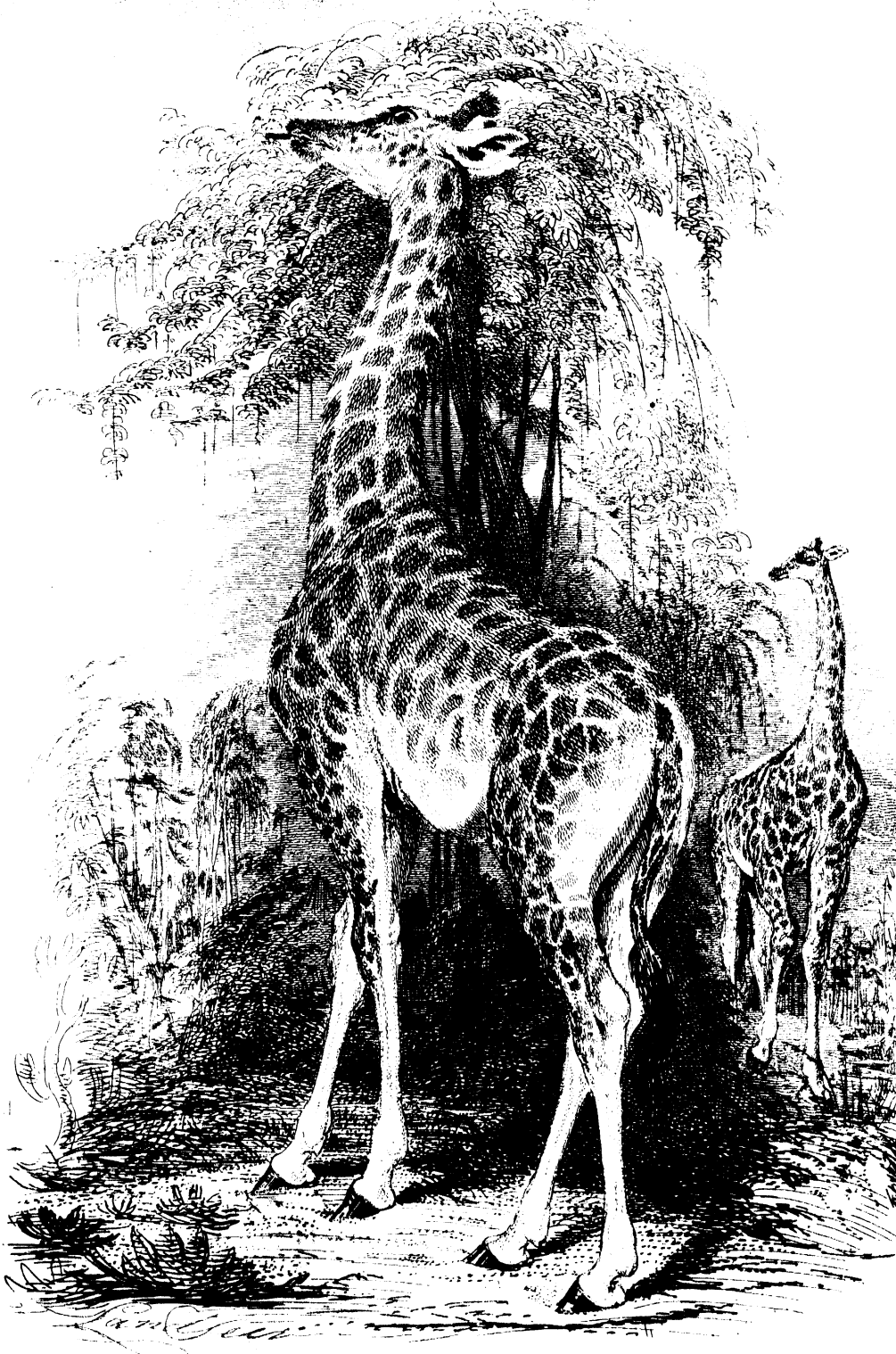
The Red-footed Falcon is a characteristic one in Greece and the other hilly and woody parts of the east of Europe. It is rather a discursive bird, and has occurred in some parts of England as an exceedingly rare straggler. A specimen of this bird, which had been shot near Doncaster, was exhibited before the Committee of Science of the Zoological Society of London, on the 27th of November, 1832. Its characters are: bluish ash on the upper part; breast and belly of the same colour, but paler; lower part of the belly, thighs, and under tail-coverts, bright reddish; beak black; irides and feet red; and claws yellow, with black tips. The length of the male bird is about ten inches and a half. The female is a little larger, and has the nape marked with reddish lines; the sides of the head and the throat bright reddish; the under part and the thighs reddish brown, with black markings. The plumage of the young is intermediate between that of the mature male and the mature female, but differs from both, and this has led to some little confusion.

GIRAFFE.

The giraffe is one of the most singular subjects in the whole compass of animated nature. It is a ruminating animal; but it differs so much from all the rest of the order that it almost requires a separate place in the classification. There is only one known species, and that species is known only as a native of Africa. When full grown, it is by much the tallest of animals, if measured from the hoofs of the fore feet to the top of the head. From fifteen to eighteen feet is mentioned as being the height of the majority, though specimens have been seen as high as twenty feet. A considerable portion of this height arises from the length of the neck, though the shoulder is also high, much higher in proportion than the rump. Some have said that much of the apparent height of this part of the body is owing to the great length of the spinous processes of the scapular vertebræ; but though these processes upon the anterior part of the spine are long, and thus afford firm points of insertion to the muscles of the shoulder, yet the great height is in the legs and the neck, which answer to each other. Behind, the animal is not so high, and in that part it appears lower than it really is, as the hind legs are partially bent when the animal is browsing at the full stretch of its neck. On the other hand, when it feeds on the ground, which it can do much more easily than is generally supposed, it has to diminish the height forwards by setting the fore-feet apart from each other, as is done by the young of the horse in their first attempts to graze.

Altogether the appearance of these animals, though peculiar, is very graceful. The body is short, compact, and well filled up and rounded. The limbs are clean, but at the same time strong and muscular, and the form of the neck and its union with the head are very symmetrical. The head is light and airy in appearance, and has not the least appearance of being a burden on the neck, as is the case with some other ruminants. The ears, which are long, and have a good deal of motion, are handsomely formed. The eyes are large and clear; and are placed in a peculiar manner, occupying so prominent a place on the sides of the head, that they command perhaps more of the horizon than those of any other animal. In this respect they bear some resemblance to the eyes of the hare; and they appear to answer a purpose something similar—that of watching against danger from behind, which is the chief danger to which this fleet and strong but inoffensive and gentle animal is exposed.

The colours of the giraffe are disposed in a very pleasing manner. The ground colour is whitish, but with a tinge of warm cream colour, and the spots, which are brown and nearly square in shape, give it the appearance of being cross-barred with the paler colour. When young the sexes resemble



Girafe.

each other in their colours; but as they advance, the spots on the male become of a dark brown, while those on the female retain more of their original rust-coloured tint. Both are, however, subject to some varieties of colour, perhaps in proportion as they are differently exposed to the action of the sun.

The hair on the body is short, and lies flat and smooth on the skin; but the neck and upper part of the back are furnished with a short mane. At each side of the commencement of this mane on the occiput, there is a bony tubercle on the skull, which tubercles appear as the rudiments of a second pair of horns; so that if we include the flat one in front, there are bases for five horns on the head of the giraffe, though there is not a true horn on any of them. The tail is strong, reaching beyond the heels, short-haired for the greater part of its length, but furnished with a handsome brush of strong hairs at the tip. The principal hoofs are of a dark colour, and remarkably hard and firm in their texture.

In their native country, these animals show their peaceable disposition in being partially gregarious. They are found in small flocks of about five or six. They do not appear to live in the very close forests, near the river banks, where the giant vegetation of Africa has its growth. Their locality is rather in those places which may be considered as holding a mean proportion between the excess of tropical vegetation and the final sterility of the plantless wilderness. The lion appears to be the only wild animal of which the giraffe needs to have any fear. The defence of the giraffe is kicking; and from the vigour of its muscles, the length of its legs, and the consequent velocity of the hoof, when it comes to the position in which it can take effect, the kick is a truly formidable one, and it can be repeated with great celerity. The full effect of one kick is said to be sufficient to break the skull of a lion, strong as it is.

The times at which the lion is said to attack these animals with the greatest chance of success is, when they seek the water-courses for the purpose of drinking. This is usually in the morning; and the lion lies in wait at some place more elevated than that of his intended prey. When it reaches down for the purpose of drinking, all the advantage which its eye gives it when the neck is elevated is gone; and from the position of the fore-legs during this operation, it could not kick with the same force which it does when on the level ground, and in full command of itself. In this situation, the lion sometimes succeeds in fastening upon its back; and though the animal bounds off with great speed, the weight of the lion, and the pain of the laceration, which he inflicts both by claws and teeth, ultimately bring it to the ground, and when once there it is altogether helpless.

The giraffe was known to the ancients; and tolerable descriptions of it are given by several of them, especially by Heliodorus, the Greek bishop of Sicca.

OWLS.

All the nocturnal birds of prey are Owls, and there is a common character running through the whole, though the species differ in many respects. Those figured on the plate are among the most characteristic.

The Eagle Owl, or great tufted-owl, is inaccurately called Virginian, as it is common in North America, and not unknown in many parts of Europe.

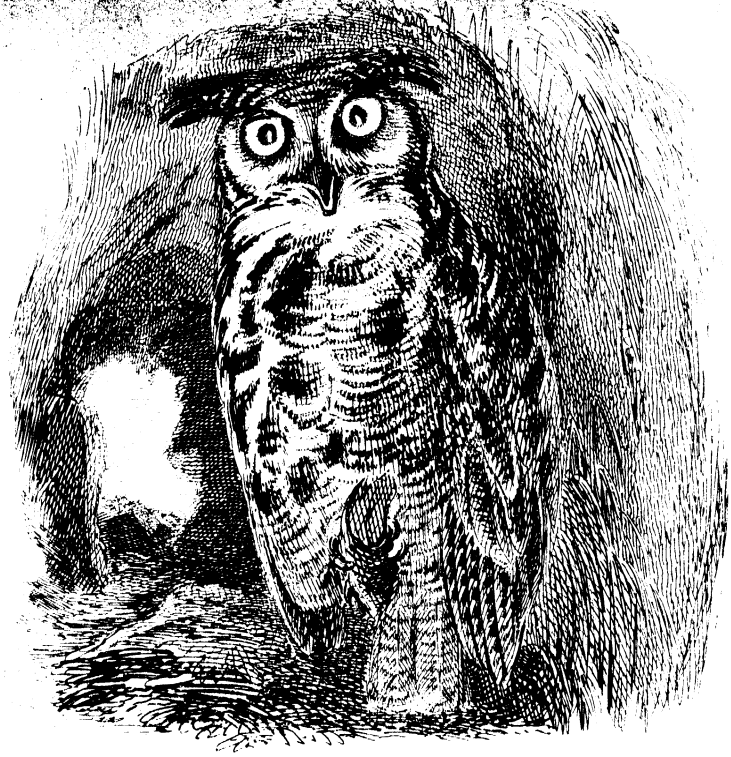
"This noted and formidable owl," says Wilson, "is found in almost every quarter of the United States. His favourite residence, however, is in the dark solitudes of deep swamps, covered with a growth of gigantic timber; and here, as soon as evening draws on, and mankind retire to rest, he sends forth such sounds as seem scarcely to belong to this world, startling the solitary pilgrim as he slumbers by his forest fire,

'Making night hideous.'

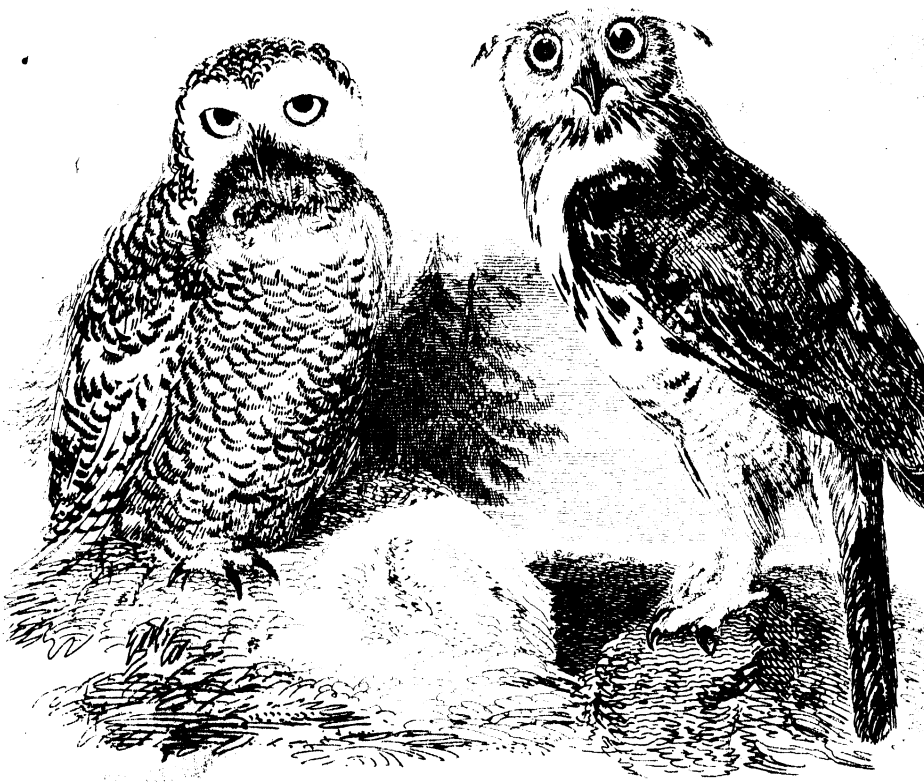
Along the mountainous shores of the Ohio, and among the deep forests of Indiana, alone, and reposing in the woods, this ghostly watchman has frequently warned me of the approach of morning, and amused me with his singular exclamations—sometimes sweeping down and around my fire, uttering a loud and sudden, Waugh O! Waugh O! sufficient to have alarmed a whole garrison. He has other nocturnal solos, no less melodious, one of which very much resembles the half-suppressed screams of a person suffocating, or throttled, and cannot fail of being extremely entertaining to a lonely benighted traveller, in the midst of an Indian wilderness." Young birds, squirrels, rabbits, rats, mice, partridges, and different kinds of small birds, are its principal prey.

In Europe it is more migratory, which is not exactly in accordance with the general habits of birds in the two continents. It is chiefly in the north in the berry season; and it very rarely comes to any part of the British islands, excepting Shetland, Orkney, and the extreme north of Scotland. Sometimes, however, it does visit the English shores; and when it does so, it is either to the northward of Flamborough Head, or to the southward of the Thames, as the line of the coast in both these places is most likely to intercept a heavy bird when migrating southward, and beaten from the direct line of its migration by the north-east wind. It is not a little remarkable that, while the birds which migrate from the north most frequently take the English coast at one or other of the places we have named, those of the eastern migration more frequently land on that portion of the coast which lies between these.

The Great White or Snowy Owl may properly be styled the monarch of all the owls; and, from its habitation, its powers of endurance, and its bravery, it is one of the most interesting of the feathered race. Its dwelling



Virginian Eagle Owl



Snowy Owl

Egyptian Owl

is in the extreme north, where it finds its food and rears its young among the rocky mountains and isles, despite all the violence of the northern storms. It is found in the north of Asia, in the north of Europe, and in the north of America; and it very rarely makes its appearance even in the most northerly of the Scottish islands, and rarely, indeed, on any part of the mainland, and never in the south. It is tempered to the "thick-ribbed ice;" and, when our navigators made their somewhat Quixotic expeditions in search of an *impassable* passage, from sea to sea, by the north end of America, they found this owl at the very extreme point which they reached, better fitted for the intensity of the climate, by the hand of nature, than they were by all the resources of art.

Owls of this description are birds of the wilds, and of rocky places, rather than of woods; they are swifter fliers, and more diurnal and given to hawking on the wing, than the other owls. One can easily see why this should be the case with this northern species. During a considerable part of the year there is perpetual sun on its pasture, and for a still greater part there is light the whole night over. The summer action of nature is extremely vigorous there; vegetation sprouts, blossoms are expanded, and berries are ripened, as if it were by magic, while both the air and the waters swarm with insects and other small living productions of the season. These support the summer birds, which resort in vast numbers to the north; and this owl, in concert with the eagles and the more powerful hawks, is a regulator of the numbers of those birds. It must not be understood, however, that the long summer in those high latitudes is a season of atmospheric tranquillity. The places we allude to are, generally speaking, near the sea; they are, almost without exception, hilly and rocky; and in the heat of the season the currents keep the masses of ice in continual motion from place to place: there is, therefore, a great deal of evaporation, and condensation of humidity, alternating with each other, the result of which is dense fogs, which often come on very suddenly, and so close, that they put an end to the labours of diurnal birds of prey. At other seasons of the year the snow-storms are equally violent, and accompanied by winds which blow with the greatest fury, and attended with such thickness of drifting snow clouds, as to be proof against the eyes even of eagles, proverbial as they are for the keenness of their vision.

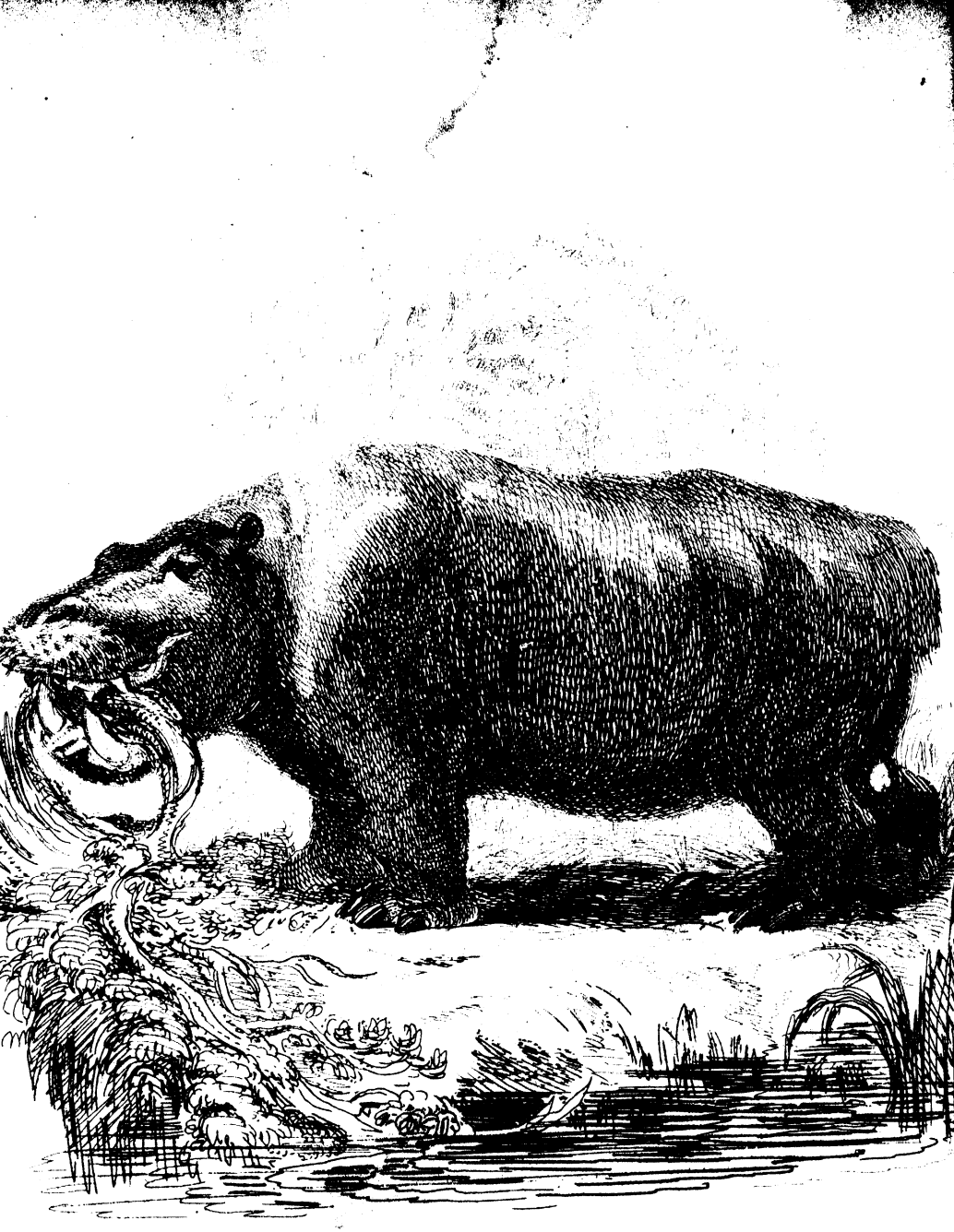
The Egyptian Owl represented on the plate, is also a tufted owl, having some resemblance to the eagle owl, but it is by no means so powerful a bird. It has not been long added to the list, and nothing peculiar is known of its manners.

HIPPOPOTAMUS.

THOUGH this animal has been styled the *hippopotamus*, or river horse, ever since the time of the Greeks, yet a single glance at its representation on the adjoining plate will show that it has no external resemblance to the ordinary horse with which every one is familiar. The localities for which the two are adapted by nature are also as different as their appearances. The horse is an animal formed for swift motion, and naturally seeks his food upon the dry and wide plains. The hippopotamus is a clumsy and slow-moving animal, inhabiting not merely the margins of the waters, but the waters themselves, and never quitting them while the sun is above the horizon and shining. Therefore, in their appearance and their principal habit, the one is the very opposite of the other.

There are certain points, however, in which they agree; but these are structural, and could not have been known to the Greeks at the time when the animal was named; and besides, the hippopotamus has as much resemblance, even in them, to the rhinoceros, the elephant, the pig, and various other animals, as to the horse,—more indeed; for if any one who was familiar with animals, or the representations of them, were asked to what animal the hippopotamus was most nearly allied, he would, as a matter of course, answer the rhinoceros. Both animals belong to the order of *pachydermata*, or thick-skins; both feed wholly upon vegetable substances; and neither of them chews the cud, or grinds the food in any manner; they take it into the stomach merely bruised or broken, and their digestion consists fully as much in drawing a tincture from the food as in reducing any part of it to a pulp. Such are the few points of resemblance between the hippopotamus and the horse; and in every other respect they differ widely.

As a living animal, there is only one species of hippopotamus, and that species is confined to the rivers of central and southern Africa, and not, in modern times at least, descending the Nile so far as even Upper Egypt, though it is found in all the larger branches, as well as in the main trunk, in the upper country. At some period of the world's history there have been others, some of them not larger than the smallest breed of hogs, and they inhabited Europe; but no one can tell how many ages have passed away since the last of them was buried in the earth. As the rivers which the living hippopotamus inhabits, flood the country at one season of the year, and are very low at another, it is probable that the hippopotami shift their quarters with the seasons; but when they do, the river is their pathway, and they never make any long journeys over land. Near the larger rivers of Africa, the three great pachydermatous animals, the elephant, the rhinoceros, and the hippopotamus, are found in the close vicinity of each other:—the



Hippopotamus

elephant in the damp forest and moist meadow; the rhinoceros among the reeds and other tall herbage on the sludge; and the hippopotamus actually in the water. Thus, though they live in the close vicinity of each other, each has its own appropriate locality, and they live at peace.

But, as there is a gradation of place among them, so there is a gradation of food, and of the structure and furnishing of the mouth for the taking of that food. The teeth of the elephant have all flat and furrowed crowns; for the tusks are of no use to the animal in feeding. The rhinoceros has four large cutting teeth in each jaw, and a smaller one on each side of these. The hippopotamus has the upper front teeth conical and bent backwards, and the under ones cylindrical and straight, and directed forwards; and besides the grinders it has canine teeth in both jaws, the lower ones very long and crooked. The last are not, however, teeth properly so called, but tusks which have a hollow and core at their bases. These tusks are, both in their bone or ivory, and in their enamel, the hardest and heaviest of animal productions, and they are preferred to all others for making artificial teeth. The enamel is so hard as to strike fire with steel, and therefore it is difficult to work; but it lasts long, and keeps its colour.

From these differences in the teeth, it will readily be understood that the elephant lives chiefly upon green food, such as tall grass and the leaves and tender shoots of trees; that the rhinoceros can divide twigs and dry vegetables, though of considerable consistency; and that the hippopotamus can live upon dry sticks, or any portions of trees which may be brought down by the flood of the rivers. All the three prefer succulent food when they can obtain it; and the hippopotami, when they come to land during the night, do great mischief to the plantations. They do not bite the plants clean off, as is done by those animals which have the fore-teeth chisel-shaped, but they tear and mangle, and spoil both crop and land by the tread of their large and heavy feet.

They are very large animals, and long in proportion to their height. The length from the nose to the tail is about eleven feet; and the height only between four and five. They take very short steps, and thus they make ruts in soft ground, as if rugged wheels were drawn along. They swallow an immense quantity of food,—the stomach being capacious enough to hold five or six bushels; and the larger intestine as much as eight inches in diameter.

It is probable that they sleep in the water, with only the nostrils, which are at a distance from the mouth, above the surface of the water; and the probability is, that they sleep standing as horses and some other pachydermatous animals do; and the support of the water for this purpose is much better than that of the air. But at times they lie on the banks, where they appear like dark masses of some shapeless matter. As their transitions between land and water are numerous, they are provided with soft fat under the skin, which seems to answer a purpose similar to that of the blubber

of whales. Their visits to the cultivated districts are very much dreaded; and in the rivers they are not safe for small craft. They do not attack, except in their own defence; but the turmoil they make is apt to upset a small vessel. Altogether they are rough animals, and in their element only in savage nature.

THE END.

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