A SKETCH

OF THE

HISTORY OF MONKEYS.

WITH NUMEROUS ILLUSTRATIONS.

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HISTORY OF MONKEYS.

INTRODUCTION.

THERE are few animals which, living or dead, are so immediately useless to man, that excite so much of his interest and curiosity as those which are included under the general name of MONKEYS; or more scientifically classified as QUADRUMANA, or four-handed. Rarely used as food, furnishing no materials for clothing, and unavailable for the service of man, attention has been always attracted to them by their approximation in some respects to the human structure, and by their faculty of imitation. The degree of assimilation, however, varies greatly in the different species contained in their genera: from the great ape, or Chimpanzee (*Simia troglodytes*), and the Orang-outan, or Wild Man of the Woods (*Simia satyrus*), to the Lemurine Colugo (*Lemur volans*) which more resembles a cat, the steps are very numerous and the descent is great. Still the connecting links are traceable; nor does it close even here: some recent naturalists have proposed to include the Opossum tribe in the same genera. The chief reasons for this proposal are, that some of the acknowledged Monkey tribe have pre-

hensile tails, and that the American Monkeys are not strictly Quadrumana, as the thumb on the fore-hand is not opposable, but only that on the hinder limb, in which respects they agree with the Opossums. The greater number of naturalists, however, agree in treating the Opossums as belonging to the genus *Marsupiala* from the pouches in which they carry their young, a characteristic sufficiently marked, we think, to justify the classification.

The number of species of the genus Quadrumana is very large, and in the present work it is not intended to notice every one, but only to give such specimens of each family as to afford a general and, we trust, popular idea of the whole. The generally received division is into Apes, Monkeys, Baboons, and Lemurs—a division which we shall follow.

CHAPTER I.

APES IN GENERAL (*Simiæ*).

THIS family is composed of three minor groups, definitely characterised by appropriate traits of organic development, and respectively distinguished, in our own language, by the names of apes, monkeys, and baboons—a division which has the rare advantage, seldom attendant upon mere popular classifications, of being in perfect accordance with scientific principles, founded upon the structure and habits of the animals. The apes have neither tails nor cheek-pouches, and their ischial callosities are either defective altogether or developed only in a rudimentary form; though inhabiting the woods their pace is semi-erect, and they walk on two legs even along the branches, their extremely long arms compensating the want of a tail in steadying and directing their motions. The monkeys have cheek-pouches, callosities, and very long muscular tails; they likewise are a pre-eminently sylvan race; they walk on all-fours, and their long tails become powerful and efficient instruments in guiding their movements and securing their equilibrium during the rapid and varied evolutions which they habitually execute, in spite of the precarious nature of their footing. The baboons have cheek-pouches and callosities, but tuberculous or short tails, never reaching beyond the houghs, destitute of all muscular power, and incapable of entering as an efficient instrument into the function of progression; they go on all-fours, live among rocks and mountains, and are seldom or never found in the forests.

Each of these sub-families, the apes, monkeys, and baboons, comprises two or more distinct genera; and all are exclusively restricted, as regards their habitat, to the warmer regions of Asia and Africa.

The word *ape*, which exists with little variation in all

the modern European languages which have their origin in the ancient Teutonic—as *aap* in Dutch, *affe* in German, *apor* in Swedish, &c.—is commonly supposed to be derived from the German word *affen*, to imitate (literally to *ape*); and in English is applied indiscriminately to all simiæ without tails, which are, on that account, generally considered to approach most nearly to the human form.

Of all the inferior animals, the apes approach most nearly to man, as well in their organization as in their habits and intellectual endowments. Zoologically considered, they are distinguished from the other quadrumana by the total absence of tails and cheek-pouches. The character arising from defect of tail, indeed, is not, strictly speaking, peculiar to the apes: certain other quadrumanous mammals, and those of groups greatly inferior in point of structure and intelligence, such as the magot, or Barbary ape, and the black *ape* of the Philippines, are equally deficient in this organ; even certain dog-headed baboons, as, for instance, the drill and mandrill, have the tail so short as to be almost tuberculous; so also have some of the lemuridæ; but these instances can only be regarded in the light of casual exceptions to the general rule which obtains in their respective genera, and the term *ape* has been accordingly applied, universally in ordinary conversation, to designate a *monkey without a tail*, all quadrumanous mammals possessing this character being called indifferently apes.

But as the absence of tail is not peculiar to the apes, neither does it constitute their most marked or influential character. This is unquestionably found in their want of cheek-pouches, organs which exist universally in all the other simiæ, or monkeys of the Old World, the semnopithecs alone excepted, and which are a kind of natural wallet, in which these animals can stow away considerable quantities of fruits, grain, and other provisions, either in returning from their predatory excursions into the gardens and cultivated fields, when removing to distant parts of the forest, or finally to preserve them for a future occasion, after satisfying their immediate wants.

Being thus an influential as well as a peculiar attribute, the presence or absence of these organs becomes a valuable character in the generic distribution of the quadrumana, and more especially in defining the natural groups of the simiæ, as distinguished from the simiadæ and lemuridæ.

There is another generic character, however, which is even more peculiarly appropriate to the true apes than the absence either of tails or cheek-pouches, and, in its influence upon the economy of these animals, and more especially upon their mode of progression, of much greater consequence. This arises from the extraordinary disproportion that exists between the length of the anterior and that of the posterior extremities, and which is carried to such a degree of apparent extravagance in some species, that when the animals stand upright upon the hind-legs they can touch the ground with the fingers of the fore-hands, and, though they walk upon the hind-feet, it is with a vacillating unsteady pace, touching the ground lightly on either side with the knuckles of the fore-hands, which are kept half closed for this purpose. This is uniformly the case when the hands are free, but when they are otherwise employed, as in grasping or carrying anything, the pace is purely biped, and the position consequently erect, the knees, however, being still very much bent; nor do the animals appear to suffer as if the position was constrained or unnatural.

But, though thus capable of proceeding with sufficient ease and security upon a level surface, it is not on plain ground that the apes have an opportunity of displaying the surprising force and agility with which their organic structure really endows them. As the conformation of their extremities is, in some measure, intermediate between that of bats and quadrupeds, so likewise do they occupy a habitat intermediate between the elements in which these two different tribes of mammals are adapted to move and execute the most important functions of their lives. The apes are essentially an arboreal or sylvan race; every part of their conformation, every modification of their organic

structure, has a direct tendency to this end; and those very peculiarities, which diminish their powers of walking with ease upon the surface of the earth, are admirably adapted to increase their facility of climbing and grasping. The shortness of their legs and thighs, by keeping the centre of gravity always near to the surface upon which they tread, necessarily secures a degree of equilibrium to the body, which it could not possess were these organs of greater length; and no sooner is this equilibrium in danger of being deranged than the long arms are immediately employed to restore it, either by grasping the nearest branches, or being inclined upon each side like the balancing pole of a rope-dancer. The legs, moreover, are not in the same line with the thighs; the knees are turned outwards, and the feet are articulated at the ankle in such a manner that their soles turn inwards, so as to face or be opposed to one another. By these means the apes are enabled to embrace or grasp the trunks and branches of trees with much greater force than if their members were constructed like our own: they thus become most essentially sylvan or arboreal animals, and never voluntarily abandon the forests, where they find at once the most congenial food and the most perfect security.

Their whole organization peculiarly adapts the apes to these habits. Besides the conformation of the extremities just noticed, the fingers and toes are long, flexible, and deeply separated from one another; the thumb, though shorter, and placed farther back towards the wrist, than in man, possesses, nevertheless, considerable power, and is completely opposable to the other fingers; and as this is equally the case on the anterior and posterior members, the apes become thus pre-eminently fitted for an arboreal life. They are not *quadrupeds*, as has been justly remarked by Tyson, Buffon, and other naturalists, but *quadrumana*; not four-footed, but essentially four-handed animals. The great and leading details of their structure, their habits, actions, and superior intellectual endowments, make them, in reality, the connecting link between man and the inferior animals—

the next grade to humanity in the descending scale of existence.

It is unquestionable that the superior powers of prehension enjoyed by the apes greatly enlarges their sphere of action. They are not confined to the surface of the earth, like the generality of mammals, and, though they do not possess the power of elevating themselves into the air like bats and birds, they are, nevertheless, enabled to traverse the intermediate regions of the woods and forests, with an ease and velocity which can only be compared to actual flight. On the other hand, when compelled by circumstances to pass over any part of the earth's surface, their pace, as we have already seen, is, properly speaking, neither that of a biped nor of a quadruped; they do not walk upright with the firm and portly attitude of man, but much less can they be said to walk upon all-fours like the lower animals, or even like the inferior tribes of monkeys and lemurs. The oblique articulation of their ankles, coupled with the opposable thumb-like great-toe, which stands out almost at a right angle to the soles of the posterior members—circumstances which are manifestly well calculated to increase their powers of prehension, compels them, in walking, to tread only upon the outer edge of the hind-foot, and produces a rocking or waddling gait, precisely similar to that of a rickety child or bandy-legged man. In their native forests, the extreme length of their arms and hands is turned to the greatest advantage: it not only extends their sphere of prehension, but acts, as we have already observed, upon the principle of the rope-dancer's balancing-pole, and completely secures their equilibrium even with the most precarious footing. Thus it is that travellers have beheld the apes securely poised at the very extremity of the slender trunk of the bamboo, balancing themselves adroitly, and waving their long arms to and fro with a gracefulness and ease of motion truly admirable.

The absence of a tail, which has already been slightly noticed as one of the most prominent characters of the apes, and which, in the estimation of the world

at large, is usually considered as the distinguishing mark between them and the lower tribes of monkeys, is not altogether devoid of influence upon the habits and economy of these animals. Not that we consider this organ as generally exercising functions of superior or primary importance among the great majority of mammals; on the contrary, its uses are, in many cases, extremely obscure, if not altogether beyond the reach of observation: but among the arboreal, aquatic, and some other tribes, its functions are at once obvious and important—too apparent, indeed, to be liable to the blunders which so often attend speculations upon final causes in some other departments of zoology. Though the presence of a tail, then, does not always indicate a corresponding function, and though its absence is not, strictly speaking, confined to the present group of quadrumanous animals, yet a long tail would seriously embarrass the nearly erect motion of the real apes; whilst its use is, in other respects, superseded by the length of the fore-arms, which appear intended to compensate its loss, and which supply its place in adjusting the proper balance of the body, the only function—an important one, no doubt—which the tail performs in the common monkeys.

A character which is common to all the other known simiæ is, nevertheless, found in some species only of the real apes, and absent in others: this is the possession of callosities, or naked callous patches on the buttocks, upon which these animals sit when fatigued by the violent and rapid movements which they habitually execute. These organs have been already partially referred to, and their functions will be described more at large when we come to speak of the baboons and other simiæ, in which their development is most remarkable. Among the apes they are confined to the gibbons, or *hylobates*, and even in them exist only in a rudimentary form; but their presence is, nevertheless, sufficiently important to become a legitimate generic character, to distinguish these animals from the chimpanzees and orangs, as the comparative length of the anterior and

posterior extremities distinguishes these genera from one another. We shall find, however, that the gibbons, which possess these diminutive callosities, differ in no other particular from the chimpanzee and orang-outan, which are deficient in this respect; they have the same system of dentition, the same organs of sense, and the same singular modification of the organs of locomotion and prehension: their manner of life, also, is precisely similar; they take up their abode equally in the thickets and most solitary forests, inhabit the same countries, and live upon the same food; and, finally, their actions, character, and mental faculties are, in all respects, the same.

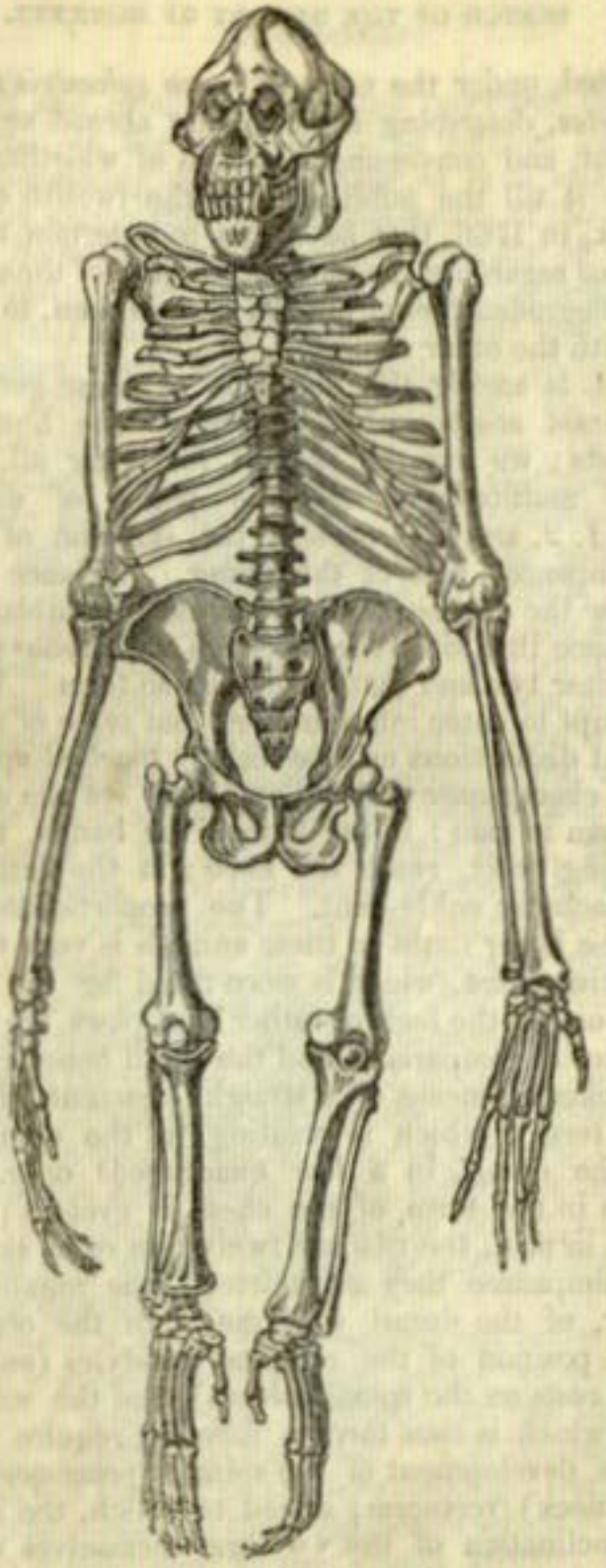
The teeth of the apes, as indeed those of all the other monkeys of the Old World, are of the same number as in man; nor, as far as the incisors and molars are concerned, do they present any difference of form in the chimpanzees and orangs, the two most anthropoid genera of the family; in the gibbons, however, the three posterior molars of the lower jaw have their crowns marked by five tubercles each, instead of four; and in the adults of all the species, more especially in the old males, the canines are developed in the same relative proportion as in the carnivora; the tusks of the full-grown orang-outan, at least as large as those of the lion, are most formidable weapons. Unfortunately, we know but little of the manners of these animals in their adult state; but this circumstance gives us strong reason to suppose that the extreme gentleness and placidity observable in the young individuals, usually brought into Europe, do not always continue to characterise them in their native climates, but that their dispositions alter in proportion to the development of their muscular force; and that, in their adult state, they are as formidable and mischievous as the baboons themselves.

The characters and habits of the apes present individual differences, which we shall notice when speaking of the several genera and species. As far, however, as their general manners have been observed, they are of a gentle, and we may even say, without exaggeration, of a

grateful and affectionate disposition, tinged, indeed, with an obvious shade of melancholy, which may be owing, however, to the confinement and other unnatural circumstances in which they are necessarily placed when brought to this country: their looks are expressive in the highest degree; their eyes beam with intelligence; their actions are grave, circumspect, and deliberate; they are seldom moved to violent passion, though occasionally peevish and fretful when teased or thwarted; and, finally, they are totally free from the petulance, caprice, and mischievous curiosity, which so strongly characterise the monkeys properly so called. It must be remembered, however, that these observations apply to the apes only in the state of confinement in which we have had an opportunity of seeing them in Europe, when their spirits were, perhaps, broken down by captivity and absence from their native woods and companions; those usually seen have been, moreover, generally of immature age, and may consequently be naturally supposed to have exhibited a greater degree of gentleness and docility than what we may reasonably presume to be due to their adult condition and the full development of their physical powers; but, on the other hand, the gibbons which we have observed had unquestionably attained their mature growth, as was manifest from the great development of their canine teeth, yet their character and disposition differed in no respect from what we have here described. The patience, circumspection, and docility of these animals, really approach more nearly to the attributes of human reason than our vanity may at first be willing to admit. They patiently endure clothing to defend them from the effects of our changeable climate, are readily taught to imitate or perform various actions, quickly learn to interpret the sentiments and emotions of those they are attached to, and almost seem to comprehend the language you address to them. If at any time they mistake your meaning when commanded to do a particular act, they hesitate with their hand perhaps on the object, look attentively at your face, as if to divine your meaning, and, in short, conduct themselves precisely as a dumb man would do under

similar circumstances. Those which are deprived of callosities do not repose on their hams, after the fashion of ordinary monkeys, but stretch themselves on their sides like human beings, and support their heads upon their hands, or by some other means supply the want of a pillow.

We need not be surprised that animals approaching so nearly to the human form should have been at all times objects of intense interest to the philosopher, or of credulous and exaggerated relations among the common people. Accordingly we find that the inhabitants of Western Africa, the Indian Archipelago, and the south-eastern parts of Asia, universally regard the apes as a sort of wild men, closely allied to the human species, and preserving silence, not from any defect in the organs of speech, but from motives of policy, that they may escape the drudgery, servitude, and other evils incident to man in a state of society. The credulous, and, for the most part, ignorant travellers of the sixteenth and seventeenth centuries, readily adopted these extravagant accounts, and, perhaps, embellished them with additional colours from their own fertile imaginations; they represented the apes as living in a kind of regulated society, in the depths of the most impenetrable forests, arming themselves with clubs, expelling even the elephant from their cantonments, always walking erect, sheltering themselves in caves, or erecting rude huts to defend them from the inclemency of the weather, and occasionally kidnapping the people of the country, when they happened to meet them alone in the woods, and reducing them to a state of the most revolting slavery. These and similar narratives imposed upon the credulity of the age, and even grave and learned philosophers began to imagine that they had here a kindred and closely-allied species, if not man himself in his original and natural state. The great Linnæus himself long hesitated as to the true affinities of these extraordinary beings. In the earlier editions of his celebrated *Systema Naturæ* he has invariably considered them as *wild men*, and as such classed the only species with which he was imperfectly



3.—Skeleton of Orang-Outan.

acquainted, under the name of *homo sylvestris* and *homo troglodytes*, describing it as moving abroad only during the night, and conversing in a kind of whistling sound; nor was it till the publication of the twelfth edition of his work, in 1766, that he began to entertain more correct ideas regarding the natural relations of the apes, and, finally, degraded them from the rank of men, to associate them with the other simiæ.

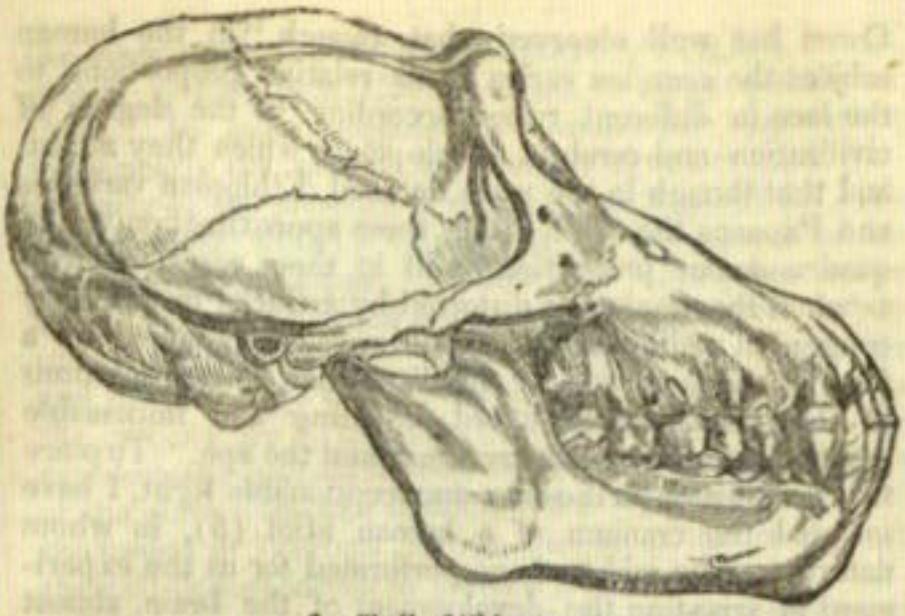
But it is among the members of these genera that the nearest anatomical approach to the human subject exists; we say the nearest, for, after all, important and multitudinous are the points of difference. Figures 1, 2, and 3, represent the skeleton of man, of the chimpanzee, and of the orang. A glance at them will show the degree of their mutual resemblance, and the distance that intervenes between the osseous structure of the latter two and that of the human form. We shall not attempt to enter into minutiæ; but some of the more important distinctions may be briefly touched upon. In both the chempanzee and the orang we see the arms far longer than in man: in the former the hands, the skeleton being erect, reach the knee; in the latter they nearly reach the ankle-joint. The proportionate shortness of the lower limbs in these animals is very striking. In the chimpanzee, which is more fitted for the ground than the orang, the feet, or rather hind-paws, are broader and shorter in comparison, and the thigh bone is secured in the socket by means of a straight ligament (the ligamentum teres), which is wanting in the orang; and besides the orang, in a few quadrupeds only. The difference in the form of the chest is evident; in the orang, as in man, the ribs are twelve on each side; but in the chimpanzee they are thirteen, the number, consequently, of the dorsal vertebræ. In the orang the backward position of the occipital condyles (on which the skull rests on the spinal column), and the weight of the face, which is thus thrown forward, require a commensurate development of the spinous processes of the cervical (neck) vertebræ; added to which, the general anterior inclination of the vertebræ themselves renders

the length and robustness of these processes the more imperative. In the chimpanzee the spinous processes, though necessarily developed, are so in a less degree than in the orang, the anterior inclination of the cervical vertebræ being less decided, and the weight of the face less oppressive. In both animals (and, indeed, in all the ape tribe) the cervical region is shorter than in man, and therefore better fitted for sustaining the weight of the head, which preponderates anteriorly. In the front view of the orang, the neck cannot be seen. The length of the forehead, and the proportionate shortness of the thumb, are marked characters. The difference in the form of the pelvis between these animals and man is obvious. The narrowness of the os sacrum, and the deficiency in expansion of the iliac bones, are not to be overlooked. With the expansion of the pelvis is connected the development of the lower limbs in man, to whom alone, of all animals, the erect attitude is easy and natural. The magnitude and position of the skull, the structure of the spinal column, the osseous and muscular development of the pelvis and lower limbs, necessitate such an attitude. One advantage gained by this arrangement is the perfect freedom of the superior extremities, the lower limbs being the sole organs of progression. In the orang and chimpanzee all four extremities are organs of locomotion: the chimpanzee, it is true, can proceed on the ground, supported, or rather balanced, on the lower extremities, calling the superior only occasionally into use, except in as far as they are needed to maintain the equilibrium of the body; but man walks with a free step, with his arms at liberty, and with a precision very remote from the vacillating hobble of the tottering chimpanzee.

Figures 4, 5, 6, and 7, are respectively representations, first, of a well-developed human skull; secondly, of the skull of a human idiot; thirdly, of the chimpanzee (female); fourthly, of the orang. The contrast between the first and the last two is very striking; but that even of the idiot possesses those characters which at once proclaim it as belonging to the human species. Professor

4.—Human Skull.

5.—Skull of Human Idiot.



6.—Skull of Chimpanzee.

7.—Skull of Orang-Outan.

Owen has well observed, that, though "in the human subject the *cranium* varies in its relative proportions to the face in different tribes, according to the degree of civilization and cerebral development which they attain, and that though in the more debased Æthiopian varieties and Papuans the skull makes some approximation to the quadrumanous proportions, still in these cases, as well as when the cranium is distorted by artificial means or by congenital malformation, it is always accompanied by a form of the jaws, and by the disposition and proportions of the teeth, which afford unfailing and impassable generic distinctions between man and the ape. To place this proposition in the most unexceptionable light, I have selected the cranium of a human idiot (5), in whom nature may be said to have performed for us the experiment of arresting the development of the brain, almost exactly at the size which it attains in the chimpanzee, and where the intellectual faculties were scarcely more developed; yet no anatomist would hesitate in at once refering this cranium to the human species. A detailed comparison with the cranium of the chimpanzee or orang shows that all those characters are retained in the idiot's skull which constitute the differential features of the human structure." We refer those who wish to investigate the anatomy of the orang and chimpanzee to Professor Owen's papers in the 'Trans. Zool. Soc.' and the 'Proceedings of the Zool. Soc.'

With regard to the external characters of the chimpanzee, the orang, and the gibbons, it may be remarked that they agree in the total absence of a tail and cheek-pouches, and in the extraordinary length of the anterior extremities compared with the posterior. In some few points the orangs and gibbons agree with each other the nearest, namely, in the presence of extensive laryngal sacculi, in the extreme length of the anterior extremities, and in the narrowness of the hands and feet, but not in general anatomical structure, aspect, or clothing. A small round head, a compressed face, a narrow under-jaw, deep woolly fur, and ischiatic callosities, distinguish the gibbons both from the orang and the chimpanzee. On

the other hand, the orang and chimpanzee are less immediately related than Cuvier seems to have considered them. In most respects the chimpanzee approaches more nearly the type of the human structure, and particularly in the presence of a pendulous uvula at the back of the palate, which is wanting in the orang, and in the structure of the larynx, in which the laryngal sacs are not developed, as in the orang, but are produced into a cavity of the os hyoides. Still, however, the chimpanzee and the orang are more closely related to each other than the gibbons are to the latter. They are, moreover, the representatives of each other in their respective portions of the globe; the one tenanting the secluded depths of the forests in Western Africa, the other the recesses of the still denser forests of Borneo and Sumatra.

The food of the apes, in a state of nature, consists of wild fruits, bulbs, and probably the inner bark and tender buds of certain trees. They likewise eat insects and small reptiles, and search after the nests of birds, of which they greedily suck the eggs, and devour the callow young. Of eggs they are passionately fond, even in a state of confinement, but they refuse beef or mutton unless it has been previously cooked. Milk or water is their favourite beverage; at first they will reject wine or spirits; but, like the savages of America and Australia, they soon overcome their aversion, and learn to enjoy their glass with the gusto of a connoisseur.

In point of geographical distribution, this group is principally confined to the peninsula of Malacca and the great islands of the Indian Ocean. One genus is, nevertheless, an inhabitant of Western Africa, and that too the most anthropoid of the whole, both in its intellectual faculties and physical conformation. It is, therefore, usually placed at the head of the series of apes, and we shall now proceed to relate its history and describe its manners.

CHAPTER II.

The Chimpanzee.

Pongo and *Engeco*, Battel, in Purchas's 'Pilgrims; *Barys*, *Baris*, and *Quojas Morrou* of Barbot, Dapper, &c.; *Smitten*, Bosman; *Pongo*, Buffon; *Pongo*, or *Great Black Orang*, Shaw; *Jocko*, Audebert; *Chimpanzee*, Scotin's print, 1738; *Troglodytes*, *Homo nocturnus*, Linnæus; *Troglodytes niger*, Desmarest.

The characters of the genus Troglodytes may be thus summed up:—muzzle long, and truncated anteriorly; supraorbital ridges prominent; forehead depressed; no cranial ridges; facial angle 35°; external ears large and standing out; tail wanting; arms reaching below the knee-joint; feet wide, the thumb extending to the second joint of the adjoining toe, and always furnished with a nail. Canines large, overpassing each other, their points being lodged respectively in intervals of the opposite teeth; intermaxillary bones anchylosed to the maxillaries during the first dentition; ribs, thirteen pairs; no cheek-pouches; laryngal sacculi, small.

The Chimpanzee is a native of Western Africa, to the extent of ten or twelve degrees north and as much south of the torrid zone, including Guinea, Benin, Congo, Angola, &c. In some districts it appears to be common, and Bowdich ('Mission from Cape Coast Castle to Ashantee,' Lond., 1819) informs us that at Gaboon, where it is by no means rare, it was known to the natives under the name of Inchego and Ingeno. From the negroes he also learned that the adults generally attain to the height of five feet, the breadth of the shoulders being very great, and their strength enormous. A female adult skeleton which we measured stood only three feet ten inches; but the males most probably are larger. (Fig. 8.) The hand of an adult, preserved in

8.—The Chimpanzee.

spirits of wine, measured nine inches and a half in length, and three inches and four lines in breadth across the palm. The chimpanzee, the orang, and even the mandrill, have been strangely confounded together in the works of our older travellers, and even naturalists have regarded the two former as identical. Tulpius adopted the term Quojas Morrou, used by Barbot ('Descr. of Guinea'), and Dapper ('Descr. of Africa') also calls the chimpanzee the Satyre of Angola, but he confounded the orang of the Indian islands with the chimpanzee, and figured as the latter an orang which was brought from Borneo, and presented to Frederick Henry, Prince of Orange, 1777.

Buffon, who adopted the terms Pongo and Jocko (from pongo, inchego, engeco, or enjocko), in his great work (1756), gives an imperfect sketch of a living young chimpanzee which he saw at Paris in the year 1740, and which was taken in Gaboon. At that time Buffon was not aware of any distinction betweeen the African and the Indian animals. In the supplement (vol. vii.) the two are, however, distinguished. To the African chimpanzee the name of Pongo is appropriated, and to the Indian orang that of Jocko. Shaw describes "the Pongo, or great black orang-otan," as a native of Africa, and the "reddish-brown or chesnut oran-otan, called the Jocko," as a native of Borneo and the other Indian islands. With regard to the Smitten, Barris, Boggo, &c., and which have been applied by the early travellers apparently to the chimpanzee, there is every reason to believe that they really refer to the mandrill.

Mr. Ogilby was the first to point out that the chimpanzee is, as it would seem, alluded to in a work of great antiquity—the 'Periplus Hannonis.'* It appears that a

* The original, of which only a Greek translation is extant, was written in Punic by Hanno, and is a narrative of a voyage he made, by order of the Carthaginian Senate, along the African coast, for the establishment of colonies. Many celebrated men of the name of Hanno have lived at different times: but who the Hanno in question was, and what was the exact date of his voyage, are not ascertained.

9.—Chimpanzee.

Carthaginian navigator named Hanno (A.C. 500, or about that period), sent on an expedition of discovery, coasted Western Africa, and sailed from Gades to the island of Cerne in twelve days; and thence, following the coast, he arrived, in seventeen days, at a promontory called the West Horn. Thence, skirting a burning shore, he arrived in three days at the South Horn, and found an island inhabited by what were regarded as wild men, called by the interpreters *Gorilloi*, who were covered with long black hair, and who fled for refuge to the mountains, and defended themselves with stones. With some difficulty three females were captured, the males having escaped; but so desperately did they fight, biting and tearing, that it was found necessary to kill them. Their preserved skins were carried by Hanno to Carthage, and hung up in one of the temples as consecrated trophies of his expedition. From this time till the sixteenth century of our era we hear nothing of the chimpanzee; for the western coast of Africa was, as it may be said, re-discovered only in the fifteenth century.

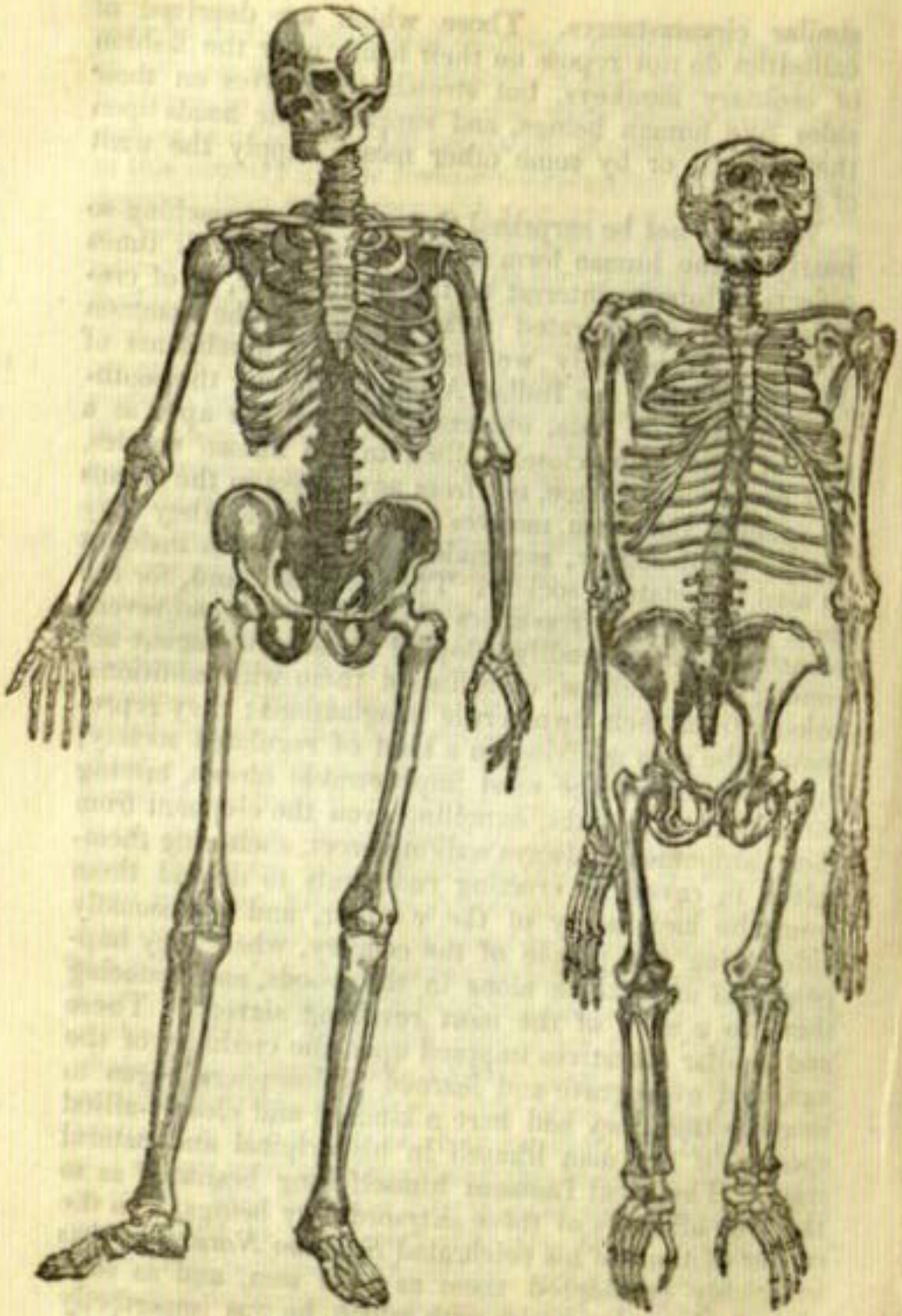
One of the most trustworthy of our earlier travellers, Andrew Battel, a sailor, who was taken prisoner in 1589, and lived many years in Congo (Purchas's 'Pilgrims'), describes two animals, the Pongo and the Engeco, the former as high and stouter than a man, the latter being much less. The Pongo, which is doubtless the chimpanzee, he describes as having sunken eyes, long hair on the sides of the head, a naked face, ears, and hands, and the body slightly covered. The limbs differed from those of man, being destitute of calves, but the animal walked upright. In its disposition it is stated to be grave and melancholy, and even when young far from frolicsome; at the same time it is swift and agile, and is sometimes known to carry away young negroes. He further states that these animals constructed arbours in which they slept. Their diet consisted of fruits, nuts, &c.; and their muscular strength is such that ten men were unable to overcome one. (Fig. 9.) Upon the death of one of their community, the survivors cover the body with leaves and branches of trees.

Bosman, Froger, De la Brosse, and others describe the chimpanzee as living in troops, which resist the attacks of wild beasts, and even drive the elephant from their haunts. They possess matchless strength and courage, and it is very dangerous for single individuals to pass near their places of abode. Bosman states that on one occasion a number of them attacked, overpowered, and were proceeding to poke out the eyes of two slaves, when a party of negroes arrived to their rescue. That they surprise and carry away the negresses into the woods, and there detain them sometimes for years, is asserted by all, and an instance came under the personal notice of De la Brosse. Captain Paine was assured that similar instances happen in Gaboon. De la Brosse says they build huts, and arm themselves with clubs, and that they walk either upon two feet or four, as occasion may require.

Lieutenant Matthews, R.N., who resided at Sierra Leone during the years 1785-6-7, and whose letters describing this part of Africa appeared in 1788, informs us that the "chimpanzees," or "japanzees," are social animals; and that "they generally take up their abode near some deserted town or village where the papau-tree grows in abundance, of the fruit of which they are very fond. The build huts nearly in the form in which the natives build their houses, which they cover with leaves; but these are only for the females and young to lie in; the males always lie on the outside. If one of them is shot, the rest immediately pursue the destroyer of their friend, and the only means to escape their vengeance is to part with your gun, which they directly seize upon with all the rage imaginable, tear it to pieces, and give over the pursuit." The terrestrial habits of the chimpanzee are confirmed by other observers.

Lieutenant Henry K. Sayers, who in 1839 brought a young chimpanzee to England, which he had procured in the Bullom country, the mother having been shot, states that "trees are ascended by the chimpanzees (as he is led to conclude) only for food and observation."

(Fig. 10.) From the natives he learned that "they do not reach their full growth till between nine and ten years of age, which, if true, brings them extremely near the human species, as the boy or girl of West Africa, at thirteen or fourteen years old, is quite as much a man or woman as those of nineteen or twenty in our more northern clime. Their height, when full grown, is said to be between four and five feet; indeed I was credibly informed that a male chimpanzee, which had been shot in the neighbourhood and brought into Free Town, measured four feet five inches in length, and was so heavy as to form a very fair load for two men, who carried him on a pole between them. The natives say that in their wild state their strength is enormous, and that they have seen them snap boughs off the trees with the greatest apparent ease, which the united strength of two men could scarcely bend. The chimpanzee is, without doubt, to be found in all the countries from the banks of the Gambia in the north to the kingdom of Congo in the south, as the natives of all the intermediate parts seem to be perfectly acquainted with them. From my own experience I can state that the low shores of the Bullom country, situated on the northern shores of the river Sierra Leone, are infested by them in numbers quite equal to the commonest species of monkey. I consider these animals to be gregarious, for, when visiting the rice-farms of the chief Dalla Mohammadoo, on the Bullom shore, their cries plainly indicated the vicinity of a *troop*, as the noise heard could not have been produced by less than eight or ten of them. The *natives* also affirmed that they always travel in strong bodies, armed with sticks, which they use with much dexterity. They are exceedingly watchful, and the first one who discovers the approach of a stranger utters a protracted cry, much resembling that of a human being in the greatest distress. The first time I heard it I was much startled; the animal was apparently not more than thirty paces distant, but had it been but *five* I could not have seen it from the tangled nature of the jungle, and I certainly conceived that such sounds could only have proceeded from a human



1.—Skeleton of Man.

2.—Skeleton of Chimpanzee.

10.—Chimpanzee.

being who hoped to gain assistance by his cries from some terrible and instant death. The native who was with me laid his hand upon my shoulder, and, pointing suspiciously to the bush, said, 'Massa, baboo live there,' and in a few minutes the wood appeared alive with them, their cries resembling the barking of dogs. My guide informed me that the cry first heard was to inform the troop of my approach, and that they would all immediately leave the trees or any exalted situation that might expose them to view, and seek the bush; he also showed evident fear, and entreated me not to proceed any farther in that direction. The plantations of bananas, papaws, and plantains, which the natives usually intermix with their rice, constituting the favourite food of the chimpanzees, accounts for their being so frequent in the neighbourhood of rice-fields. The difficulty of procuring live specimens of this genus arises principally, I should say, from th superstitions of the natives concerning them, who believe they possess the power of 'witching.'

"There are authors who have, I believe, affirmed that some of the natives on the western coast term these animals in their language 'Pongos;' but I beg leave to differ with them as to 'Pongos' being a *native* term. The Portuguese formerly monopolized the trade of the coast, and had large possessions there, as well as in the East Indies, most of the capes, rivers, &c., bearing the names they gave them to this day. Now 'Pongos' I look upon to be a *Portuguese East Indian* term for a tailless monkey; and in consequence of their discovering a river in Africa the banks of which were inhabited by vast numbers of this species, they called it 'Rio Pongos,' a name which it bears still. This I conceive to be the origin of the term; whilst on the coast I observed that all the natives in the neighbourhood of Sierra Leone, when speaking of this animal, invariably called him 'Baboo,' a corruption, I should suppose, of our term Baboon." ('Proceed. Zool. Soc.,' 1839.)

Within the last few years several young chimpanzees have been brought to this country, but none have long survived. Their human-like appearance, their intelligence

and confiding manners, together with their activity, have attracted great interest and given rise to many narrations. One was a female, which lived in the menagerie of the Zoological Society from September, 1835, to September, 1836. Its docility and gentleness were remarkable; but it is well known that the gentleness which characterises the young of all the ape tribe gives place, as maturity advances, to "unteachable obstinacy and untameable ferocity;" and from what we know of the chimpanzee in its wild state, we have reason to conclude that the young, however docile they are, would become savage and distrustful as they grew up, even in captivity, and thus form no exception to the rule. The following description was taken from the young individual alluded to:—

General figure short and stout; chest broad; shoulders square; abdomen protuberant; forehead retreating behind the supraorbital ridge, the cranium otherwise well devoloped; nose flat; nostrils divided by a very thin septum; lips extremely mobile, and traversed by vertical wrinkles; ears large, naked, and prominent; eyes lively, deep-set, and chestnut-coloured; neck short; arms slender, but muscular, and reaching, when the animal stands erect as possible, just below the knee; all the four hands well developed, with opposable thumbs; the nails human-like; the hair moderately coarse and straight, longest and fullest on the head, down the back, and on the arms, thin on the chest and abdomen; on the fore-arm it is reverted to the elbow; backs of hands naked to the wrist; muzzle sprinkled with short white hairs; skin of the face dusky black; ears and palms tinged with a purplish hue; hair glossy black; total height, two feet. The lower limbs are less decidedly organized for arboreal habits than in the orang; but their tournure is obliquely inwards, the knees being bowed out, but the soles of the feet are capable of being applied fairly to the ground. It runs about with a hobbling gait, but very quickly, generally assisting itself by resting the knuckles of the first two fingers of the hand on the ground, to do which it stoops its shoulders forwards: it can, however, and does walk

frequently upright. Its pace is a sort of waddle, and not performed, as in man, by a series of steps in which the ankle-joint is brought into play at each successive step, the heel being elevated and the body resting on the toes; on the contrary, the foot is raised at once and set down at once, in a thoroughly plantigrade manner, as in stamping, which indeed is an action it often exhibits, first with one foot, then with the other. It grasps with its feet, which are broad and strong, with astonishing firmness, and has been seen, while resting on a perch, to throw itself completely backwards, and, without using its hands, raise itself again into its previous position—a feat requiring both great power and agility.

In the mutilated skin of an adult we found gray hairs mixed with the black, especially on the lower part of the back, the haunches, and thighs, these parts having a grizzled appearance.

CHAPTER III.

The Orang-Outan (*Pithecus Satyrus*, Geoffr.).

So different are the characters, dependent upon age, which the Orang-outan assumes at different periods of its growth, and so much in many respects do the males differ from the females, that no little confusion has arisen; and the young, which is the Simia Satyrus of Linnæus, has only recently been proved to be identical with the Asiatic Pongo (this word is now restricted to the orang); the latter, as Cuvier suspected, and indeed asserted, and as Professor Owen has proved, being the adult. (See *Trans. Zool. Soc.*, vol. i., 'Osteology of Chimpanzee and Orang.')

The difference which the skull assumes in figure, and the relative proportions of the cranial and facial parts, during the transition from youth to maturity, is indeed extraordinary; and so great is the amount of variation ultimately, that the errors of naturalists who had no opportunities of examining a series of crania, of different ages, up to maturity, may well be pardoned. Fig. 12 is the skull of an adult orang, remarkable for the development of the facial portion, the breadth and strength of the lower jaw, the deep cranial ridges, or crests, the contraction of the forehead, and the flattening of the occiput; the strength of the teeth, and the enormous size of the canines. Totally different is the general form and appearance of the skull of the young.

In Borneo there are two species of orang—one of large size, and dreaded by the natives (*Pithecus Wormbii*, or *Pongo Wormbii*); the other of small size, recently characterized by Professor Owen from a skull. This species (*Pithecus Morio*) has been subsequently verified. It is timid and gentle.

11.—Orang-outan

12.—Head of adult Sumatran Orang.

It would appear that a distinct species, of large size, distinct from the great Bornean orang, exists in Sumatra. Some naturalists, it is true, are disposed to regard the Bornean and Sumatran large orangs as identical, and it must be allowed that some difficulty exists which remains to be cleared up. Professor Owen has pointed out certain differences in the contour of their respective skulls, which seem to justify those who contend for a distinction of species. In the adult male Bornean orang (Fig. 13) there are huge callosities, or protuberances of callous flesh, on the cheek-bones, giving a strange aspect to the countenance, and which are presumed to be absent in the Sumatran orang (*Pithecus Abellii*). They are certainly not depicted in Dr. Abel's figure of the head of the adult Sumatran orang (Fig. 12); still, as figures are often faulty, and the adult male Sumatran an mal remains to be ex-

amined, the point is undecided. With respect to difference of colour, little stress can be laid upon it: the Sumatran species is said to be of a much lighter colour than the Bornean; but all the Bornean orangs we have examined (and those not a few) have been of a chestnut colour, or bright sandy rufous passing into a chestnut, on the back, and scarcely, if at all, darker than the Sumatran adult female in the collection of the Zoological Society.

The Sumatran animal is said to exceed the Bornean in stature. According to Dr. Abel the male orang killed at Ramboon on the north-west coast of Sumatra exceeded 7 feet in stature—a singular exaggeration, as is now allowed. In the span of the arms and hands, this animal, he states, measured 8 feet 2 inches; and in the length of the foot, 14 inches. Now, in the specimen of a Sumatran female in the collection of the Zoological Society, which could not have stood higher than 3 feet 6 inches, the span of the arms and hands is 7 feet 2 inches, and the length of the foot 10½ inches. That the Sumatran orang does not exceed the Bornean may therefore be safely concluded. The largest Bornean male orang, an adult, with large facial callosities, which we ever examined measured 4 feet 6 inches from head to heel; but Temminck, in his monograph of the genus, says, "Our travellers inform us by letters from Bangarmasing, in the island of Borneo, that they have recently procured orangs of 5 feet 3 inches in height, French measure" (5 feet 9 inches English). In both the Bornean and Sumatran specimens the ungueal or nail-bearing phalanx of the hind thumb is sometimes absent, sometimes present, in both sexes; sometimes it is present on one foot, and wanting on the other.

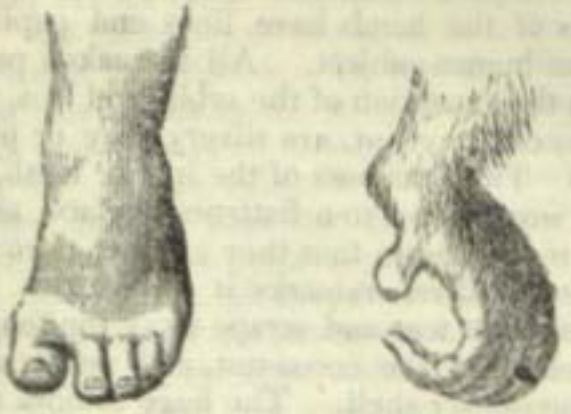
Description of a nearly adult male orang from Borneo, in the Paris Museum:—The head is large, the forehead naked, retiring and flat; large fleshy callosities in the form of somewhat crescentic ridges occupy the malar bones, extending from the temples and giving a singular and even hideous expression to the physiognomy. The eyes are small and set closely together; the nose is depressed; the septum of the nostrils thin, and carried

13.—Adult male Bornean Orang-outan.

out to blend with the skin of the upper lip; the nostrils are oblique; the lips are thick and fleshy, and the upper one is furnished with scanty moustaches; the chin is furnished with a long and peaked beard. The hair is very long and thick on the back, shoulders, arms, and legs; very scanty on the chest, abdomen, and inside of the thighs; the hair of the fore-arms is reverted to the elbows; the hair of the head is directed forwards from a common centre of radiation on the back of the neck, or rather between the shoulders. The contour of the body is heavy, thick, and ill-shapen; the arms with the hands reach to the heel; the thumbs of the hind-feet are nailless; the general colour is deep chestnut. Total height, 3 feet 8 inches. Breadth of face across the callosities, 9 inches.

The organization of the orang (we refer to both Bornean and Sumatran animals) fits him almost exclusively for arboreal habits: on the ground his progression is more awkward than that of the chimpanzee; for the abbreviation of the posterior limbs, their inward tournure, their pliancy, owing to the absence of the ligamentum teres of the hip-joint, and the mode of treading, not upon the sole, but the outer edge of the foot, tend all to his disadvantage. Among the trees, however, the case is reversed. In the mighty forests of his native climates he is free and unembarrassed, though by no means rapid in his movements: there, the vast reach of his sinewy arms enables him to seize branches at an apparently hopeless distance; and by the powerful grasp of his hands or feet he swings himself along. In ascending a tall tree, the inward tournure of the legs and ankle-joints, and the freedom of the hip-joint, facilitate the application of the grasping foot. The length and narrowness of the hands and feet render them hook-like in character; while the short thumbs, set as far back toward the wrist as possible, act as a fulcrum against the pressure of the fingers while grasping the branch to which the animal is clinging.

The difference between the human foot and that of the orang (Fig. 14) is very marked; the arrangement of the bones, muscles, and muscular tendons being modified in



14.—Foot of Man and of Orang-outan.

each for a different purpose. Yet there have been men of learning who have contended that in the course of time, by use, the foot of the orang might assume the form and proportions of the human, and the human that of the orang. Such opinions are beneath criticism.

The physiognomy of the orang is grave, melancholy, and even apathetic, but in adults not unaccompanied by an expression of ferocity; the huge fleshy callosities on the sides of the face adding an air of brutish grossness. The head leans forward on the chest, the neck is short; and loose folded skin hangs round the throat, except when the laryngal sacs are inflated; this loose skin is then swollen out, like a naked shining tumour, extending up along the sides of the face under the small angular ears, filling up the interspace between the chin and chest, and encroaching upon the latter: the lips are wrinkled, and possess extraordinary mobility; the animal can protrude them in the form of a snout or proboscis, contracting the mouth to a circular orifice, or, on the contrary, draw them back, and turn them in various directions. The breadth of the chest and shoulders conveys an idea of great strength; the abdomen is protuberant; the hair, which falls on the back and shoulders in long masses, forms a covering to the animal crouching in repose, necessary as a protection by day against the burning rays of the sun, by night against the heavy dews, and during

the rainy seasons as a shelter from the falling showers. The palms of the hands have lines and papillæ, as on those of the human subject. All the naked parts of the body, with the exception of the orbits and lips, which are of a sallow, coppery tint, are silvery-gray or plumbeous. (Fig. 15.) The thickness of the incisor teeth, which in adults are worn down to a flattened surface, as are also the molar teeth, shows that they are put to rough work, and Professor Owen remarks it is probable that their common use is to tear and scrape away the tough fibrous outer covering of the cocoa-nut, and perhaps to gnaw through the denser shell. The huge canines are doubtless defensive weapons, which, in connection with the muscular strength of these animals, enable them to offer a more than successful resistance against the

15.—Orang-outang.

leopard, and render them formidable opponents even to the tiger. Of the habits of the orang in a state of nature our knowledge is limited. It tenants the secluded recesses of the forests in the hilly and central districts of Borneo and Sumatra; living, as it would appear, a secluded life, and not being, like the chimpanzee, gregarious; nor does it, like that animal, build huts, but, in accordance with its arboreal predilections, it constructs a rude seat or platform of interwoven boughs and twigs among the branches of the tallest trees, on which it takes up its abode. Here the adult male will sit, as is said, for hours together, listless and apathetic. His movements are slow and indolent: when attacked, he swings himself from branch to branch, clearing vast intervals with ease, but not with the rapidity which has been imagined, and which is displayed by some of the gibbons. If at last driven to extremity, he defends himself with determined resolution, and his prodigious bodily powers and prowess render it dangerous to venture on a close assault. The females are devoted to their young. A few years since, Captain Hall repaired to Sumatra purposely to obtain one of these animals, but at his outset he experienced a serious obstacle in the difficulty of procuring guides to conduct him to their usual haunts: this proceeded from the fears of the natives, who not only believe that the orangs possess a natural dominion over the great forests, but that they are animated by the souls of their own ancestors. Succeeding at length in this preliminary part of the undertaking, the Captain soon met with one of the objects of his search, a female, which he describes as having been five feet in height. When first discovered she was sitting on a branch of one of the highest trees, with a young one in her arms. Upon being wounded she uttered a piercing cry; and, immediately lifting up her little one as high as her long arms could reach, let it go among the topmost branches. While the party approached to fire again she made no attempt to escape, but kept a steady watch, glancing her eye occasionally towards her offspring, and at last seemed to wave her hand to hasten its departure, which it safely effected.

The following summary is the result of our repeated observations upon young living specimens:—The progression of the orang on the ground is slow and vacillating, and is rather dependent on the arms, which from their length act as crutches, supporting the body between them, than upon the lower limbs, which are ill calculated for such service. When left entirely to itself on the floor, the young orang, if incited to walk, supports its weight on its arms, applying the bent knuckles to the ground, which, from the length of the arms, is an easy action. The lower limbs are at the same time bowed outward, and the outer side of the foot is placed upon the floor. In this attitude it waddles along, the arms being the main support; when indeed it wishes to hasten its progress, it fairly swings the body forward between the arms, as if impatient of the hobbling gait to which the structure of the lower limbs restricts it. The lower limbs, however, are not incapable of supporting the body alone, and it can waddle along very fairly, especially if it can lay hold of anything by which to steady itself in its progress. In climbing it is at its ease, and confident, but deliberate. It will suspend itself with its head downwards, sometimes by the hand and foot of the same side, the disengaged hand being stretched to seize objects within its reach; sometimes by the hook-like hands, or the feet alone, varying its grotesque attitudes in the most singular manner, and in all displaying the freedom of the hip-joint. Its arboreal progress is not by bounding like a monkey, but by swinging from branch to branch, grasping them by its hands in succession. Habitually dull and inanimate, it has still its times of sportiveness, and will engage in play with those to whom it has attached itself, following them to court their notice, or pursuing them in mimic combat. It has little curiosity, and is fond of sitting covered up by blankets or other articles of defence against the cold, and will wrap itself up with considerable dexterity. To those who attend it it becomes very affectionate, and readily obeys their voice, recognising its name and the words and tones of command. Confinement is annoying to it

in the extreme, and disappointment irritating From these causes paroxysms of passion are often exhibited, in which it will dash itself about, uttering a whining cry, and manifest every token of anger. We have seen a young orang make the most strenuous efforts to escape from his enclosure, striving to force the door or the frame-work; and then, screaming with disappointment, swing from branch to branch, and again repeat its endeavours, excited to the extreme, and all because its keeper had left it for a short time. Nothing but his return and attentions would pacify it.

Dr. Abel states that his young orang displayed great alarm at the sight of some live turtles, and also of a tortoise; looking at them with horror from a distant place, to which he had retreated for security, and projecting his long lips in the form of a hog's snout, while at the same time he uttered a sound between the croaking of a frog and the grunting of a pig. The young chimpanzee which lived in the year 1836 in the menagerie of the Zoological Society recoiled with horror from a large snake introduced into the room by way of experiment, and also regarded tortoises with aversion; and a young orang in the same menagerie, before which a tortoise was placed, stood aghast in an attitude of amazement ludicrously theatrical, gazing upon the crawling animal with fixed attention and evident abhorrence. On the other hand, we have seen a young orang play with a full-grown cat, drag it about, put the animal on its own head, and carry it from branch to branch, regardless of its scratching and struggles to get free. Fred. Cuvier notices the same fact, which we have ourselves verified. The young orang may be taught to use a spoon, a cup, or glass with tolerable propriety, and will carefully put them down on the table, or hand them to some person accustomed to receive them. To this point F. Cuvier also alludes, as well as to the care it takes in adjusting its bed, and covering itself warmly with blankets and other materials when retiring to rest.

The young chimpanzee, in comparison with the orang, is far more lively, animated, and frolicsome · and dis-

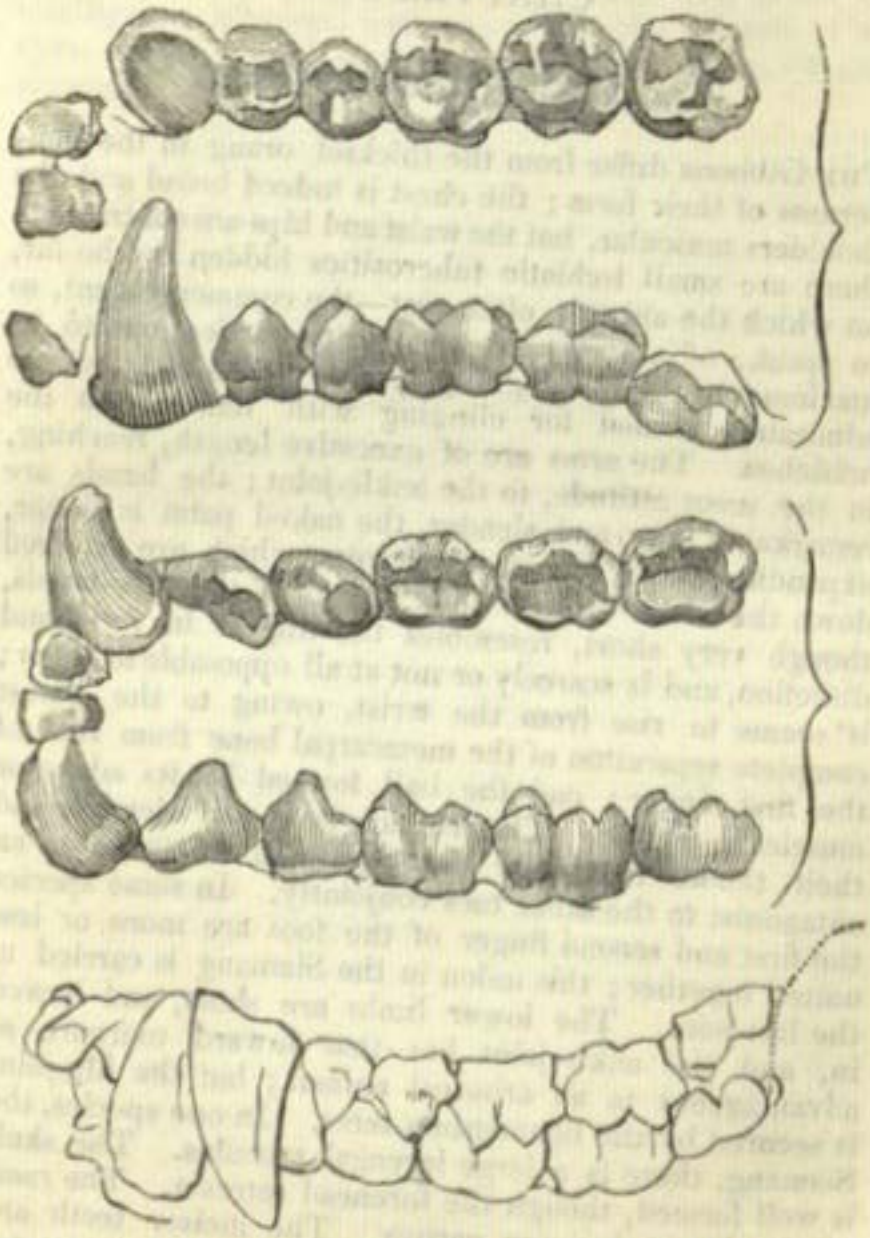
plays much more curiosity, being alive to everything which takes place about it, and examining every object within its reach with an air so considerate as to create a smile in the face of the gravest spectator. In alertness it exceeds the orang, and is to the full as gentle and affectionate, and more intelligent. The expression of intelligence is indeed well denoted by the vivacity of its eyes, which, though small and deeply set, are quick and piercing.

CHAPTER IV.

The Gibbons (Genus *Hylobates*).

The Gibbons differ from the thickset orang in the slenderness of their form; the chest is indeed broad and the shoulders muscular, but the waist and hips are contracted; there are small ischiatic tuberosities hidden by the fur, on which the animals often rest—the commencement, so to speak, of a structural peculiarity carried out to its maximum in the lower groups. The hands and feet are admirably formed for clinging with tenacity to the branches. The arms are of excessive length, reaching, in the erect attitude, to the ankle-joint; the hands are remarkably long and slender, the naked palm is linear, expanding at the base of the fingers, which are covered down the backs with fur; the thumb of the fore-hands, though very short, resembles the fingers in form and direction, and is scarcely or not at all opposable to them; it seems to rise from the wrist, owing to the almost complete separation of the metacarpal bone from that of the first finger; and the ball formed by its adductor muscles is trifling. The feet are long and slender, and their thumb is greatly developed, so as to form an antagonist to the other toes conjointly. In some species the first and second finger of the foot are more or less united together; this union in the Siamang is carried to the last joint. The lower limbs are short, and bowed in, and the ankle-joint has that inward tournure so advantageous to an arboreal animal; but the hip-joint is secured by the ligamentum teres. In one species, the Siamang, there is a large laryngal sacculus. The skull is well formed, though the forehead retreats. The rami of the lower jaw are narrow. The incisor teeth are moderate, the canines slender, the molars moderate,

with the crown broad and bluntly tuberculate. Dental formula:—Incisors, $\frac{4}{4}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{5-5}{5-5}$ = 32. (Fig. 16.) The gibbons are clothed with deep



16.—Teeth of Gibbon.

thick fur, softer in some species than others: on the fore-arms it is in most species reverted to the elbows; in one or two it is erect. The prevailing colours of these animals are from black to brown, brown-gray, and straw-yellow.

The gibbons are distributed through Java, Borneo, Sumatra, Malacca, and Siam, where they tenant the forest branches, among which they display the most astonishing activity. They sweep from branch to branch with arrow-like velocity; their mode is to suspend themselves by their long arms, and by an energetic muscular movement to launch themselves onwards, aiming at a distant branch, which they seize with admirable precision. Most live in troops or families; some species frequenting the mountain-ranges covered by forests of fig-trees, others keeping to the forests of the plains.

The head of the gibbon is small and of an oval figure, and the face is depressed; the expression of the countenance being grave, gentle, and rather melancholy. All utter loud cries, whence, in imitation of the sound, has arisen the name of Wou-wou, which appears to be common to two or three species; Fred. Cuvier has applied it to the Agile Gibbon, but Camper had previously appropriated it to the Silvery Gibbon, said by Dr. S. Müller to be called Oa-oa by the natives of Java, a word differing little in the sound from wou wou or woo-woo. None of the gibbons attain to the stature of the orang, about three feet being the height of the largest species standing erect, an attitude which they are capable of assuming on the ground or any level surface, along which they waddle, at a quick pace, in the manner of the chimpanzee, using the arms as balancers, or occasionally touching the ground with the fingers.

The Agile Gibbon;

also known under the native titles Ungka-puti and Ungka-etam (*Hylobates agilis*, F. Cuv.; *Hylobates Lar*; *H. Rafflesii*).

This interesting gibbon is a native of Sumatra, and owing to certain variations in colour, to which it is sub-

ject, has been formed into two distinct species—an error now corrected. M. Müller, in reference to this gibbon, states that it is curious to observe its numerous variations. "Two individuals are never precisely the same; and we were therefore disposed to conclude, during the early part of our stay in Sumatra, that there were really different species of what, as it proved, is but one Hylobates: for it was only after the examination of individuals of different colours, and after we had killed many of both sexes and various ages, that we came to the conclusion that the oengko-itam, or black oengko, and the oengko-

17.—Female Agile Gibbon and young.

poetih, or white oengko, of the Malayans, were the same species."

The general colour of this species varies from black to brownish-yellow and yellowish-white; a white or pale stripe traverses the brow, and the sides of the face and throat are often gray or flaxen: in black or dark individuals the lumbar region and crupper are usually of a pale rusty-brown or yellowish; the pale individuals have the throat, chest, and abdomen of a darker brown. The pale-coloured females often produce black young, and the black as often young of a pale colour. (Fig. 17.) We have seen straw-white young. The fur is soft and woolly: the first two fingers of the feet are united together at the base.

The agile gibbon usually lives in pairs, and is timid

18.—Male Agile Gibbon.

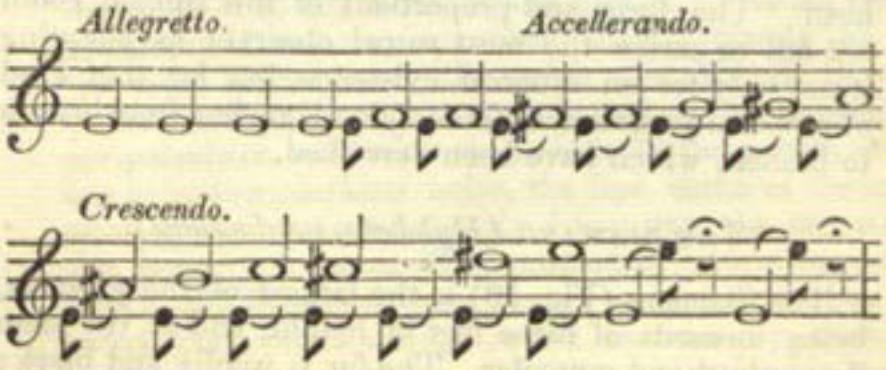
and gentle: its activity and the velocity of its movements are wonderful; it escapes pursuit almost like a bird on the wing. On the slightest alarm it ascends rapidly to the top of a tree; it there seizes a flexible branch, swings itself two or three times to gain the requisite impetus, and then launches itself forward, repeatedly clearing, without effort and without fatigue, as Mr. Duvaucel witnessed, spaces of forty feet. (Fig. 18.)

Some few years since, a female of this species was exhibited in London. The activity of this animal in the large compartment in which it exercised itself, and the velocity and precision with which it launched itself from branch to branch, excited the admiration of all who beheld it. Distances of twelve and eighteen feet were thus cleared, the gibbon keeping up a succession of launches, without intermission and for a great length of time, and all the while exhibiting an air of nonchalance, as if the feat was of the most easy performance. In her flight, for so indeed it might be termed, the gibbon seemed but to touch the branches with her hands in her progress, the impetus being acquired during that, momentary hold; and it could not be doubted that, if the animal had been in the enjoyment of liberty in her own native forest, distances far exceeding eighteen feet would have formed no interruption to her progress. It was curious to witness how she could stop in her most rapid flight, when the momentum was at the highest, and it might naturally have been supposed that a gradual cessation would have been required. Suddenly as thought, however, she arrested her progress; the branch aimed at being seized by one hand, a rapid and energetic movement raised the body up; the branch was then grasped by the hind-hands, and there she sat, quietly gazing at the astonished spectators of her extraordinary gymnastics. With the same abruptness did she throw herself into action. Admirable was the precision with which she calculated her distances and regulated the impulse necessary to clear intervals varying from four, five, or six, to eighteen feet: such indeed was her quickness of eye, that when apples or other fruits were thrown at her, or so as to pass near her in her flight, she would catch them

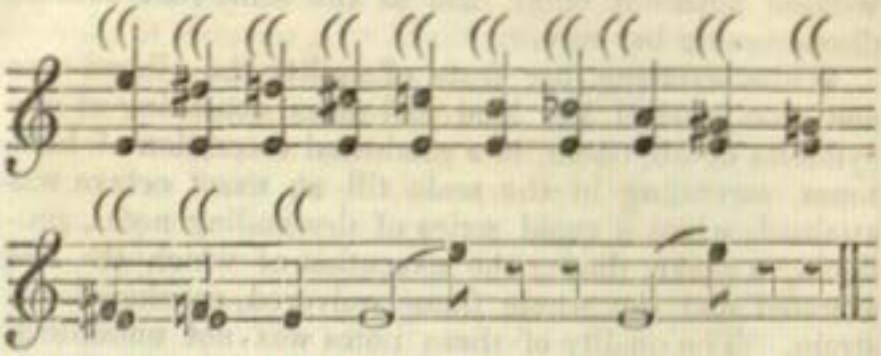
without apparent effort, and at the same time without discontinuing her career.

While exerting her feats of agility the gibbon ever and anon uttered her loud call-notes, consisting of the syllables oo-ah, oo-ah, in a graduated succession of half-tones, ascending in the scale till an exact octave was attained, when a rapid series of descending notes, producing a shake, during the execution of which the lips vibrated and the whole frame quivered, concluded the strain. The quality of these notes was not unmusical, but their loudness was deafening as heard in the apartment, and when uttered by these animals in their native forests must resound far through their stilly depths. It is principally in the morning that the gibbon exerts the whooping cry, which is doubtless its call to its mate or companions, and it was at that time that we heard it. It should be observed that at first the syllables were slowly and distinctly repeated, and on the same note, E. As the tones rose in the chromatic scale, the time quickened, till, gaining the octave, the descent by half-tones was inexpressibly rapid: this ended, two barks followed, each composed of the high and low E, sounded nearly together. At the conclusion the animal was always violently agitated, as if wrought up to a high pitch of excitement, and shook with all her strength the branch to which she was clinging, or the netting, the cords of which she grasped with her hands.

The following notes will give a correct idea of the musical call of this gibbon :—



Prestissimo.



This interesting animal was timid and gentle; she greatly preferred the presence of females to that of men, and approached them and received their attentions with pleasure: there is reason to believe that ill-treatment had made her suspicious of the sex from which she had experienced injury. She was intelligent and observant, and her quick eyes seemed to be ever on the watch, scrutinizing every person and observing all that passed around her. When a person had once gained her confidence, she would descend to meet him as often as invited, and allow her hands to be taken hold of, and her soft fur to be stroked, without any hesitation: to females, though strange to her, she gave her confidence, without any previous attempts at conciliation. The muscular power of the arms, shoulders, and chest was very great, and the muscles were finely developed; the chest was broad and the shoulders high; the reach of the extended arms was about six feet; and the animal when erect stood about three feet from the heel to the top of the head. The form and proportions of this gibbon could not fail to strike the most casual observer as adapting it not only for an arboreal existence, but for that kind of arboreal progression, those flying launches from branch to branch, which have been described.

The Siamang (*Hylobates syndactylus*).

The Siamang (Fig. 19) is the largest of the gibbons, being upwards of three feet in height, and at the same time robust and muscular. The fur is woolly and black;

19.—Siamang.

the first and second fingers of the feet are united to each other, and there is a huge laryngal pouch on the throat covered with black naked skin, which, when the sac is distended with air, is smooth and glossy. The use of this apparatus is not very apparent; most probably the sac has some influence on the voice; for Mr. G. Bennett ('Wanderings,' &c.) observes that when the siamang in his possession was irritated, he inflated the pouch, uttering a hollow, barking noise, the lips being at the same time pursed out and the air driven into the sac, while the lower jaw was a little protruded. It is this noise which M. Duvaucel describes, as we suspect, when he states that the siamang rouses occasionally from its lethargy to utter a disagreeable cry approaching in sound

to that of a turkeycock, and which he takes upon himself to say expresses no sentiment and declares no wants. Mr. Bennett noticed that the sac was inflated, not only during anger, but also when the animal was pleased. It is exclusively in Sumatra that the siamang is found: it is abundant in the forests, especially in the neighbourhood of Bencoolen, which resound with the loud and discordant cries of the troops sheltered among the lofty branches. (Fig. 19.) Duvaucel says that this species is slow, inanimate, and destitute of activity among the trees, and on the ground it is so overcome by fear as to be incapable of resistance; that in captivity it exhibits no pleasing traits, being at once stupid, sluggish, and awkward, unsusceptible either of feelings of grateful confidence or of revenge, and regarding nothing with interest. On the contrary, Sir T. S. Raffles, who kept several of these animals, describes the siamang as bold and powerful, but easily domesticated, gentle, confident, and social, and unhappy if not in company with those to whom it is attached. Nay, M. Duvaucel contradicts himself: first he says all its senses are dull and imperfect, and then gives an account of its extreme vigilance and acuteness of hearing, and of the affection of the mothers for their young. If a young one be wounded, the mother, who carries it or follows it closely, remains with it, utters the most lamentable cries, and rushes upon the enemy with open mouth, but, being unfitted for combat, knows neither how to deal nor shun a blow. It is, he adds, "a curious and interesting spectacle, which a little precaution has sometimes enabled me to witness, to see the females carry their young ones to the water, and there wash their faces, in spite of their childish outcries, bestowing a degree of time and care on their cleanliness, which, in many cases, the children of our own species might envy." The Malays informed him that the young are carried respectively by those of their own sex; and also that the siamang frequently falls a prey to the tiger, under the influence of that sort of fascination which intense terror produces, and which the snake is said to exercise over birds and squirrels.

19*.—Siamang.

Mr. G. Bennett's account (' Wanderings,' &c.) of the siamang which he kept for some time gives us a very favourable impression of its disposition and intelligence. The adroitness and rapidity of its movements, the variety of attitudes into which it threw itself when climbing about the rigging of the vessel in which it was brought from Singapore, and the vigour and

prehensile power of its limbs, indicated its adaptation to the branches of the forest. Its disposition was gentle, but animated and lively, and it delighted in playing frolics. With a little Papuan child on board this siamang became very intimate; they might often be seen sitting near the capstan, the animal with his long arm round her neck, lovingly eating biscuit together. In his gambols with the child he would roll on deck with her, as if in mock combat, pushing with his feet (in which action he possessed great muscular power), his long arms entwined round her, and pretending to bite. With the monkeys on board he also seemed desirous of establishing amicable companionship, evidently wishing to join them in their gambols; but as they avoided his company, probably from fear, he revenged their unsociableness by teasing them, and pulling their tails at every opportunity. He recognised his name and would come to those he knew when called, and soon became a general favourite, for his liveliness was not accompanied by the love of mischief. Yet his temper was irritable, and, on being disappointed or confined, he would throw himself into fits of rage, screaming, rolling about, and dashing everything aside within his reach: he would then rise, walk about in a hurried manner, and repeat the scene as before. With the cessation of his fit of anger, he did not abandon his purpose, and often gained his point by stratagem, when he found that violence was of no avail.

When vessels were passed at sea, it was very amusing to see him take his position on the peak haulyards, and there gaze on the departing ship till she was out of sight. After this he would descend and resume his sports. One instance of his intelligence is peculiarly interesting. Among various articles in Mr. Bennett's cabin, a piece of soap greatly attracted his attention, and for the removal of this soap he had been once or twice scolded. One morning Mr. Bennett was writing, the siamang being present, in the cabin; when, casting his eyes towards the animal, he observed him taking the soap. "I watched him," says the narrator, "without his perceiving that I did so; he occasionally cast a furtive

glance towards the place where I sat. I pretended to write; he, seeing me busily engaged, took up the soap and moved away with it in his paw. When he had walked half the length of the cabin, I spoke quietly, without frightening him. The instant he found I saw him, he walked back again, and deposited the soap nearly in the same place whence he had taken it; thus betraying, both by his first and last actions, a consciousness of having done wrong." This animal died when nearing our shores, to the regret of all the crew.

The White-handed Gibbon (*Hylobates Lar*).

To these species we refer both the Grand Gibbon and the Petit Gibbon of Buffon. It is the Simia longimana

20.—White-hande Gibbon.

tempered, lively, and frolicsome. In 1828 a young male lived for a short time in the menagerie of the Zool. Soc. Lond.

21.—Silvery Gibbon.

The Hooloc, Golok, Hooloo, or Voulock (*Hylobates scyritus*).

The Hooloc inhabits the province of Assam, probably also other parts of the Eastern peninsula, and attains the stature of four feet or upwards when full grown and standing in an upright posture. The whole animal is covered with uniform black hair of a shining rigid quality, very different from the woolly texture of the fur proper to the last species, and, in the absence of all other characters, alone sufficient to distinguish them. A white band or fillet, about half an inch in breadth, separates the face from the forehead; it passes immediately over the eyebrows, but does not extend beyond the temples, leaving the cheeks and chin of the same black colour as the rest

of Erxleben, and the Simia albimana of Vigors and Horsfield; the Pithecus Lar of Geoffroy, the Pithecus variegatus of Geoffroy, Kuld, and Desmarest. The fur is soft and woolly; the colour varies from dirty-brownish or from yellowish-white, to deep umber-brown or blackish-brown, the crupper being paler; the face is encircled by a band of white; the hands and feet are white; the first and second fingers are sometimes united at the base. (Fig 20.)

The White-handed Gibbon is a native of Malacca and Siam, but of its peculiar habits nothing is ascertained. It is one of those species which has hitherto been in a state of confusion, but from which opportunities of examining numbers of specimens have enabled us, as we trust, to disentangle it.

The Silvery Gibbon, or Wou-wou of Camper (*Hylobates leuciscus*).

This gibbon is a native of Java, where it was met with by M. Müller, who states that it is called there Oa-oa, from its cry, whence also the name of Wou-wou, which has been given to other species. (Fig. 21.) The fur is fine, long, close, and woolly; the general colour is ashy-gray, sometimes slightly tinged with brown, and paler on the lower part of the back; the sides of the face are white; the soles and palms are black. According to Müller, the tint of gray varies in intensity, and sometimes has a brownish, sometimes a yellowish tone, the face being encircled with white or light gray. In aged animals the chest becomes of a blackish colour.

It is to the celebrated anatomist Camper that we owe the recognition of the Silvery Gibbon or Wou-wou as a distinct species. The specimen which he dissected was brought from one of the Moluccas: in these islands it is reported to frequent the dense jungles of tall canes, amongst which it displays astonishing activity. Two or three living individuals appear at different times to have existed in England. Of these, one belonged to Lord Clive, and is described by Pennant. It was good-

of the body. The backs of the hands and feet are also black, and the hair of the fore-arms is reversed, or directed towards the elbows.

Of the habits and intelligence of the hooloc we possess detailed and accurate information, which will amply compensate for our scanty knowledge of the preceding, whilst the probable similarity of their manners leaves us little cause to regret our ignorance upon this point. Allamand, in his additions to the Dutch translation of Buffon's works, inserts the following notice, which he had received from Colonel Gordon, of an animal of this species, which had been presented by the king of Assam to Mr. Harwood, by whose brother it was brought to the Cape of Good Hope and given to its describer. "This ape," says Colonel Gordon, "called *voulock* in its native country, was a female, and remarkably mild in its disposition: small monkeys alone were displeasing to her, and she could never endure their presence. She always walked upright upon her two hind-legs, and could even run very swiftly; when passing over a table or among china she was particularly careful not to break anything; she used her hands only in the act of prehension, and had her knees formed like those of the human species. Her cry was so acute, that when near it was necessary to stop your ears to avoid being stunned by it; she frequently pronounced the word *ya-hoo* many times consecutively, laying a strong emphasis on the last syllable, and when she heard any noise resembling this sound she invariably answered it in the same manner; when expressing pleasure or content, however, she uttered a low guttural sound. When any way indisposed, she fretted like a child, and came to her acquaintances to be petted and comforted. Her food was milk and vegetables, and she had such a dislike to meat of all kinds, that she even refused to eat off a plate which had contained it. When thirsty she dipped her fingers into the liquid and then sucked them; she would not suffer herself to be dressed in any kind of jacket, but of her own accord would cover herself with any cloth she found at hand to keep out the night air. Her character was pensive and melancholy;

but she would answer readily to her name, *Jenny*, and come to you when called."

But the most complete account which we possess of the character and habits of this species is contained in the following letter of Dr. Burrough, who had procured the specimens afterwards described and figured by Dr. Harlan. "These gibbons," says Dr. B., "were presented to me by Captain Alexander Davidson, of the Honourable Company's servive, stationed at Goalpara, on the Burrampooter river, in the kingdom of Assam. They are called *hooloc* by the Assamese, and are met with on the Garrow Hills, in the vicinity of Goalpara, between latitude 25° and 28° north, and the specimens in question were taken within a few miles of the town of Goalpara. The full-grown one was in my possession alive from January to May. They inhabit more particularly the lower hills, not being able to endure the cold of those ranges of the Garrows of more than four or five hundred feet elevation. Their food in the wild state consists for the most part of fruits common only to the jungle in this district of country; and they are particularly fond of the seeds and fruits of that sacred tree of India called the peepul-tree, and which on the Garrow Hills attains a very large size. They likewise partake of some species of grass, and also the tender twigs and leaves of the peepul and other trees, which they chew, swallow the juice, and reject the indigestible part. They are easily tamed, and, when first taken, show no disposition to bite, unless provoked to anger, and even then manifest a reluctance to defend themselves, preferring to retreat into some corner rather than to attack their enemy; they walk erect, and, when placed upon a floor or in an open field, balance themselves very prettily, by raising their hand over their head, and slightly bending the arm at the wrist and elbow, and then run tolerably fast, rocking from side to side; and if urged to greater speed, they let fall their hands to the ground, and assist themselves forward, rather jumping than running, still keeping the body, however, nearly erect. If they succeed in making their way to a grove of trees, they then swing with such

astonishing rapidity from branch to branch, and from tree to tree, that they are soon lost in the jungle or forest.

"The individual in question became so tame and manageable in less than a month, that he would take hold of my hand and walk with me, helping himself along, at the same time, with the other hand applied to the ground, as described above. He would come at my call, and seat himself in a chair by my side at the breakfast-table, and help himself to an egg, or the wing of a chicken from my plate, without endangering any of my table furniture. He would partake of coffee, chocolate, milk, tea, &c.; and although his usual mode of taking liquids was by dipping his knuckles into the cup, and licking his fingers, still, when apparently more thirsty, he would take up the vessel from which I fed him, with both hands, and drink like a man from a spring; his principal food consisted of boiled rice, boiled bread and milk with sugar, plantains, bananas, oranges, all of which he ate, but seemed best pleased with bananas; he was fond of insects, would search in the crevices of my house for spiders, and if a fly chanced to come within his reach he would dexterously catch him in one hand, generally using his right hand. Like many of the different religious castes of this country (India), he seemed to entertain an antipathy to an indiscriminate use of animal food, and would not eat of either the flesh of the cow or hog, would sometimes taste a little piece of beef, but never eat of it; I have seen him take fried fish, which he seemed to relish better than almost any other description of animal food, with the exception of chicken, and even this he would eat but very sparingly of, preferring his common diet, bread and milk, and milk with sugar, fruit, &c. In temper he was remarkably pacific, and seemed, as I thought, often glad to have an opportunity of testifying his affection and attachment for me. When I visited him in the morning, he would commence a loud and shrill *whoo-whoo, whoo-whoo*, which he would keep up often from five to ten minutes, with an occasional intermission for the purpose of taking a full respiration; until, finally, apparently quite

exhausted, he would lie down and allow me to comb his head, and brush the long hair on his arms, and seemed delighted with the tickling sensation produced by the brush on his stomach and legs. He would turn from side to side, first hold out one arm and then the other, and, when I attempted to go away, he would catch hold of my arm, or coat-tail, and pull me back again to renew my little attentions to him, daily bestowed. If I called to him from a distance, and he could recognise my voice, he would at once set up his usual cry, which he sometimes gradually brought down to a kind of moan, but generally resumed his louder tone when I approached him. This animal was a male, but showed no particular marks of the sex, and, by a casual glance, might readily, if not examined more closely, have passed for a female. I have no idea of his age, but, judging from the size and length of his canine teeth, suppose him to have been advanced in life.

"The other large hooloc of which you have the cranium was also a male, and full grown; he was likewise obtained from the Garrow Hills in Assam, and presented to me by my friend Captain Davidson, of Goalpara. He came into my possession in the month of April, and died at sea in July, just before getting up with the Cape of Good Hope, of a catarrhal affection. His death probably might have been hastened from the want of proper food, such as is not procurable on long voyages. This animal was similar in habit and general characters to the one already described, and may have been eight or ten years of age, or perhaps older, as I am informed by the natives of Assam that they live to the age of twenty-five or thirty years.

"The young specimen was also alive in my possession; this is a female, and was brought to me by a Garrow Indian, at the same time the first was received, but died on the way from Goalpara to Calcutta, of a pulmonary disease following catarrh. This poor little creature, when first taken sick, suffered great pain and oppression at the chest, for which I prescribed a cathartic of castor-oil and calomel, and a warm bath, which seemed to afford

it some temporary relief, but she died after ten days' illness. The animal appeared delighted with the bath, and when I removed her from the vessel, she would run back again to the water, and lie down again till again removed; she was, like the others I had in my possession, gentle and pacific in disposition, very timid and shy of strangers, but, in less than a week from the time she was taken, would, if put down in an open space, quickly run to me, jump into my arms, and hug me round the neck: I supposed her to have been from nine months to a year old. I fed her on boiled milk, goat's milk diluted with water, and sweetened with sugar-candy; she also would sometimes partake of a little bread and milk with the older one; she soon learned to suck the milk from a small bottle, through a quill covered with a piece of rag."

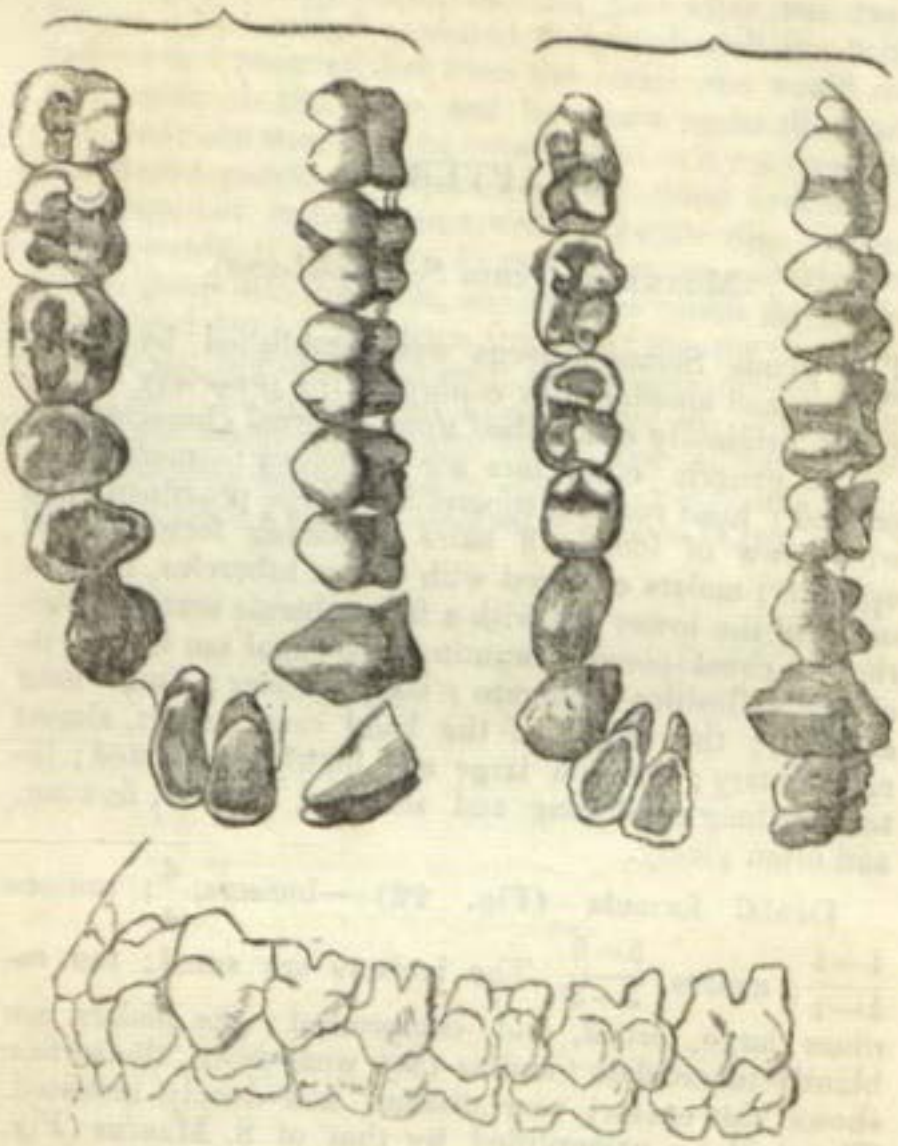
CHAPTER V.

Monkeys (Genus *Semnopithecus*).

The genus Semnopithecus was established by Fred. Cuvier, and anatomy has confirmed the propriety of this genus, originally established upon external characters.

The generic characters are as follow:—muzzle depressed; head round; superciliary ridge prominent, and with a row of long stiff hairs projecting forwards and upwards; molars crowned with obtuse tubercles, the last molar of the lower jaw with a fifth tubercle seated posteriorly; cheek-pouches wanting; laryngal sac large; ischiatic callosities moderate; body slender; limbs long and thin; the thumb of the hand small, short, almost rudimentary; stomach large and highly sacculated; intestines long; tail long and slender; fur soft, flowing, and often glossy.

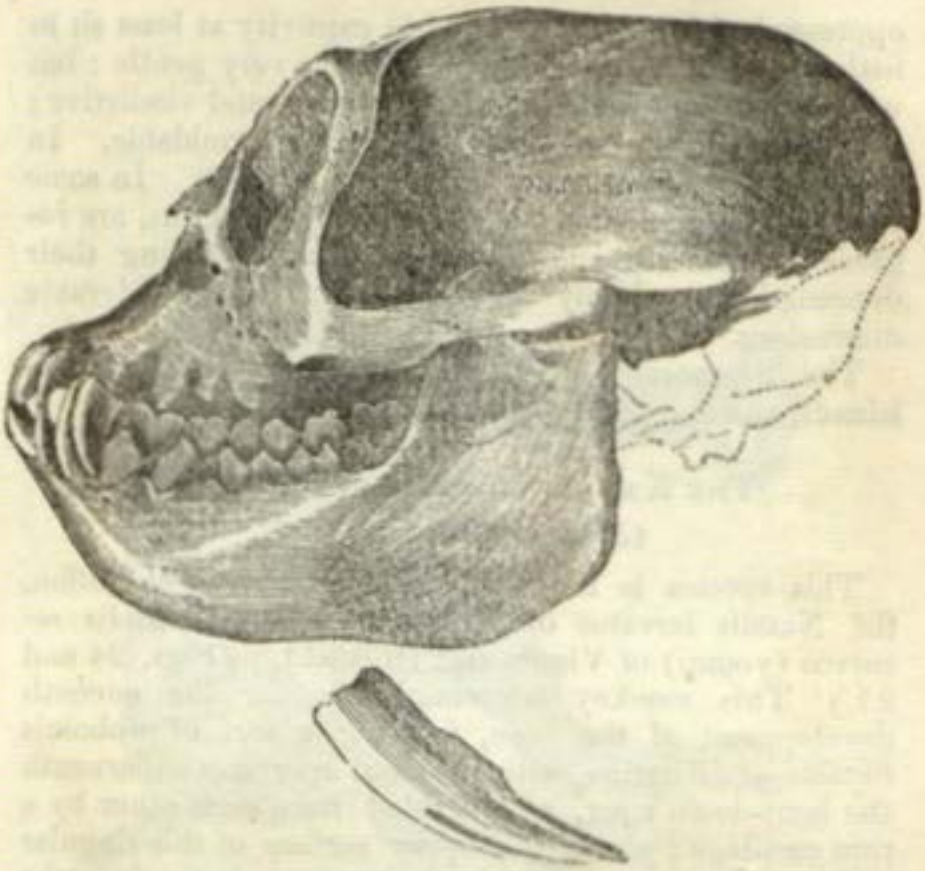
Dental formula (Fig. 22):—incisors, $\frac{4}{4}$; canines $\frac{1-1}{1-1}$; molars, $\frac{5-5}{5-5}$. The incisors are small; the canines large, broad, and compressed; the molars are bluntly tuberculate; and as they wear down, the surface shows the enamel very distinct and deeply indented. The skull, as exemplified by that of S. Maurus (Fig. 23), may be characterised as round, the orbits large and square, with an abruptly prominent superciliary ridge, and with boldly projecting margins; the interorbital space is broad, and the face depressed; the lower jaw, however, is very deep, and the space for the masseter muscle considerable; the chin recedes obliquely. The hands of the Semnopitheci are remarkable for their elongation and narrowness, and for the almost rudimentary condition of the thumb, which cannot be brought into



22.—Teeth of Monkey.

action as an antagonist to the fingers; the feet also are narrow and elongated, but the thumb is stout and well developed.

There are no cheek-pouches, as in the ordinary monkeys, but a large laryngal sac extends over the whole of the throat, communicating with the larynx (windpipe) by



23.—Skull and Canine Tooth of Monkey.

means of a large aperture. The stomach is sacculated in an extraordinary manner, the sacculi being in all probability preparatory receptacles for the vegetable aliment, which undergoes digestion in an elongated pyloric portion.

Cuvier calls the Semnopitheci slow monkeys; but it is only in a certain sense that they merit the title. The length and slenderness of the limbs and body detract, if not from their agility, at least in some degree from the abruptness of their movements, which have a more sweeping character than those of the Cercopitheci. Nevertheless, they leap and bound among the branches of their native forests with great ease, and to vast distances, their long tail acting as a director or balancer in their motions. Less lively, less petulant, and perhaps less inquisitive than the Cercopitheci, they appear at times as if

oppressed with melancholy and in captivity at least sit in listless apathy. While young they are very gentle; but when adult they become sullen, morose, and vindictive; and their long canines render them truly formidable. In their native regions they associate in troops. In some parts of India certain species, as the Entellus, are regarded as sacred, and tolerated notwithstanding their depredations. Many species attain to considerable dimensions.

The Semnopitheci are all natives of India and its islands, and the Malay peninsula.

The Kahau, or Proboscis Monkey (*Semnopithecus larvatus*).

This species is the Guenon à longue nez of Buffon, the Nasalis larvatus of Geoffroy, and the Nasalis recurvus (young) of Vigors and Horsfield. (Figs. 24 and 25.) This monkey is remarkable for the uncouth development of the nose, forming a sort of proboscis capable of dilatation, with the nasal apertures underneath the bent-down apex, and divided from each other by a thin cartilage; along the upper surface of this singular organ runs a longitudinal depression, indicating the division between the two canals. The ears, which are small, and the face, together with the palms, are of a leaden colour, with a slight tinge of yellow; the neck is short; the throat swollen from the enormous laryngal sac. On the sides of the neck and shoulders the hair is long compared with that of the rest of the body. The top of the head, the occiput, and the scapular portion of the back, are of a rich chestnut-brown; the sides of the face and a stripe over the shoulders are yellow; the general colour of the body is fine sandy-red. The crupper, the tail, the fore-arms, and legs are cinereous; the under parts are yellow; the tail is somewhat tufted at the tip. A full beard in the male advances forward, and curls up under the chin, almost to the long nose. In the young, regarded by some naturalists as a distinct species, the nose is somewhat recurved, and shorter than

24.—Kahau.

in the adult. That this distinction is not specific, as we ourselves formerly believed, we have fully satisfied ourselves by the examination of specimens in Paris. Fig. 26 represents the face of the adult kahau; 27, that of the young; 28, the nose of the adult as seen from beneath; 29 is the skull of the kahau: it has all the characters of a true Semnopithecus.

The male kahau is remarkable for size and strength, and, from the magnitude of the canines, must be a formidable animal. The female, however, is considerably smaller, a circumstance noticed by Wurmb, who says these monkeys "associate in large troops; their cry,

which is deep-toned, resembles the word Kahau. They assemble morning and evening, at the rising and setting of the sun, along the borders of rivers, and are to be seen on the branches of lofty trees, where they offer an agreeable spectacle, darting, with great rapidity from one tree to another at the distance of fifteen or twenty feet. I have not observed that they hold their nose while leaping, as the natives affirm, but I have seen that they then stretch out their paws in a remarkable manner. They are of different sizes; some, indeed, are seen which are not above a foot in height, but which yet have young."

The kahau, as far as is known with certainty, is a native only of Borneo; perhaps it is to be found also in Sumatra. M. Geoffroy states it to inhabit the Malay peninsula, but we are not aware that it has ever been seen there. The adult male measures two feet in the

25.—Kahau.

length of the head and body, and two feet four inches in that of the tail. It has never been brought alive to Europe.

26.—Face of adult Kahau.

28.—Nose of adult Kahau, seen from beneath.

27.—Face of young Kahau.

29.—Skull of Kahau.

The Entellus, or Hoonuman
(*Semnopithecus Entellus*).

The Entellus is a native of India and the adjacent islands. The general colour is straw-yellow, more or less inclined to ashy gray; superciliary hairs black; hands and feet washed with black; face black. Length of head and body of adult male, two feet two inches; of tail, three feet one inch. The adults are paler than the young. (Fig. 30.)

The Entellus, or Hoonuman, is held sacred in some parts of India, but not by the people of Mahratta, where it is called Makur; it occurs in large troops in the woods of the western Ghauts. In Lower Bengal, where it makes its appearance towards the latter end of winter (for it would seem that it migrates from the upper to the lower provinces, and vice versâ, in this part of India), the pious Brahmins venerate it, supply it with food, and zealously endeavour to prevent its molestation by Europeans. According to Dr. Fryar and others these monkeys, in Malabar, toward Ceylon, and at the Straits of Balagat, are deified. At Dhuboy (see Forbes's 'Oriental Memoirs') they are, if not worshipped, protected, from motives of humanity to the brute creation and a general belief in metempsychosis. According to the latter author there are as many monkeys as human inhabitants in Dhuboy, and the roofs and upper parts of the houses seem entirely appropriated to their accommodation. To strangers they are unbearably annoying.

In Dhuboy, if a man wish to revenge himself on his neighbour for any insult or injury, he takes the opportunity, just before the periodical rains (about the middle of June) set in, and when the tiles have been adjusted to meet that season, of repairing to his neighbour's roof and scattering over it a quantity of rice or other grain. This is soon discovered by the monkeys, who not only devour it, but pull up all the tiles in search of what has fallen through the crevices. At this critical juncture the rain commences; no one can be found to re set the tiles; the house is deluged, the furniture ruined, and

30.—Entellus.

the depositaries of grain, generally formed of unbaked earth, soaked through by the falling torrent.

The origin of the extreme veneration in which these animals are held by the Hindoos is involved in the obscurity of the early history of that wonderful people. It may probably have arisen from the doctrine of the metempsychosis, or transmigration of souls; for they firmly believe that the spirits of their departed friends pass into these and other sacred animals. But however this may be, it is certain that it has subsisted among them from the earliest periods. The superstitions and traditions of the Brahmins upon the subject hold a prominent place in the 'Ramayan,' one of the greatest epic poems which the genius of any age or country has produced, and of which we shall give a very brief outline in so far as it is connected with the animal whose history we are now relating. The chief subject of the poem appears to

be to celebrate the triumph of the good over the evil principle. These principles are typified by the Hindoo gods on the one hand, and a nation of demons on the other, who are called Rackschasas, and, who, under their king Ravana, are supposed to reside in the island of Lanka or Ceylon. The power of these demons had long been predominant over the earth; and, as the gods had made them invulnerable against the immortals, it followed that Ravana and his followers could only be subdued by a mortal adversary. The gods, compassionating the misery which prevailed on the earth, thus governed uncontrolled by the principle of evil, assemble a grand council, and agree to send Vishnu down in the form of a man to fulfil the decrees of fate by subduing the Rackschasas by human power. The incarnation is made in the person of Rama, the eldest son and successor to Dasharatha, king of Ayodhya (Oude), who thus becomes the hero of the poem, and, though present on earth in the character of Rama, does not cease, in the mean time, to maintain his station among the gods in the character of Vishnu. In this latter capacity, he creates invulnerable tribes of apes and monkeys, all under their proper kings and generals, (of whom the chief is Hoonuman,) and endowed with the courage and intelligence necessary to creatures destined to be the allies of his earthly incarnation Rama, in the glorious enterprise against Ravana. Passing over the numerous previous incidents of the story, we come at once to the cause and consequences of the war between Rama and the Rackschasas. Its immediate origin arose out of the rape of Sita, the wife of Rama, who is carried off by Ravana and confined in the fortress of Lanka. The hero upon this contracts an alliance with Hoonuman, the king of the monkeys, who undertakes to go in search of the lost princess; and, having at length discovered her in Lanka, hastens back with the information, and rejoins Rama at Ayodhya. A grand expedition is immediately prepared against Ravana; a bridge is built from the continent to the island of Lanka, over which the army of the allies is marched, and the two princes sit down before the

fortress. The feats of the warriors on both sides, and the conduct of the siege, fully equal, as we are assured by Oriental scholars, if they do not surpass, the corresponding portions of the Iliad, both in the interesting nature of the events and the force and beauty of the description. The fight is not confined to the surface of the earth, the air is likewise filled with combatants; Rama and Ravana at length encounter one another in personal combat, the heavens resound, the earth trembles beneath their desperate contest, till at length, after seven days' struggle, Ravana is finally overcome, his forces scattered or destroyed, and Rama and Hoonuman enter Lanka in triumph.

Throughout the whole of this war Hoonuman is, next to Rama, the most conspicuous hero opposed to the demons, and signalises himself by numerous acts of strength, courage, and agility. Among others of his enterprises, the Hindoos still consider themselves indebted to him for the introduction of the mango, which he carried off from the gardens of a celebrated giant whom he had overcome, and which still continues to be especially grateful to the palates of his descendants. Such an act of theft, however, committed during the progress of so sacred a war, naturally drew down upon the perpetrator the supreme anger of the gods, and it was to evince their displeasure that they placed a mark upon himself and his race, by blackening their face and hands, which continues to this day an unquestionable evidence of the truth of these statements. Another of Hoonuman's adventures had well-nigh terminated even more seriously. The hero conceived the masterly project of setting fire to the whole island of Ceylon, and thus destroying his enemies at once, by means of a tar-barrel tied to the end of his tail. The plan was no sooner conceived than it was executed; but, in the laudible act of thus burning out his enemies, Hoonuman's own tail caught fire also, a mischance upon which it appears the hero had not calculated. Stung by the pain, and fearful of losing this valuable and ornamental appendage altogether, he was about to extinguish the flame by plunging

it into the sea; but the inhabitants of that element, apprehensive of the fatal consequence which might ensue to themselves from such an unwarrantable proceeding, should the sea also be set on fire, remonstrated strongly with him upon the subject, and finally persuaded him to alter his intention. So far all Indian histories agree in the relation of this important event, but the subsequent part of the story is differently told by different authorities. Some learned pundits say that Hoonuman upon this stretched his tail out upon the shore, whilst his friend Sumunder threw water over it and extinguished the flame; others, on the contrary, affirm that he proceeded forthwith to the Himalayan mountains, and dipped it into a lake at the source of the sacred river Ganges; and we must confess that we are ourselves most inclined to credit the latter account, not only because it is the most worthy of such an heroic action, and most remote from the ordinary course of events, but because the lake in question bears the name of Bunderpouch, or "*monkey's tail*," to this very day, as if to confound the audacious sceptics who venture to question the truth of the legend. Moreover, all the world (in Hindustan) believe and affirm that a single monkey is deputed from the plains every year in the month of P'hagun, and, ascending the hills by way of Hurdwar, takes his station on the snowy peak of a high mountain which rises majestically over the sacred lake, and there watches incessantly till relieved in the following season. In the execution of this sacred duty, as may be naturally expected from the inhospitable nature of the country and climate, he undergoes many privations, and returns to Bengal wasted to a skeleton by watching and fasting: but what will not men and monkeys suffer in support of a favourite dogma!

From these superstitious traditions we learn to appreciate the force and origin of the high veneration and esteem which the hoonuman enjoys among the disciples of Brahma, wherever that system of worship extends. We see, in fact, that the animal is identified with the history of a great moral and religious doctrine, analogous to, if not identical with, our divine revelations

regarding the fall and regeneration of man, though disguised and disfigured under the garb of an exuberant and extravagant allegory. Nor is the veneration of the people confined to the hoonuman; we have seen that the hoonuman tribe was only the chief, the Brahmins, as it were, of the many others created by Vishnu for the purpose of assisting Rama in his enterprise of subduing the principle of evil; and we find that the bhunder (*Papio Rhesus*), and other species, enjoy the same degree of favour as the hoonuman itself. This favour is carried to the greatest height that religious fervour and zeal are capable of. Splendid and costly temples are dedicated to these animals; hospitals are built for their reception when sick or wounded; large fortunes are bequeathed for their support; and the laws of the land, which compound for the murder of a man by a trifling fine, affix the punishment of death to the slaughter of a monkey! Thus cherished and protected, the entellus abounds over every part of India, enters the houses and gardens of the natives at will, and plunders them of fruit and eatables without molestation: the visit is even considered an honour; and the Indian peasant would consider it an act of the greatest sacrilege to disturb or to drive them away. They generally take up their residence in the topes, or groves of trees, which the people plant round their villages for the purpose of screening them from the too ardent rays of the sun, but they are permitted to occupy the houses in common with the inhabitants when they feel disposed to change the scene, and are described by a late traveller as to be seen by dozens playing on the flat roofs, or perched with much gravity at the open verandas to observe the passing crowd.

The entellus, though a native of the hot plains of India, is by no means incapable of sustaining the rigours of a much more ungenial climate. It is well known that they ascend the Himalayas wherever they can find wood: they are found in Nepaul; and Turner even informs us that he met with them on the cold elevated plains of Bootan. The following extract is from the

works of that traveller, which will be found to contain much valuable information upon this subject:—"Wild animals," says he, "are so extremely rare in Bootan, according to my experience, and as far as my information leads me to include, that I must not pass by, without particular mention, a multitude of monkeys which we saw playing their gambols by the road-side. They are of a large and handsome kind, with black faces surrounded with a streak of white hair, and very long slender tails. They are the honoumaunt (*hoonuman*) of India, the largest in these regions, and the gentlest of the monkey tribe. They are held sacred by the Booteeas as well as by the Hindoos, and have obtained a distinguished place in their miscellaneous and multifarious mythology. I once saw a multitude of them at Muttra, in Hindoostan, which, I was informed, were daily fed on the produce of a stipend settled for their support by the Hindoo prince Madajee Sindia. I ventured amongst them with some diffidence, for they were bold and active, which rendered it difficult to avoid any sort of liberty which they might choose to take. Resentment was out of the question, for I was informed that they were at all times ready to unite in one common cause. One amongst them was lame from an accidental hurt, and it was surprising, in consequence of this resemblance to his patron, what partial attention and indulgence he had obtained, and of which indeed he seemed perfectly sensible. I have also noticed multitudes of the same species near Amboa, in Bengal."

The celebrated banian-tree on the banks of the Nerbuddah is tenanted by hosts of monkeys and myriads of snakes. The antics and gambols of the former are very amusing; if they ever suffer from the snakes, they repay the poor reptiles with interest. When they see one asleep, twined round a branch, they seize it by the neck, and descending run to the nearest stone, and on it commence to grind down the reptile's head, frequently looking at it and grinning at their progress. When convinced that its fangs are destroyed, they toss it, writhing

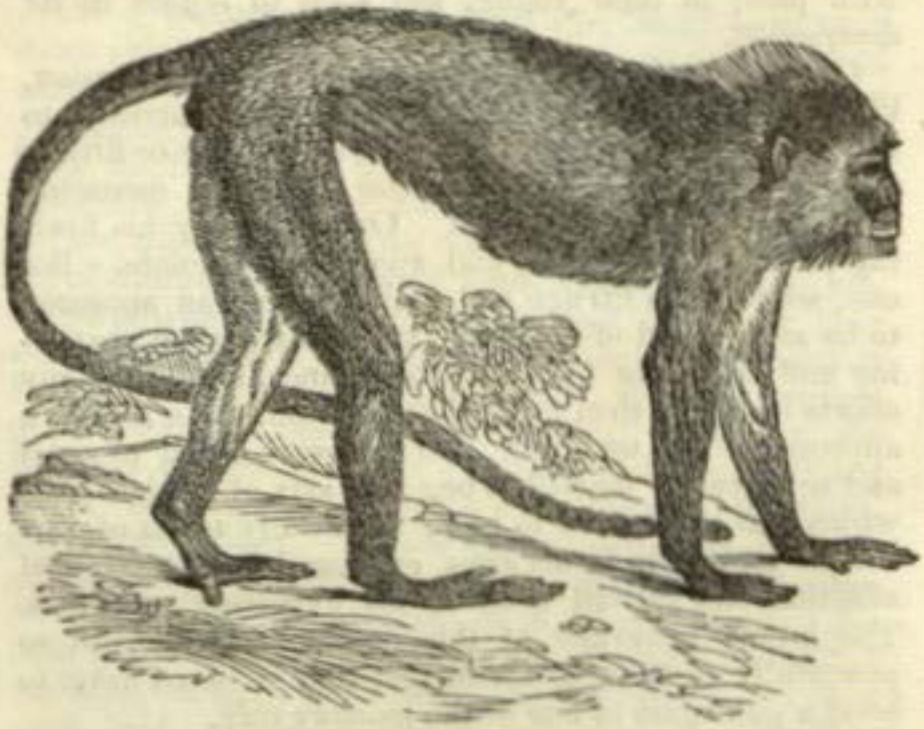
with pain, to their young, and seem to rejoice in its destruction.

Once a friend of Mr. Forbes, on a shooting excursion, killed a female monkey under this tree, and carried it to his tent, which was soon surrounded by forty or fifty of the tribe, who made a great noise, and with menacing gestures advanced towards it. On presenting his fowling-piece, they hesitated and appeared irresolute. But one, which from his age and station in the van appeared to be at the head of the troop, stood his ground chattering and menacing in a furious manner, nor could any efforts less cruel than firing drive him off. He at length approached the tent door, and by every token of grief and supplication seemed to beg the body of the deceased, which was then given to him: with every token of sorrow he took it up in his arms, embraced it with conjugal affection, and carried it off to his expecting comrades. The artless behaviour of this poor animal wrought so powerfully on the sportsmen, that they resolved never to level a gun again at one of the monkey race.

The Black-crested Monkey

(*Semnopithecus melalophos; Cimepaye*, or *Simpai*, of F. Cuvier, not Raffles).

This slender and beautiful species is a native of Sumatra. The head is small; the fur is long, soft, falling, and glossy; the top of the head is ornamented with a long compressed crest. The general tint is a fine bright golden rust colour, pure and rich on the limbs, but slightly washed with a dusky tint on the back; the abdomen and inside of the limbs are paler than the other parts. The crest is washed with a dusky tinge passing into black at the tip. A black or blackish line beginning over the eyes passes across the temples, and turning up over each ear merges into the colour of the crest. The skin of the face is dusky-bluish; the palms, soles, and nails are black. Length of head and



31.—Black-crested Monkey.

body, one foot eight inches; of tail, two feet eight inches. (Fig. 31.)

This species has not, as far as we know, been brought alive to Europe. It is said to be extremely active, and to tenant the remote parts of the forest; but of its exclusive habits nothing is known.

The Budeng (*Semnopithecus Marus*).

The Budeng is a native of Java: the general colour is black; the fur is long and silky; the hairs, diverging from the crown of the head, conceal the ears. The young after birth are of a pale reddish-yellow; first a gray discoloration appears on the hands; then this begins gradually to spread, extending to the shoulders and sides; as it spreads it becomes darker, and at last passes into black. The budeng, according to Dr. Horsfield, is grave, sullen, and morose: it is abundant in the extensive

32.—Budeng and Young.

forests of Java, where it associates in large troops, often of more than 50 individuals. On the approach of man they set up loud screams, and so violent and incessant are their motions, that decayed branches are often detached and precipitated on the spectators. The natives chase them for the sake of their fur, which is jet black, silky, and employed in riding equipages and military decorations. They are seldom kept alive, from the sullenness of their temper, which renders them anything but agreeable. While young they feed on the tender leaves of plants and trees; but when adult, on wild fruits of every description. (Fig. 32.)

The Douc, or Cochin-China Monkey

(*Semnopithecus nemæus*, F. Cuv.; *Pygathrix nemæus*, Geoffr.; *Laniopyga nemæus*, Ill.).

The Douc, a genuine example of the genus Semnopithecus, is one of the most beautiful, if not the most beautiful, of all the monkey race. We give the following description from a fine adult male in the Paris Museum:—The face is naked and of an orange colour, surrounded by full long whiskers of a glossy whiteness; the fur of the forehead is blackish, passing into delicate grizzled gray, which is the colour of the whole head, the back, the sides, and abdomen, each hair having annulations of white and dusky black to the number of eleven or twelve. From the eyebrows to the ears extends a pencil of chestnut red; the throat is white; a band, or gorget, of chestnut red extends across the top of the chest from shoulder to shoulder, succeeded by a band of black spreading over the top of each shoulder. The fore-arms, the tail, and a square patch above its root, are of a snowy white. The knees, the legs, and the tarsal portion of the feet are of a rich chestnut; the fingers, the toes, and the thighs are black; space round the callosities, white; callosities and naked skin of the palms, yellow. Fur, full and soft. Length of head and body to root of tail, two feet one inch. Native country, Cochin China. Fig. 33.)

33.—Cochin-China Monkey.

The douc has never been brought alive to Europe, and of its habits and manners we have but meagre information. Bezoar-stones are said to be frequently found in its stomach, a proof that it is sacculated, as in the other Semnopitheci, and also in the Colobi.

In the 'Magasin de Zoologie' ('Voyage autour du Monde de la Corvette La Favorite'), 1836, it is stated that "these animals live in troops, more or less numerous, in the vast woods which cover the country along the shore; and their manners are certainly far from being wild, as has been supposed. They are, indeed, little troubled by the presence of man, and often come near to the habitations of the Cochin-Chinese, who appear to offer them but little molestation, and do not attempt to draw from the beautiful fur of the doucs all the advantages which might be obtained from such a source. However, the incursions of the sailors of the corvette La Favorite in a very short time inspired these animals with such terror, and so rapid was their flight, that, numerous as they were, they were not procured without difficulty."

Though Buffon, on the authority of M. de Poivre, gave the name of douc to this species, as its native appellation, nevertheless it would seem that such is not the term by which it is known in Cochin-China. M. Rey, the captain of a French merchantman, who visited that country in 1819-20, informs us that these monkeys are there called Venam, which, he says, signifies "men of the woods." M. Rey had no difficulty in killing numbers of them, but it was not without great trouble that he succeeded in capturing living individuals. So numerous were they, that on one occasion, in the course of a few hours, a hundred were slaughtered. Desirous, however, of taking some alive, for the purpose of transporting them, if possible, to France, he set to work in earnest. In the attempt many were shot dead, and others wounded; and as they fell, the survivors collected round the dead and dying, endeavouring to carry them off into the deeper parts of the forest. Three young ones were ultimately secured, which held so fast round the bodies of their dams, that it required no small effort to detach

them. They did not reach France alive. M. Rey remarks that this species of monkey greatly resembles the orang-outan in stature and inoffensive manners, inhabiting the mountains and tops of the loftiest trees, and living on fruit. Its fur he describes as being exceedingly fine. Some of the males measured, when standing upright, about four feet four inches in height.

Genus Colobus.

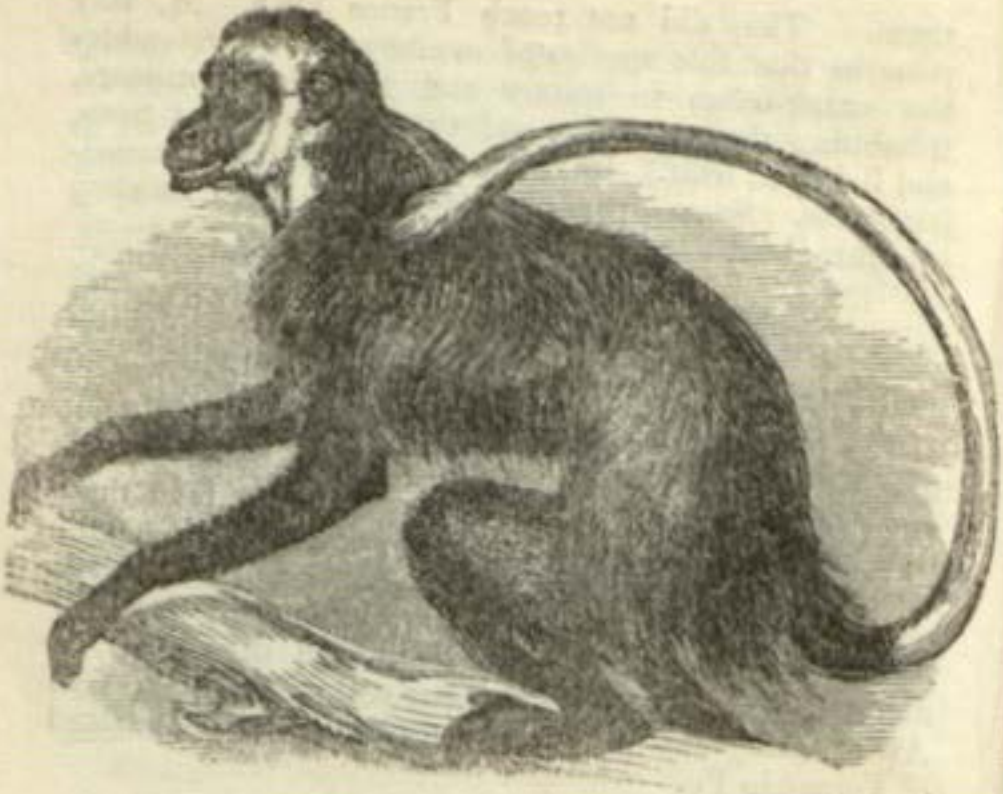
The monkeys of this genus are restricted exclusively to Africa: in all respects they resemble the Semnopitheci, but the thumb, which in the latter is small, is in these wanting or reduced to a mere nailless tubercle. What the Semnopitheci are in India, the Colobi are in Africa. Till lately only two species were known; but the list now contains ten accredited species, to which others will no doubt be added as we extend our researches in Western Africa, along the borders of the Gambia, and the island of Fernando Po.

The White-thighed Colobus

(*Colobus leucomerus*, Ogilby).

This beautiful monkey is a native of the banks of the Gambia. The fur is long, fine, silky, and shining; the general colour is black: a white frontal band spreads from the forehead over the whiskers on the sides of the face, and passing down occupies the throat, so that the face is surrounded with white, which is narrowest on the forehead. The hairs covering the thighs externally are white, more or less mixed with black, and gradually merging into the general hue. The tail is long and of a snowy white. (Fig. 34.)

The White-thighed Colobus has never been observed by European travellers in its native forests; the skins, mostly imperfect and wanting the head, are brought down by the negroes from the interior for the purposes



34.—White-thighed Colobus.

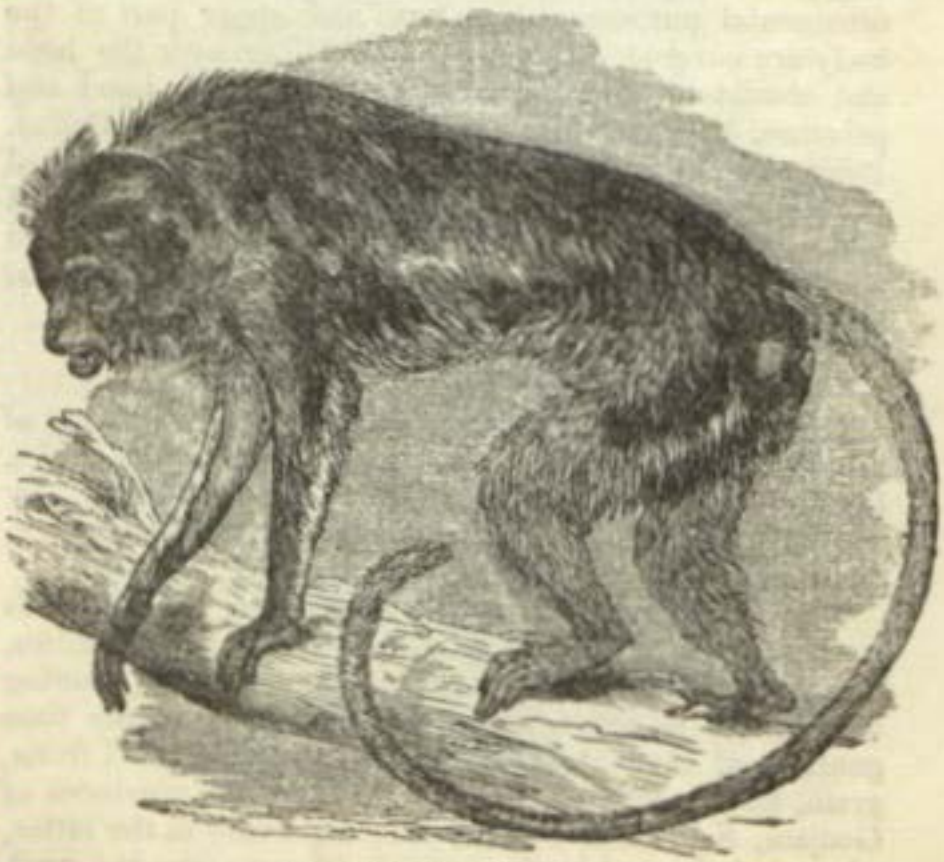
of barter. Nothing respecting its habits has been ascertained.

Temminck's Colobus

(*Colobus Temminckii*, Kuhl, 'Beitr.,' 1820).

The top of the head is black, as is also the occiput, which latter is slightly sprinkled with rufous: the back and the outside of the humerus and of the thighs are of a sooty black, with a tinge of slate-blue. The sides of the face, the chest, the sides of the humerus, and the whole of the fore-arms are of a rufous colour, which becomes deeper and brighter on the hands; the anterior part of the thighs, the knees, and the legs are also rufous, the feet being of a deeper hue: the throat, together with a line along the chest and abdomen, are

of a sandy-yellow; the middle of the chest and of the abdomen is abruptly of a dirty yellowish-white, varying to white; the tail at the base is black, with rufous hairs intermixed; it then assumes a chestnut red or rufous colour, becoming again darker at the extremity; an obscure dusky line runs along the whole of its upper surface. The naked skin of the face is brown with a tinge of red purple; the palms and soles are of a purplish black. It was in a very pale-coloured and aged female of this species, in the museum of the Zoological Society, London (26, Cat. ' Mamm.,' 1838), brought from the river Gambia, that Mr. Ogilby found his Colobus fuliginosus, afterwards termed by him C. rufo-fuliginus. (Fig. 35.)



35.—Temminck's Colobus.

The original of Kuhl's description was formerly in Bullock's museum, but is at present in that of Leyden. With respect to the native country of this species, it is now ascertained to be Gambia. Length of head and body, 2 feet 2 inches; of tail, 2 feet 6 inches. Nothing relative to the habits and manners of the species, as it exists in its native forests, has been collected.

Full-maned Colobus

(*Colobus polycomos*. Full-bottomed Monkey, Pennant; Guenon à Camail, Buffon).

The Full-maned Colobus is a native of the forests of Sierra Leone; it is called by the natives "the king of the monkeys," on account of the beauty of its colours, and the *camail*, which represents a sort of diadem. Its fur is in high estimation, and applied to different ornamental purposes. The head and upper part of the body are covered with long hairs falling over the head and shoulders, forming a sort of mane-like hood and pelerine, whence the name given to it by Buffon. Pennant's title is in allusion to the full-bottomed periwig worn in his day. These long hairs are mingled yellow and black; the face is brown; the body covered with short jet-black hair; the tail is snowy-white and tufted. (Fig. 36.)

The Guereza (*Colobus Guereza*).

General colour black; sides of the body and top of the loins ornamented with long pendent white hairs, forming a fringe-like mantle; face encircled by white; tail ending in a white tuft. Native country, South and West Abyssinia.

The Guereza, which is the Abyssinian name of this species, lives, according to Rüppell, in small families, tenanting the lofty trees in the neighbourhood of running waters. It is active and lively, and at the same time gentle and inoffensive. Its food consists of wild fruits, grain, and insects. It is only found in the provinces of Godjam, Kulla, and Damot, more especially in the latter, where it is hunted by the natives, who consider it a mark

36.—Full-maned Cololus.

of distinction to possess a buckler covered with its skin, the part used being that covered with the long flowing white hairs. Ludolph (in the 'Hist. Æthiop.,' lib. i.) has made express allusion to this animal, but he figures a different species under its name. (Fig. 37.)

Genus Cercopithecus.

In this genus are comprehended the ordinary long-tailed monkeys, or Guenons, of Africa. The muzzle is moderately prominent; the facial angle 45° to 50°; the head is round; the superciliary ridge moderate; the molar teeth are crowned with acute tubercles; the last molar of the lower jaw with only 4 tubercles; there are ample cheek-pouches; the laryngal sac is variable; ischiatic callosities moderate; general contour light, but vigorous; limbs muscular; stomach simple; tail long; the hairs composing the fur annulated.

The genus *Cercopithecus*, as here defined, will consequently comprehend all the *monkeys*, properly so called, which have cheek-pouches and perfectly developed thumbs on the anterior extremities. The first of these characters differentiates them from the semnopithecs, and the second from the colobs; their long tails and ischial callosities are common to the other monkeys, as the latter character is to the baboons and most of the apes. The distinction, so simple and appropriate, founded upon characters at once so obvious and so influential, accomplishes a great desideratum in the history of the cercopithecs, and places that genus on an equality with the semnopithecs and colobs, or any other natural group of simiæ, in point of logical precision and exclusive propriety of character. As for minor modifications, it has been already observed that the absence of the fifth tubercle of the last inferior molar tooth, hitherto supposed to be peculiar to the cercopithecs, is not a universal character of the genus. The tubercle in question was discovered on examining the skull of a mangabey (*Cercopithecus fuliginosus*), which died some time since in the Zoological Gardens; it will probably be found to exist likewise in the *collared mangabey*

37.—Guereta.

(*Cecopithecus Æthiops*), and other similar species among the larger-sized cercopithecs; and, upon the whole, the adoption of its absence, as an exclusive generic character in this group of simiæ, appears to have been the result of a too hasty and inconsiderate generalization. Were the existence of this tubercle a character of any importance, it might countenance the re-formation of M. Geoffroy St. Hilaire's suppressed genus *Cercocebus*, to include the Asiatic species which we have here dissevered from the old genus *Macacus*, and the African species of acknowledged cercopithecs, in which it has already or may be afterwards found; but it is neither sufficiently influential, nor even sufficiently general, for this purpose; its adoption would place the green monkey (*C. sabæus*), the white-throated monkey (*C. albogularis*), and their allied species, in a different group from the mangabey (*C. fuliginosus*), the macac (*C. cynomolgus*), and the bonnet-monkey (*C. sinicus*), and could only lead to arbitrary and artificial distinctions. The genus cercopithecus, therefore, as it is here defined and limited, admits of no further subdivision: it is founded upon important and influential modifications of structure, and is consequently entitled to be considered as a perfectly natural and scientific group.

The annulated nature of the fur is another secondary character which is very generally found among the cercopithecs, and serves at a glance to distinguish them from all other monkeys. It is equally common to the acknowledged African animals, and to those anomalous Asiatic species which have been heretofore associated with the true papios, in the arbitrary and artificial genus *Macacus*; and its existence in the latter is no small confirmation of their generic identity with the true cercopithecs, which has been here founded upon more important and influential characters. This annulated character of the fur produces a pleasing variety and intermixture of colours, and gives the animals a minutely-mottled or speckled appearance; it is not, however, confined to the cercopithecs, being equally found in the greater number of the cynocephals; but, with the exception of the few Asiatic species of the former genus, it is more peculiarly appropriate to

the African simiæ, though without being absolutely universal even among these. The colobs, and even some species of cercopithecs, such as the white-eyelid monkeys, resemble the Asiatic simiæ in the unannulated nature of their hair; but, generally speaking, this character will be found to be a ready practical distinction between the simiæ of the two continents.

The cercopithecs are of a lighter and more active make than the papios; their heads are rounder, their faces shorter, and their eyes less deeply sunk beneath projecting superorbital crests; their limbs are longer, their bodies more slender, and their whole proportions destitute of that massive and powerful structure which characterises the latter animals. Neither have they the gloomy, morose, and saturnine disposition common to all the baboons. They are capricious, petulant, and inconstant, rather than intentionally mischievous or malicious; they substitute vivacity, impetuosity, and restlessness, for the mild, gentle, and almost apathetic manners of the semnopithecs and colobs; and if they possess the activity and impetuosity of the papios and cynocephals, they are at the same time free from their sullen and intractable dispositions, and from the disgusting propensities which they sometimes display.

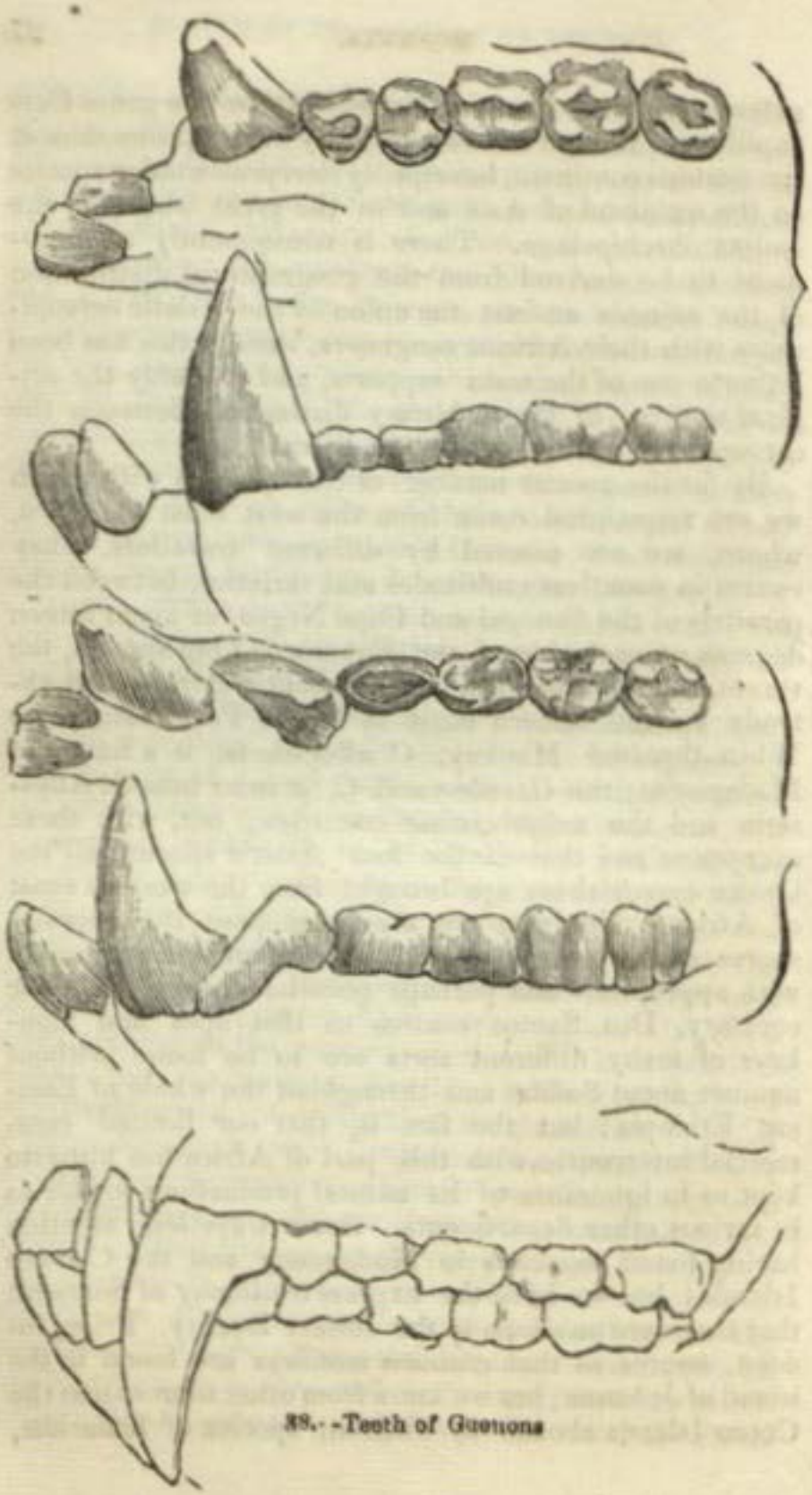
Like all the other monkeys, the cercopithecs are a pre-eminently sylvan race; they never abandon the forests, where they live in society under the guidance of the old males: they appear even to be extremely local in their habitat. Each tribe or family has its own particular district, into which individuals of other tribes or species are never allowed to intrude, the whole community uniting promptly to repel any aggression of this nature, either upon their territory or upon their individual rights. So strongly is this propensity implanted in the cercopithecs, that they carry it with them even into our menageries; nothing is more common or more pleasing than to see monkeys of the same species uniting to defend one of their brethren against the tyranny of a more powerful oppressor, or to resent any insult offered to a member of their little community. They are highly

gregarious, never leave the recesses of the forest, generally take up their quarters in the vicinity of a running stream, and seldom approach the habitations of men, or invade the cultivated grounds of the gardener and husbandman. It is, no doubt, this spirit of union and mutual defence which prompts the monkeys to collect round travellers, and, by their chattering, grimace, and every other means in their power, endeavour to prevent them from intruding into the little territory which they regard as their especial property. That their minds are capable of entertaining this idea of the right of property, all their actions plainly demonstrate; and the fact gives us a high idea of the superior order of their intelligence. They feed indiscriminately upon wild fruits, the seeds and buds of trees, insects, bird's eggs, &c., but appear, on the whole, to be less carnivorous in their appetites than either the apes or baboons—an observation, indeed, which may be extended to all the true monkeys.

The geographical distribution of the genus Cercopithecus has been generally believed to be confined to the continent of Africa; and, with the exception of the four species heretofore confounded with the papios, this is no doubt true. If, as is commonly admitted, we assume the Asiatic papios to be the legitimate representatives of the African cynocephals, and consider the colobs as the proper analogues of the semnopithecs, it will follow that the cercopithecs, which are still a pre-eminently African genus, have no appropriate representatives peculiar to the eastern continent or its dependent islands; but, the truth is, that these animals are no more exclusively proper to Africa than the papios are to Asia, or the cynocephals to the former continent; each of these genera having representative species in both localities, and the colobs and semnopithecs alone being confined to one or other. Thus the genus Cynocephalus, which has its head-quarters in Africa, is nevertheless represented in Asia by the *C. hamadryas*, which is found on all the mountains of Arabia; the genus Papio, pre-eminently an Asiatic group, is represented in the neighbouring continent by the *P. gelada* and *P. inuus*, the latter of which

extends even into Europe; and so likewise the genus Cercopithecus, though the vast majority of its species inhabit the western continent, has equally its representative species on the mainland of Asia and in the great islands of the Indian Archipelago. There is consequently no argument to be derived from the geographical distribution of the animals against the union of the Asiatic cercopithecs with their African congeners, though this has been hitherto one of the main supports, and probably the original motive, of the arbitrary distinction between the cercopithecs and the so-called macacs.

By far the greater number of cercopithecs with which we are acquainted come from the west coast of Africa, where, we are assured by different travellers, they swarm in countless multitudes and varieties, between the parallels of the Senegal and Cape Negro, or about fifteen degrees on each side of the Equator. One species, the vervet, *C. pygerythrus*, inhabits South Africa, and extends up the eastern coast as far as Port Natal; the White-throated Monkey, *C. albogularis*, is a native of Madagascar; the *C. ruber* and *C. griseus* inhabit Abyssinia and the neighbouring countries; but, with these exceptions and that of the four Asiatic species, all the known cercopithecs are brought from the western coast of Africa. Not that we are to suppose the opposite shores of this vast continent less abundantly supplied with appropriate and perhaps peculiar species. On the contrary, Dos Santos assures us that apes and monkeys of many different sorts are to be found without number about Sofala and throughout the whole of Eastern Ethiopia; but the fact is, that our limited commercial intercourse with this part of Africa has hitherto kept us in ignorance of its natural productions in this as in various other departments. Some travellers mention having found monkeys in Madagascar and the Comoro Islands; but we have the express testimony of Sonnerat that there are no simiæ in the former locality. Prior, indeed, assures us that *common monkeys* are found in the island of Johanna; but we know from other sources that the Cooro Islands abound in different species of lemuridæ,



89.--Teeth of Guenons

others by coming down upon the ground, others, in fine—and these were the greatest number—by jumping from one tree to another. Nothing could be more entertaining, when several of them jumped together on the same bough, than to see it bend under them, and the hindmost drop down to the ground, whilst the rest got farther on, and others were still suspended in the air. As this game was going on, I continued still to shoot at them; and though I killed no fewer than three-and-twenty in less than an hour, and within the space of twenty fathoms, yet not one of them screeched the whole time, notwithstanding that they united in companies, knit their brows, gnashed their teeth, and seemed as if they intended to attack me."

The Diana Monkey.

(*Cercopithecus Diana.*) Le Roloway ou Palatine of Buffon; the Palatine and Spotted Monkey of Pennant and Shaw.

The top of the head, the back of the neck, the shoulders, sides, and middle of the body are of a deep grizzled ashy gray; the hairs being annulated with white and black, and white at the tips. This gray tint darkens into black on the hands; the tail is gray, becoming black at the extremity: a crescent-shaped line of long white hairs, surmounting a band of dusky black, and resembling Dian's silver bow, has suggested the animal's name. The sides of the face are covered with long bushy white hairs, which merge on the chin into a long, thin, flat, and pointed beard. The front of the neck and the anterior part of the humerus are white; the latter with an abrupt line of demarcation.

On the middle of the back commences a mark of deep chestnut, which gradually widens as it descends to the root of the tail, forming an elongated triangle with the base on the crupper. A line of white, beginning at the root of the tail, runs obliquely along the outer side of each thigh to the knee; the lower part of the abdomen and the inner side of the thighs are abruptly of an orange-yellow, orange-red, or bright rust colour. The face is

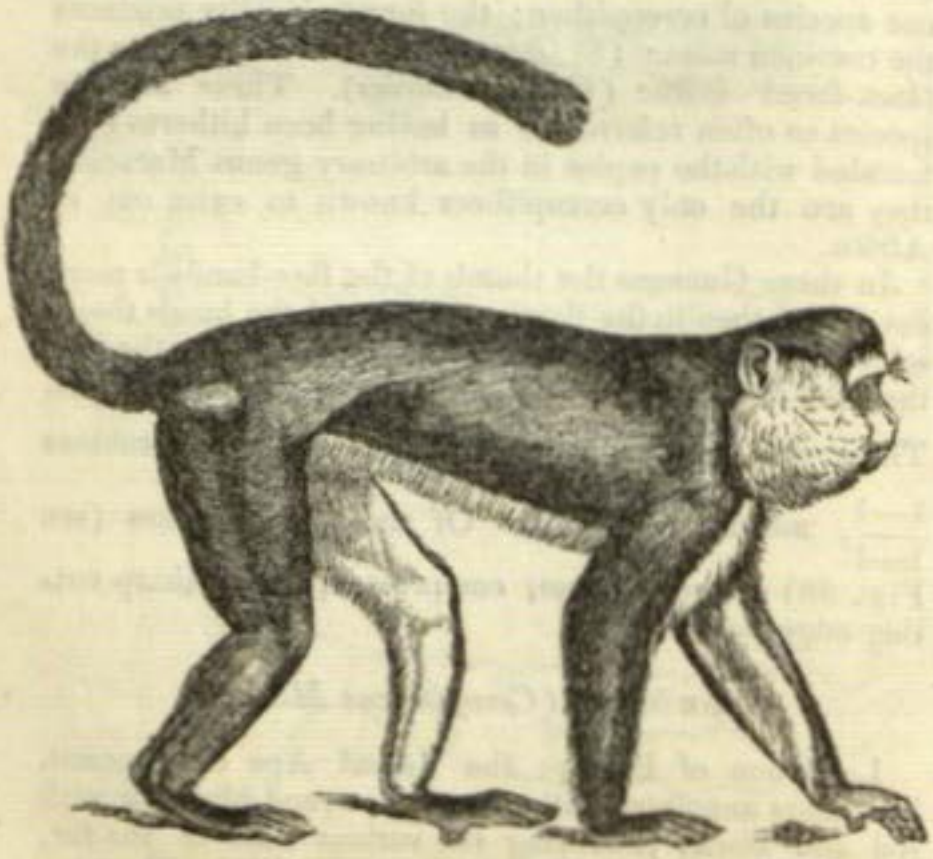
and it was probably from confounding the animals of these two kindred groups that the mistake originated. M. Desjardins again informs us that the *C. cynomolgus* is at present found wild in the Isle of France: but it is unquestionably a recent introduction, since we know that the species is an inhabitant of the island of Java; besides which, the old navigators assure us that there were originally no quadrupeds in the Mauritius, except rats and tortoises. The opposite shores of India, however, are inhabited by one, or perhaps two, species of cercopithecs. The common bonnet-monkey (*C. radiatus*) is found all along the coast of Malabar, from Bombay to Cape Comorin, if it be not replaced towards the south by the *C. pileatus*, a species not so frequently seen in collections, and of which the exact habitat has not been ascertained. Java and Sumatra, again, contain each one species of cercopithec; the former locality produces the common macac (*C. cynomolgus*), and the latter the black-faced macac (*C. carbonarius*). These are the species so often referred to as having been hitherto confounded with the papios in the arbitrary genus Macacus; they are the only cercopithecs known to exist out of Africa.

In these Guenons the thumb of the fore-hands is more developed than in the Semnopitheci, and the hands themselves are shorter and have better pretensions to the title than the long slender graspers of their Asiatic relatives. The dental formula is as follows:—Incisors $\frac{4}{4}$, canines $\frac{1—1}{1—1}$, molars $\frac{5—5}{5—5} = 32$. Of these the canines (see Fig. 38) are very large, compressed, with a sharp cutting edge posteriorly.

The Mona (*Ceropithecus Mona*).

La Mone of Buffon; the Varied Ape of Pennant. The hairs annulated with gray, yellow, and black, or with red and black, producing the various tints of the fur. Head of yellowish-olive colour; a black frontal stripe

above the eyebrows is surmounted by another of a whitish tint, more conspicuous in some individuals than in others; back chestnut brown; haunches and limbs externally dusky-black; tail black, with a white spot on each side of its origin on the crupper; under parts and inside of limbs white; whiskers very full, of a yellowish tint, slightly washed with black; skin of orbits and cheeks blush-purple; lips flesh-coloured; ears and head of a livid flesh-colour; length of head and body 1 foot 8½ inches; tail 1 foot 11 inches. The Mona is a native of Western Africa (Guinea), but of its manners in a state of nature little is known. It bears our climate better than most of its congeners: we have observed many adults in captivity, and always found them savage and irritable. (Fig. 39.)



39.—Mona.

The term Mone, or Mona, is of Arabic origin, and is the Moorish name for all long-tailed monkeys indiscriminately. From Northern Africa the term passed into Spain, Portugal, and Provence; nor has it stopped here: it is evidently the root of our word Monkey, which has exactly the same meaning, but which has been supposed to be a corruption of the word *monikin*, or *manikin*. To say no more, it seems going out of the way to seek in our own language for the name of a foreign animal, with which our Saxon forefathers, and indeed ourselves till at a comparatively late era, were unacquainted, and which, when imported, was imported with the name also by which it was known to the people from whom it was originally obtained.

The Green Monkey.

(*Cercopithecus Sabæus.*) The St. Jago Monkey of Edwards; le Callitriche of Buffon; Cerc. viridis of Hermann.

The general colour of the upper parts is olive-green, the hairs being annulated with black and yellow: on the outer side of the limbs a grayish tint prevails; the hands and feet are gray; the under surface of the body and inside of the limbs are white with a faint tinge of yellow. The hairs on the side of the face are full and long, and directed up towards the ears, spreading in the manner of a frill; their colour, with that of the hairs of the throat, is bright but delicate yellow. The tail is olive-green above, passing into yellow at the tip; the face, ears, and palms are black. (Figs. 40, 41.)

The Green Monkey is a native of Senegal and the Cape de Verd Islands. It is most probable that this is the species to which Adanson refers, under the name of Singe Verte, as being abundant in the woods of Podor along the Niger; and of which we have added his account in a subsequent page.

In captivity the green monkey is alert, active, and intelligent, but spiteful and malicious. F. Cuvier, however, describes an adult which was good-tempered, gentle,

40.—Green Monkey.

and familiar, and expressed pleasure on being caressed: such exceptions are rare.

This species is very frequently seen in menageries and exhibitions of animals: it is restless, lively, and petulant at all times; in youth full of gaiety and good-nature, but capricious, indocile, and full of malice in old age. It is one of the hardiest of the cercopithecs, and bears the vicissitudes of our changeable climate better than most other species; but, owing to its indocile and unfamiliar disposition, it is more admired for its colours and lively habits than for its social qualities. The individual described by M. F. Cuvier, though adult, was perfectly gentle and good-natured; it was fond of being scratched and petted by its acquaintances, seldom got into a rage or attempted to bite, and expressed its pleasure or contentment by a low gentle kind of purring noise. Of the many specimens which we have ourselves observed in the gardens of the Zoological Society and other British

menageries, we do not remember to have heard any attempt to emit a sound; and, indeed, for that matter, we have uniformly remarked that the cercopithecs in general are more silent than the papios and cynocephals; in this, as in other respects, resembling the semnopithecs, which, like them, are seldom known to emit any kind of sound in confinement. In other respects, the different individuals which we have seen varied as much in character and disposition as so many human beings would have done; and this is universally the case with individuals of all species, not of monkeys alone, but of every other kind of animal. There can be no greater fallacy than that which is involved in the too common practice of deducing the character and disposition of entire species from the observation of single individuals, and that generally in unnatural circumstances, if not labouring under actual disease. The characters and dispositions of animals, as well as the features and expressions of their countenances, are as varied and as diversified as those of men; and if we fail to perceive the nicer shades of difference, it is not because they do not exist, but because we have not enjoyed sufficient opportunities for observation and experience. Who does not know that every dog, horse, or ox, besides the broad and general nature of his kind, has an individual and appropriate character of his own, and differs in his social and moral qualities from other individuals of the same species? The shepherd, it is well known, can tell every sheep in his flock by the expression of its face; and the Irishman was not forsworn who deposed to the identity of his stolen pigs, though slaughtered and scraped, from the peculiar expression of their countenances.

Of the habits and manners of the callitrix in a state of nature, our only knowledge is derived from the following interesting passage contained in Adanson's Travels in Senegal. After having previously informed us that the trees were filled with *green monkeys*, and thus identified the species to which he refers with that at present under consideration, he proceeds: "But what struck me most was the shooting of monkeys, which I enjoyed within six

41.—Green Monkey.

leagues this side of Podor, on the landes (downs ?) to the south of Donai, otherwise called Coq ; and I do not think there ever was better sport. The vessel being obliged to remain there one morning, I went on shore to divert myself with my gun. The place was very woody, and full of green monkeys, which I did not perceive but by their breaking the boughs and the tops of the trees, which they tumbled down on me ; for in other respects they were so silent and nimble in their tricks that it would have been difficult to perceive them. Here I stopped and killed two or three of them before the others seemed to be much frightened ; however, when they found themselves wounded, they began to look about for shelter, some by hiding themselves behind the larger boughs,

long and triangular, and, together with the ears, intensely black. Length of head and body, about 2 feet; of tail, 2 feet 4 inches. (Fig. 42.)

42.—Diana Monkeys.

This richly-coloured monkey is a native of Guinea, Congo, and Fernando Po. It is very rarely brought alive to Europe; nor indeed are its skins common in collections. We have observed only one specimen in the Paris museum, from the Gold Coast. Three specimens are in the collection of the Zoological Society, London. Of these, one died some years since in the menagerie of the Society: the other two were brought from Fernando Po Of the habits of the Diana in its own forests we know nothing. While young in captivity it is gentle, active, familiar, and very playful: its frontal crest, and "beard of formal cut," give a singular aspect to its physiognomy. The latter it has been observed to be solicitous of keeping

neat and clean, holding it back when about to drink, lest it should dip into the fluid. Considering the range of country through which this species is spread, the scarcity of this monkey in the menageries and collections of Europe is rather surprising.

The Lesser White-nosed Monkey.

(*Cercopithecus Petaurista.*) Blanc-nez of Allamand; Ascagne of F. Cuvier and Audebert.

There are two distinct species of White-nosed monkey, both natives of the forests of Guinea: of these one is the Hocheur of Audebert, the Winking Monkey of Pennant, the Cercopithecus nictitans of Geoffroy. The general colour of the Hocheur is black, freckled with white; the limbs are black; the whiskers, of the general colour, are ample; the chin is beardless; the nose, which is broad and elevated, is white from between the eyes to the nostrils.

The Lesser White-nosed Monkey, or Blanc-nez (Fig. 43), has only the lower half of the nose white, but this colour extends to the adjacent part of the upper lip; the face is covered with short black hairs, those on the cheek-bone having a fulvous tinge; the whiskers and beard are white, as also the throat, chest, and abdomen. A streak of black hair runs from the face below the ear, and loses itself on the top of the shoulder; and between this black line and the hairs of the head a conspicuous streak of white runs below the ears. The general colour of the back and head is reddish olive-brown; the hairs being ringed with fulvous and black. A band across the forehead above the eyes, and a band traversing the top of the head from ear to ear, are black; a gray tint prevails on the limbs, deepening to dusky black on the hands and feet. Tail dusky gray above, white beneath. Length of head and body, about 1 foot 4 or 5 inches; of the tail, 1 foot 9 or 10 inches.

This species is common in Guinea, and is frequently brought to Europe, but does not well endure our uncongenial climate. It is gentle, graceful, and intelligent,

43.—The lesser White-nosed Monkey.

but not without a mixture of the caprice and petulance of its race. The lightness and agility of its actions, its playfulness, and beauty, certainly render it very attractive; but it dislikes to be taken hold of or interfered with: so that, though as docile as most monkeys, it becomes familiar only to a certain extent. A Blanc-nez in the possession of Allamand, though usually good-tempered and sportive, became angry if interrupted while feeding, and also when mockery was made of it. We have observed a sensitiveness to ridicule or mockery in other species, and a strong desire to resent the insult, which is evidently felt.

The Collared White-eyelid Monkey.

(*Æthiops torquatus.*) Cercocebus Æthiops, Geoff.; Cercopithecus Æthiops, Kuhl.

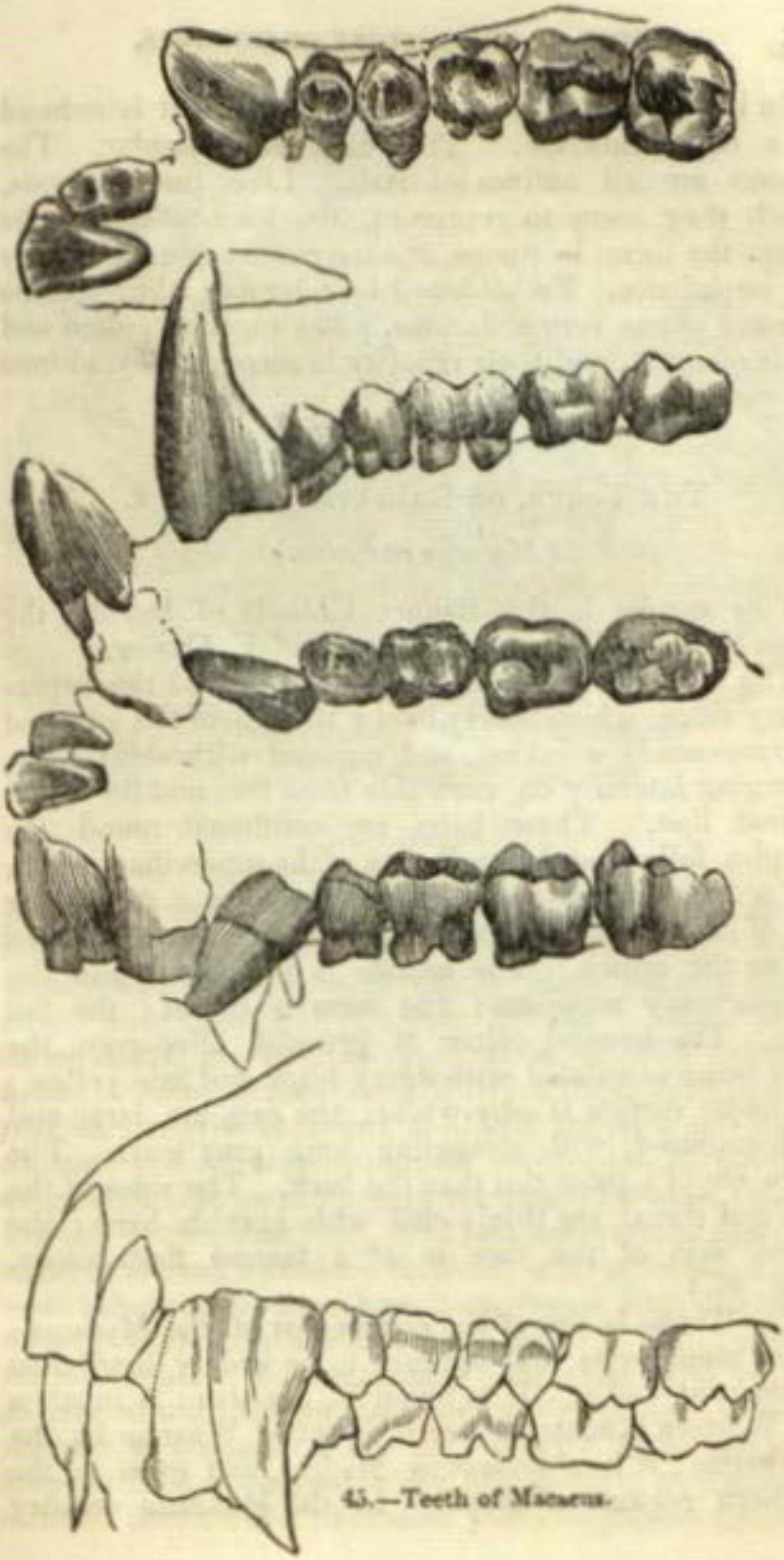
In Martin's 'Natural History of Quadrupeds,' p. 508, a subgenus termed Æthiops is there proposed for two,

if not three, closely-allied species (the White-eyelid Monkeys), which differ on tangible grounds from the Cercopitheci, namely, in the presence of a fifth tubercle on the last molar of the lower jaw,* the magnitude of the upper middle incisors, and the hairs being destitute of annulations. For these monkeys, with other Guenons by no means closely allied to them, Geoffroy proposed his genus Cercocebus—a genus, the indeterminate characters of which, from the incongruity of the species thus brought together, was perceived by Desmarest, who, unwilling to sink it, endeavoured to reform it by the removal of some species and the addition of others: so that the genus as instituted by the one naturalist, and that remodelled by the other, were two different assemblages, and the characters of both equally vague and indefinite. It therefore seems best to sink the genus altogether, and place the White-eyelid Monkeys in a separate subgenus, to which the title Æthiops has been already applied.

The Collared White-eyelid Monkey (the Mangabey à Collier of Buffon and F. Cuvier), like the Sooty White-eyelid Monkey, is a native of Western Africa. The general colour is fuliginous or sooty-black, passing into black on the limbs and hands. The top of the head is chestnut-coloured; the whiskers, throat, and collar round the neck are white. The upper eyelids are conspicuously dead-white. (Fig. 44.)

The native habits of this monkey are not known: in captivity it is gentle, active, and familiar, and testifies by a sort of jabber and grin its recognition of those for whom it has a partiality. We have observed many individuals, and have found them to be among the most diverting of their race. They would play a number of amusing tricks in order to attract the attention of bystanders, and gain a share of the nuts and biscuits they saw dealt out to their companions; and they testified their gratitude by a quick vibratory movement of the lips, producing a jabbering noise. When offended their ill-temper was

* See 'Proceedings of Zoological Society,' London, 1838, p. 117.



45.—Teeth of Macacus.

again it is short and slender; and in others it is reduced to a mere tubercle. The ears are angular. The Macaci are all natives of Asia. Like the Guenons, which they seem to represent, the long-tailed species tenant the forest in troops, and are remarkable for activity and impudence. Emboldened by tolerance, they become in many places very audacious, pillaging the gardens and fields of grain, and their rapacity is seconded by address and cunning.

The Toque, or Radiated Macaque.

(*Macacus radiatus.*)

This species is the Bonnet Chinois of Buffon; the Simia Sinica of Gmelin; the Toque of F. Cuvier.

The forehead is abruptly depressed behind the superciliary ridge, which is very bold; the skin of the forehead is transversely wrinkled, and covered with short hairs, diverging laterally on each side from the middle longitudinal line. These hairs are continued round the temples, following the projection of the superciliary ridge, and occupying the space before the ears. A circular cap of rather long hair radiating from the centre is seated flat on the crown. The muzzle is prominent, and the physiognomy malicious; the form is robust; the tail long. The general colour is greenish olive-gray, the hairs being annulated with dusky-black and pale yellow; the under surface is ashy-white; the ears are large and flesh-coloured, with straggling long gray hairs. The limbs are of a paler tint than the back. The sides of the face and throat are thinly clad with grayish hairs; the naked skin of the face is of a tanned flesh-colour. (Fig. 46.)

The Toque is one of the commonest of the Macaques in our menageries, and appears to be widely distributed throughout India. It is found in Malabar: it inhabits the Western Ghauts, where it is called Waanur by the Mahrattas: it is abundant in Madras, and even in the southern regions of Nepâl. In the Mahratta country

46.—Toque.

portions of the mighty forest are, as Mr. Elliot states, left untouched by the axe or knife, forming an impervious shade for the growth of the black pepper, cardamom, and maripalm (Caryota urens). These parts, called kans, are the favourite resort of wild animals: here the Entellus abounds, and its loud and piercing cries may be frequently heard sounding through the dense foliage: the radiated Macaque, also, which is common over the whole country, may be seen in troops, tenanting the wildest jungles. It is not, however, confined to these woodland recesses: it lives, as if at home, in the most populous towns, where it carries off fruit and grain with the greatest coolness and address, and commits incessant petty depredations. The examples of this species which we have seen in captivity have been all remarkable for intelligence and activity, and equally so for petulance when young, and irascibility—even ferocity—when adult. We have seen them display every mark

of rage against persons who did not appear to give any definite offence. Numbers of these animals are kept in the Hindoo temples, where they are exceedingly jealous of intruders of any other species, which they drive forth from their asylum with the utmost hostility—a circumstance witnessed by M. de Maisompré in the enclosures of the pagodas of Cherinan.

No monkey affords greater amusement in menageries than the Toque; and the imperturbable gravity with which it accompanies all its actions is truly diverting. When young, it is sufficiently gentle and familiar, and may be instructed to perform every action that monkey genius is capable of aspiring to. It is indescribably droll to see these animals, when two or three of them are together, hugging and nursing each other, or kindly performing the office of combs, and searching through one another's fur, with the most laudable assiduity, for fleas and other vermin, which they take effectual means to prevent from giving further annoyance, in the mode equally adopted by the Hottentots, Esquimaux, and Australians, in similar circumstances,—namely, by forthwith eating them on the spot. Happy, no doubt, does the monkey consider himself whose good fortune it is to pounce upon a fine fat jumper, and he evidently devours it with the gusto of an accomplished gastronome. But the penchant of the Toque for nursing is not confined to its own species: when only one of these animals happens to be possessed by a menagerie, a kitten is very frequently given to it as a companion, and nothing can exceed the ridiculous caricature of humanity which it presents,—petting, nursing, and hugging the unfortunate kitten, at the imminent risk of choking it, with all the gravity and fondness that a little child will display in similar circumstances. Thus it will continue for hours together, to the manifest annoyance of the object of its solicitude, who, however, is in no condition to escape from the loving embrace, as the least attempt at resistance to the arbitrary will of the Toque is followed by prompt and sometimes severe punishment. We recollect in one instance witnessing a singular and laughable instance of this de-

scription. A Toque exhibited in a travelling caravan had a cat of considerable size to keep it company in its confinement. Puss, at the moment when our story commences, happening to feel somewhat drowsy, as cats will sometimes do, even in the presence of their betters, had retired to the back and quietest part of the cage, and composed herself to have a comfortable nap. Pug, however, was neither inclined to sleep himself, nor to let any one else do so within his range; he therefore selected a stiff straw, and amused himself by poking it up the cat's nose, which, after bearing this annoyance for some time with exemplary stoicism, at length lost all patience and gave her tormentor a smart scratch on the face with her not very velvet paw. This was more than the offended dignity of the monkey could brook: he seized the unfortunate culprit by the tail, and, flying like lightning to the top of the cage, there held her suspended between heaven and earth, like Mahomet's coffin, and with something worse than the sword of Damocles over her, whilst he inflicted upon her such a series of cuffs and pinches as no doubt warned her in future to be on her better behaviour.

But though, generally speaking, thus gentle and amusing in youth, the Toque is extremely irascible, and ever ready to take offence on the slightest occasion. This is particularly apparent when it is tantalized by offering and then withholding any species of food; and it is ludicrous upon such occasions to witness the serious anger which is depicted in its countenance, whilst it pouts with its lips, looks fixedly in your face, and mutters a low complaint, or suddenly darts out its hand and endeavours to scratch you. Even when not thus provoked, however, it is always precipitate in its actions, and snatches with hasty rudeness the food which is offered to it, never pausing to eat it at the moment, but stowing it away in its capacious cheek-pouches, and begging with pouting lips and outstretched arms for a further supply. So long as the visitors continue to give, it never refuses to receive; and it is only when the offerings are exhausted that it retires to a corner, and, emptying its

reservoirs with the assistance of the bent knuckles pressed upon the outside of the cheeks, devours their contents piecemeal, and is ready to fill them again from the liberality of the next comer.

When adult, the Toque becomes excessively sullen and morose, and the deeply sunk eyes, and projecting superorbital crests, give him an aspect of gloomy ferocity which accords but too truly with his natural disposition, and warns the visitor against attempting a familiarity which is not likely to be reciprocated.

We know little of the habits of the Toque in its wild state, if it be not the species mentioned by Buchanan in his admirable 'Journey through Mysore, Canara, and Malabar,' and which he describes as a great nuisance to the gardens and plantations of the natives. "The monkeys and squirrels," says he, "are very destructive, but it is reckoned criminal to kill either of them. They are under the immediate protection of the *dáséries*, who assemble round any person guilty of this offence, and allow him no rest until he bestows on the animal a funeral that will cost from one to two hundred fanams, according to the number of *dáséries* that have assembled. The proprietors of the gardens used formerly to hire a particular class of men, who took these animals in nets, and then by stealth conveyed them into the gardens of some distant village; but as the people there had recourse to the same means of getting rid of them, all parties have become tired of this practice. If any person freed the poor people by killing these mischievous vermin, they would think themselves bound in decency to make a clamour, but inwardly they would be very well pleased; and the government might easily accomplish it by hiring men whose consciences would not suffer by the action, and who might be repaid by a small tax on the proprietors."

The Bhunder, or Rhesus.

(*Macacus Rhesus.*) This is the Patas à queue courte of Buffon; the Maimon or Rhesus of F. Cuvier.

The general colour of the fur is olive-green, with a wash of brown on the back; the crupper and thighs externally orange-red; the face orange-red; the callosities, and naked skin around, intense red: the tail short. The skin of the throat and abdomen is loose, and usually hangs in folds. (Fig. 47.) The Bhunder is a native of

47.—Bhunder.

India, and is very abundant on the banks of the Ganges, being greatly reverenced by the Hindoos. It swarms not only in the woods, but in towns and villages, tenanting

the tops of the houses. It would appear from the account of Mr. Johnson, in his 'Indian Field Sports,' that in some places ample provision is made for the support of these animals. At Bindrabun, a town near the holy city of Muttra, more than a hundred gardens are cultivated and all kinds of fruit grown, at the expense of pious and wealthy natives, for their supply. Not content with remaining outside the houses, they boldly invade the rooms and steal everything that tempts them, such as bread, sugar, fruit, &c., ransacking every place in their search. To injure one is not only to bring down the vengeance of the whole host, but, what is more, of the besotted natives, as was experienced by two young officers who imprudently fired while on a sporting excursion at one of these monkeys. They were mounted on an elephant, and no sooner was the profane assault committed than the inhabitants of Bindrabun rose incensed to the highest degree: they pelted the gentlemen and the elephant with bricks and stones, and drove them into the river: the two officers and the driver were drowned; but the elephant landed about six miles lower down the river, and was saved. In the district of Cooch Bahar a large tract of country is considered by the natives as in part the property of these monkeys; and therefore, when they cut the grain, they leave a tenth part piled in heaps for these creatures, which come down from the hills and carry off their allotted tithes.

In captivity the Rhesus, or Bhunder, displays cunning and sagacity, but is at the same time obstinate, savage, and irascible. It is, however, one of the few species of the Simia tribe known to breed in confinement, and of the occurrence of an event of this kind M. F. Cuvier has given the following interesting account:—

"The young *rhesus*," says he, "of which I have here given a figure, was produced on the 18th of December, 1824, with all its senses perfectly developed. I could not exactly ascertain the period of gestation, but presume it to have been about seven months, which was about the period I had remarked in the instance of other

species. Immediately after being born, this young rhesus fixed itself to the belly of its mother, holding her firmly by the fur with its hands and feet, and applying its mouth to the nipple, which it never quitted for fifteen days, unless to change from one breast to the other, never altering its position during the whole of that time, sleeping when the mother was quiet, but never quitting its hold even when asleep. Thus passed the first fifteen days of its life, during which it made no movements, except those of its lips and tongue for the purpose of sucking, and of its eyes to see; for, from the first moment of its life, it appeared to distinguish objects and to regard them attentively: it followed with its eyes the different movements that were made around it, and nothing announced the necessity of touch to inform it, not only of the effort which would be required to reach a distant body, but of the greater or less distance of these bodies from itself.

"The care and attention of the mother, in everything relating to the nurture and preservation of her infant, were as devoted and as provident as can be well imagined. She could never hear a sound or observe a movement without having her attention excited and her solicitude roused for its protection; its weight never seemed to impede her movements, which she managed so adroitly, that, in spite of their complication and variety, its safety was never for a moment endangered. At the end of about fifteen days the little creature began to detach itself from its mother; and, from its very first attempt, displayed an address and a precision which could result neither from exercise nor experience, and which proved that all the theories which have been propounded, as to the absolute necessity of touch for exercising certain functions of sight, are illusory and unfounded. At first it fixed itself to the vertical bars of its cage, and climbed and descended them at will; but the mother's eye always followed it, and her hand was ever ready to support or assist it: after thus enjoying its liberty for a few seconds, it returned to its original position. At other times it would advance a few steps along the

bottom of the cage, and from its first attempts I have seen it voluntarily precipitate itself from top to bottom, and light with the utmost precision on its feet, then leap upon the bars and seize them with an exactness which at least equalled that of the mother herself. Presently the mother might be seen at times attempting to get rid of the trouble of nursing, though she never forgot her solicitude for the young one's safety, for no sooner did danger threaten than it was again pressed in her arms, and the burthen and the trouble equally forgotten.

"In proportion as its powers were developed, the leaps and gambols of this little creature became perfectly surprising. I took a pleasure in examining it during these moments of gaiety, and I may say that I never knew it to make a false movement or a false calculation, or fail to arrive with the utmost precision at the very spot it intended. From this observation I had an evident proof that a particular instinct guided it in judging of distances, and determining the degree of force necessary to accomplish a particular action. It is certain that, with the intelligence of man, this animal would have required numerous trials and multiplied attempts to accomplish what it here did perfectly well from the first, yet it was now scarcely a month old.

"It was only at the end of about six weeks that a more substantial nutriment than milk became necessary for the support of this young animal; and then it was that I observed a new fact in the intellectual nature of these creatures. This mother, formerly filled with such tenderness, and animated with such solicitude,—which supported her young one constantly at her breast, and exhibited so much maternal love and affection that one would have imagined her more likely to feed it from her own mouth,—yet would not permit it to touch the least morsel of food, deprived it of the fruit and other things given to it, drove it away whenever it approached the vessel containing their common provisions, and hastened to fill her cheek-pouches and hands that nothing might escape her. Nor could these actions be traced

to any other sentiment than pure gluttony; she could not have been desirous of compelling it to suck, for her milk was already dried up, nor could she have feared that the aliment would injure the young one, for it sought it of its own accord. Hunger, however, made this little creature extremely bold and adroit; the blows of the mother, which, indeed, were never very heavy, were disregarded; and, whatever care she took to drive it away and possess herself of the whole, it always contrived to steal a portion, which it retired to devour in the farthest corner of the cage, always taking care to turn its back to the mother,—a precaution by no means useless, since I have seen her more than once quit her own place, and go to the other end of the cage to take out of its very mouth the morsel it was eating. Except at meal-times, the mother never displayed these unnatural feelings, but attended to all the wants and actions of her offspring with the utmost care and affection. The little creature itself perfectly distinguished those who fed and caressed it, and showed no signs of malice, or any other character of the monkey, except in its vivacity and address."

The Wanderoo.

(*Macacus Silenus.*) Ouanderou and Lowando, Buffon; Lion-tailed Baboon, Pennant and Shaw.

The general colour of this species is black; the tail is of moderate length and tufted at the tip; the face is encircled by a mane of long hairs of a whitish or light ash colour, sometimes pure white; the face is black; the callosities flesh-coloured. (Fig. 48.)

This large and powerful Macaque is a native of Malabar and Ceylon. Knox, in his Historical Relation of Ceylon, evidently describes this animal. They are, he says, "as large as our English spaniel dogs, of a darkish gray colour, with black faces, and great white beards from ear to ear, which make them show just like old men. They do but little mischief, keeping in the woods, eating only leaves and buds of trees; but when they are

naught they will eat anything. This sort they call in their language Wanderows." (Fig. 49.)

49.—Wanderoo.

In captivity, judging from the specimens we have seen, the Wanderoo is surly and unsocial, and disposed to tyrannise over the other inmates of its compartment. Of its manners in a state of nature we have no detailed account.

Genus Cynocephalus.

In the massive Baboons composing this genus we find the characters of the Macaques exaggerated, so to speak, to their ultimatum, and consequently impressing us with an idea of disgradation in the scale; we recognise an approach in form and aspect to the Carnivora, and on reflection appreciate the distance to which we have receded from the Chimpanzee.

Of large stature and prodigious force, the Baboons, though never voluntarily assuming an erect attitude, are

to a great degree terrestrial, inhabiting rocky and mountain districts, rather than forests and woodlands. The head is heavy, not from cranial development, but from that of the face, which is prolonged and thick, resembling that of a mastiff, the muzzle being truncated, and the nostrils at its extremity.

The maxillary bones are more or less swollen, and the superciliary ridge beetles over the scowling eyes, giving an expression of brutal and revolting ferocity.

The neck and shoulders are voluminous, the chest is deep, and the great power and equal proportions of the limbs are favourable for quadrupedal movements. They climb trees with facility, but prefer craggy rocks and precipices, among which tney dwell in security. In temper they are morose and daring, and their physical powers render them formidable. It is only during youth that they are tractable. They congregate in troops, and are bold and skilful in their predatory excursions.

To bulbous roots, berries, and grain, the Baboons add eggs, scorpions, and insects, as their diet; nor is it quite clear that they are not carnivorous as well as herbivorous. In domestication they relish cooked meat, and even devour raw flesh with avidity. They do not arrive at maturity till the seventh or eighth year of their age.

All the Baboons are African: one indeed, the Hamadryas, is found in the mountain districts of Arabia, as well as in those of Abyssinia, and was well known to the Egyptians.

The Chacma (*Cynocephalus porcarius*).

The Singe noir of Le Vaillant; the Choak-Kama of Kolbe; Papio comatus, Geoffroy.

About the shoulders and neck the hairs are long and mane-like; the general colour is grizzled dusky black, with a tinge of olive-green; the face is black, with a hue of violet; the upper eyelids are white; the tail descends to the hock-joint, and is carried arched yet drooping down, as in Figs. 50 and 51. The male attains the size of a large mastiff, and is very formidable. Length of

50.—Chacma.

adult nearly 3 feet, exclusive of the tail, which measures about 27 inches. (Fig. 52.)

The term Chacma is a corruption of the Hottentot name T'chacamma for this species, which inhabits the rocky mountains throughout the colony of the Cape of Good Hope, where, in the remoter districts, it is very abundant, and well known to the farmers from the depredations it commits in their cultivated enclosures. In its mountain fastnesses it is safe from pursuit, and troops may be frequently seen on the overhanging rocks gazing at the traveller as he traverses the mountain passes.

An old male Chacma is more than a match for two large dogs; and the boors of the interior will rather venture their hounds upon a lion or panther than one of these animals. Yet to no animal do the dogs show a more inveterate hostility. Burchell states that on one occasion a small company of them, being chased by his

dogs, suddenly turned upon their canine foes and defended themselves most effectually. They killed one dog on the spot by biting it through the great blood-vessels of the neck, and disabled another by laying bare its ribs. Even the leopard, hyæna, or wild-dog is sometimes mastered by a troop; though the former, surprising individuals, destroys numbers.

The devotion of the females to their young is very great, and in their defence they are ready to brave every danger.

The food of the Chacma consists in a great measure of bulbous roots, particularly of the Babiana; and it is customary for the troops to descend from the precipices into the secluded valleys of rich alluvial soil where these plants luxuriate. When suddenly surprised, the cry of alarm is raised, and the troop ascend the rocky cliffs, often several hundred feet in perpendicular height, with surprising agility, the young clinging to their mothers, and the old males bringing up the rear. Besides bulbs and grain, they are fond of eggs, and greedily devour scorpions, which they seize, nipping off the sting with so rapid an action as to prevent the hands from being wounded. In captivity, while young, the Chacma is good-tempered and frolicsome, but as age advances it becomes savage and dangerous.

It is of an individual of this species that Le Vaillant, in his 'Premier Voyage dans l'Intérieur de l'Afrique,' has given so amusing and, in some instances, perhaps, so apocryphal an account, under the name of *Kees*. Kees was a young animal, and a deserved favourite with his master, whom he accompanied on his travels, amused by his tricks, and sometimes essentially served by his intelligence and sagacity. We must present our readers with a leaf or two out of the biography of Kees, in the words of the lively and entertaining French traveller, because, as far as we are aware, he has not been hitherto introduced to the English reader. "An animal," says M. Le Vaillant, "which often rendered me essential services, whose presence has frequently interrupted or banished from my memory the most bitter and

51.—Chacma.

harassing reflections, whose simple and touching affection even seemed on some occasions to anticipate my wishes, and whose playful tricks were a perfect antidote to *ennui*, was a monkey of the species so common at the Cape and so well known by the name of *bavian*. It was very familiar, and attached itself particularly to me. I conferred upon it the office of my taster-general; and when we met with any fruits or roots unknown to my Hottentots, never ventured to eat them till they had been presented to and pronounced upon by Kees: if he ate, we fed upon them with confidence and a good appetite; if he rejected them, we did so likewise. The baboon has this quality in particular, which distinguishes him from the lower animals, and approximates him more nearly to man; he has received from nature equal portions of curiosity and gluttony; without appetite, he tastes everything you give

44.—The Collared White-eyelid Monkey.

transient, and they soon became reconciled to the object of their anger. In their gambols with other monkeys they were invariably good-natured.

Genus Macacus.

The distinctions between the genera Macacus and Cercopithecus, though in some points definite, are in others rather variations in degree than anything positive. In the Macaques, or Macaci, the body is stouter, the head larger in proportion, the limbs more muscular, and the tail shorter than in Guenons. The muzzle is heavy; the forehead is flattened behind a bold superciliary ridge; the callosities are large, and mostly surrounded by a naked space of skin. There are ample cheek-pouches, and Cuvier states that a laryngal sac is always present. The last molar of the lower jaw has a fifth tubercle, and the molars are broad. (Fig. 45.) The tail is variable: in some it is of considerable length, and in these the general form approaches to that of the Guenons. In others

48.— Wanderoo.

52.—Chacma.

have considered as an act of great injustice. To pluck up the roots he resorted to a most ingenious method, which greatly amused me. Seizing the tuft of leaves with his teeth, he dug about and loosened the root with his fingers, and by then drawing his head gently backwards he commonly managed to extract it without breaking; but when this method failed, he would seize the tuft as before, and as close to the root as possible, and then, suddenly turning a summerset, he would throw himself head over heels, and the kameroo rarely failed to follow.

"On these little expeditions, when he felt himself fatigued, it was most ludicrous to see him mounting upon

him; without necessity, he touches whatever comes in his way. But in Kees I valued a still more precious quality. He was my best and most trusty guardian; night or day, it mattered not, the most distant approach of danger roused him to instant watchfulness, and his cries and gestures invariably warned us of any unusual occurrence long before my dogs got scent of it. Indeed, these otherwise faithful guardians became so habituated to his voice, and depended so implicitly upon his instinct, that they became utterly careless of their own duty, and, instead of watching our encampment, went to sleep in full confidence; but no sooner had he given the alarm than the whole pack were up and on the alert, flying to defend the quarter from which his motions directed them to expect the threatened danger.... I often took him out with me on my hunting and shooting excursions; on the way he amused himself by climbing the trees in search of gum, of which he was passionately fond: sometimes he would discover the honeycombs which the wild bees deposit in the hollows of decayed trees; but when neither gum nor honey was to be found, and he began to be pressed by hunger, an exhibition of the most comic and amusing nature took place. In default of more dainty fare, he would search for roots, and above all for a particular kind which the Hottentots call *kameroo* (*babiana?*), which he greatly admired, and which, unfortunately for him, I had myself found so refreshing and agreeable that I often contested the possession of the prize with him. This put him upon his mettle, and developed all his talents for *ruse* and deception. When he discovered the kameroo at any distance from me, he commenced devouring it, without even waiting to peel it, according to his usual custom, his eyes all the while eagerly fixed upon my motions: and he generally managed matters so adroitly as to have finished the banquet before I reached him: occasionally, however, I would arrive rather too soon for him; he would then break the root and cram it into his cheek-pouches, from which I have often taken it without his displaying either malice or resentment at what he must

the back of one of my dogs, which he would thus compel to carry him for hours together. One of the pack, however, was more than a match for him, even at his own weapons, cunning and finesse. As soon as this animal found Kees upon his shoulders, instead of trying to shake him off or dispute the point, which he knew by experience to be useless, he would make a dead halt, and with great resignation and gravity stand as immoveable as a statue, whilst our whole train passed by and proceeded on their journey. Thus the two would continue, mutually trying to tire out one another's patience, till we were nearly out of sight. This had no effect upon the dog, who, to do him justice, possessed a most praiseworthy firmness of character, and an obstinacy which would have done honour to a logician; but with Kees it was a different matter: he saw the distance increasing without any better chance of overcoming his adversary's resolution than at first. Then commenced a most ludicrous and amusing scene. Kees would alight, and both follow the caravan at full speed; but the dog, always distrusting the finesse of the monkey, would adroitly allow him to pass on a little before him for fear of a surprise, running alongside and a little behind him all the way, and never for a moment taking his eye off him. In other respects he had gained a complete ascendant over the whole pack, which he undoubtedly owed to the superiority of his instinct, for among animals, as among men, cunning and address are frequently more than a match for physical force. It was only at meal-times, however, that Kees ever showed any ill-nature towards the dogs; but when any of them approached him on that important occasion, the administration of a sound box on the ear warned him to keep at a more respectful distance, and it is singular that none of the pack ever disputed the point or resented the affront.

"A singularity in the conduct of this animal, which I have never been able to account for, was that, next to the serpent, he had the greatest dread of his own species —whether it was that he feared a partner in my affection for him, or that his domestication had impaired his

faculties for a life of freedom. Yet, notwithstanding his manifest terror at their appearance, he never heard the other baboons howling in the mountains without replying; but no sooner would they approach in answer to his voice, than he would fly, in great trepidation, and trembling in every limb, to the protection of his human companions. On such occasions it was difficult to restore him to his self-possession, and it was only after the lapse of a considerable time that he recovered his usual tranquillity. Like all monkeys, he was incorrigibly addicted to petty larceny, and, had he been an Englishman, would have been long since tried at the Old Bailey and transported to Botany Bay; but, being a free-born Africaner, for such is the name by which the Cape Colonists delight to be called, he committed his depredations with impunity, or only fled for an hour or two to the woods, to escape immediate chastisement, always, however, taking good care to return by nightfall. Never but on one occasion did he absent himself during the night. It was near dinner-time, and I had just prepared some fricasseed beans on my plate, when suddenly the cry of a bird which I had not before heard called off my attention, and I seized my gun and set off in pursuit of it. I had not been more than a quarter of an hour absent when I returned with my bird in my hand; but Kees and my dinner had both disappeared in the mean time, though I had severely chastised him for stealing my supper on the previous evening. I concluded, however, that, as usual, he would return on the approach of night, when he thought that the affair would be forgotten, and so thought no more of it; but for once I was mistaken in him; evening came without any appearance of Kees, nor had any of my Hottentots seen him on the following morning, and I began to fear that I had lost him for good. I really began seriously to feel the loss of his amusing qualities and watchfulness, when, on the third day after his disappearance, one of my people brought me the welcome intelligence that he had encountered him in the neighbouring wood, but that he concealed himself among the branches upon seeing that he was dis-

covered. I immediately proceeded to the place indicated, and, after beating for some time about the environs to no purpose, at length heard his voice, in the tone which he usually adopted when supplicating for a favour or a remission of punishment. Upon looking up, I perceived him, half hid behind a large branch, in a tree immediately above me, and from which in fact he had been watching our encampment ever since his departure; but all my persuasions could not prevail upon him to descend, and it was only by climbing the tree that I finally succeeded in securing him. He made no attempt to escape me, however, and his countenance exhibited a ludicrous mixture of joy at the meeting and fear of being punished for his misdeeds."

Kees, like many people of more rational pretensions, had his taste greatly perverted by civilization, and could drink off his glass of brandy with the *gusto* of an accomplished toper: but a trick of M. Le Vaillant effectually cured his addiction to the bottle, and rendered his after-life an example worthy of the most rigid "teetotaler;" it would have delighted the president of a Temperance Society, had such excellent institutions existed in his days. "On one occasion," continues his biographer, "I had resolved to reward my Hottentots for their good conduct; the pipe went merrily round, joy was pictured in every countenance, and the brandy-bottle was slowly circulating. Kees, all impatience for the arrival of his turn, followed it with his eyes, holding his plate ready for his allotted portion, for I had found that in drinking out of a glass his impatience generally caused some of the liquor to run up his nose, which greatly incommoded him, and kept him coughing and sneezing for hours afterwards. I was engaged at the moment in sealing a letter; he had just received his share of the brandy, and was stooping down to drink it, when I adroitly introduced a slip of lighted paper under his chin: the whole plate suddenly burst into flame, and the terrified animal, with a yell of indescribable horror, leaped backwards at least twelve or fifteen feet at a single bound, and continued, during the whole time the brandy

was burning, to chatter and gaze intently at a phenomenon which he no doubt considered of preternatural occurrence. He could never afterwards be prevailed upon to taste spirits of any kind, and the mere sight of a bottle was at all times sufficient to frighten and alarm him."

The Mandrill

(*Cynocephalus Mormon*). Le Choras, Buffon; Mantegar, Bradley; Great Baboon, Pennant; Variegated Baboon, Lev. Mus.; Ribbed-nosed Baboon, Pennant; Simia Mormon and Maimon, Linn.

Adult male:—General colour olive-brown, passing into whitish in the under parts; a golden-yellow beard hangs from the chin; the hair of the forehead and temples converges to a peak; skin round the callosities red. The nostrils have a broad rim around them, at the extremity of the muzzle; the tail is short, and nearly hid by the fur. The cheek-bones are enormously swollen, rising like two ridges, and the skin is obliquely marked with deep furrows; its colour is a fine blue, with a tinge of scarlet in the furrows; a streak of brilliant vermilion, commencing on the beetling superciliary ridge, runs down the nose, and is diffused over the muzzle. Ears, palms, and soles, violet-black. In the female the cheeks are less swollen, and the scarlet is pale or wanting. In the young the cheeks are little if at all swollen, the furrows barely discernible, and the colour black. It is not until the fourth or fifth year, when the second dentition is fully complete, that the characters of maturity are assumed; and to this point there is a gradual progress, the bones of the face developing, the colour of the skin changing, the muzzle becoming broader and thicker, and the furrows more marked. (Fig. 53.)

This massive, powerful, and ferocious baboon is of huge size, and very dangerous. It is a native of Guinea and other parts of western Africa, where it is greatly dreaded by the natives, who assert that it frequently attempts to carry off women into the deep forests where

53.—Mandrill.

it resides, and occasionally succeeds. However this may be, certain it is that in captivity the appearance of a female will excite in the Mandrill unequivocal manifestations of brute passion, and any attention to her the most furious jealousy.

In its native forests the Mandrill associates in large troops, which are more than a match for the fiercest beasts of prey, and often make incursions into villages and cultivated fields, which they plunder with impunity. In their movements on the ground they are quadrupedal; but their activity is very great, and they leap and climb with the utmost facility. Their voice is deep and guttural, consisting of hoarse, abrupt tones, indicative of fury or malice. That the species is abundant in western Africa is proved by the numbers of young individuals

These have often been confounded with the young of the Mandrill: indeed, it is to Frederic Cuvier that we owe the recognition of the Drill as a distinct species, for the confused descriptions of Pennant afford us nothing tangible. In its wild state the Drill resembles the Mandrill as regards habits and manners; and travellers seem to have confounded the two species together, and even mixed up their history with that of the Chimpanzee.

54.—Drill.

American Monkeys (*Cebidæ*).

The American monkeys differ from the monkeys of the Old World in the following particulars:—The thumb of the fore-hands is never opposable to the fingers.

The dentation, excepting in the Marmozets, is as follows:—Incisors, $\frac{4}{4}$; canines, $\frac{1-1}{1-1}$; bicuspid molars, $\frac{3-3}{3-3}$; true molars, $\frac{3-3}{3-3} = 36$, instead of 32. Callosities always wanting Cheek-pouches always wanting. Nostrils lateral, with elevated margins, and separated from each other by a wide septum. Tail often prehensile, never wanting or rudimentary.

The American Monkeys, or Cebidæ, are exclusively confined to the warmer regions of the New World; so that, although the species are numerous, their extent of territory is far more limited than that occupied by the Old World monkeys. Their northward range is bounded (in the tenth or eleventh degree of latitude) by the Caribbean Sea; for they occur neither in the Caribbean group of islands, nor in Hayti, Cuba, or the Bahamas. Though found in the region south of the territory of Panama, they do not advance to Yucatan or Mexico. South of the line their range extends to the twenty-fourth or twenty fifth degree of latitude, including Brazil, Peru east of the great chain of the Andes, and Paraguay. All are arboreal, frequenting the dense forests, which, as Humboldt observes, are so thick and uninterrupted on the plains of South America between the Orinoko and the Amazon, that, were it not for intervening rivers, the monkeys, almost the only inhabitants of these regions, might pass along the tops of the trees for several hundred miles together without touching the earth.

In South America monkeys are ordinarily killed as game by the natives for the sake of their flesh; but the appearance of these animals is so revolting to Europeans, that it is only from necessity, and after custom has familiarised the sight, that they can force themselves to partake of such fare. The manner in which these animals are roasted also contributes to render their appearance disgusting. "A little grating or lattice of very hard wood is formed and raised a foot from the ground. The monkey is skinned and bent into a sitting posture, the head generally resting on the arms, which are meagre and long; but sometimes these are crossed behind the back. When it is tied on the grating, a very clear fire is kindled below; the monkey, enveloped in smoke and flame, is broiled and blackened at the same time. Roasted monkeys, particularly those that have a round head, display a hideous resemblance to a child; the Europeans, therefore, who are obliged to feed on them, prefer separating the head and hands, and serve only the rest of the animal at their tables. The flesh of monkeys is so dry and lean, that M. Bonpland has preserved in his collection at Paris an arm and hand which had been broiled over the fire at Esmeralda, and no smell arises from them after a number of years."—Humboldt.

Genus Ateles.

This genus, which includes the Spider-Monkeys, is characterised thus:—Head round; face moderately developed; limbs long and slender. Tail longer than the body, thick at the base, strongly prehensile, and naked for a considerable space beneath at its extremity. Forehands either destitute of an externally apparent thumb, or with the thumb a mere tubercle. Nostrils separated by a wide septum and obliquely oval. Ears moderate, naked, with reflected margins. Dentation as described. Fur long, crisp, or rather harsh, sometimes silky; prevailing colour black.

In the slenderness of the limbs, and in the staid, quiet, and almost melancholy expression of the face, the Spider Monkeys remind us of the Gibbons; both are timid and gentle, with an air of listlessness, lost only under excitement.

From the length of the limbs and the remarkable flexibility of the joints, the motions of the Spider Monkeys on all fours on the ground seem to be crawling and indeterminate. They tread on the inner edge of the fore-paws, and to a great degree on the outer edge of the hind-paws, and endeavour to assist themselves by attaching the tail to every object as they proceed. They often, however, assume the erect attitude, and walk thus better than any other of the long-tailed monkeys. When proceeding in this manner the tail is raised up as high as the shoulders, and then bent downwards at its extremity, evidently acting as a balancer while the animal moves steadily along. The proper place of these monkeys is among the branches of the forests; there their movements are rapid, easy, and unconstrained; their progression is by a series of swinging evolutions, in the performance of which the limbs and tail take an equal share. The latter organ, the strength and prehensile powers of which are very great, enables them to assume the most varied attitudes. In ascending or descending trees, or in traversing the branches, it is in continual requisition; they coil it round branch after branch in their passage, turning it in various directions, and applying it with wonderful precision. They often suspend themselves exclusively by it, and, swinging until a sufficient impetus is gained, launch themselves to a distant branch, or, stretching out their arms, catch it as they vibrate towards it. The advantages of this additional instrument of prehension are palpable; its sense of touch is finger-like; and it is capable of seizing small objects with great address. They are said to introduce the extremity of the tail as a feeler into the fissures and hollows of trees, for the purpose of hooking out eggs or other substances.

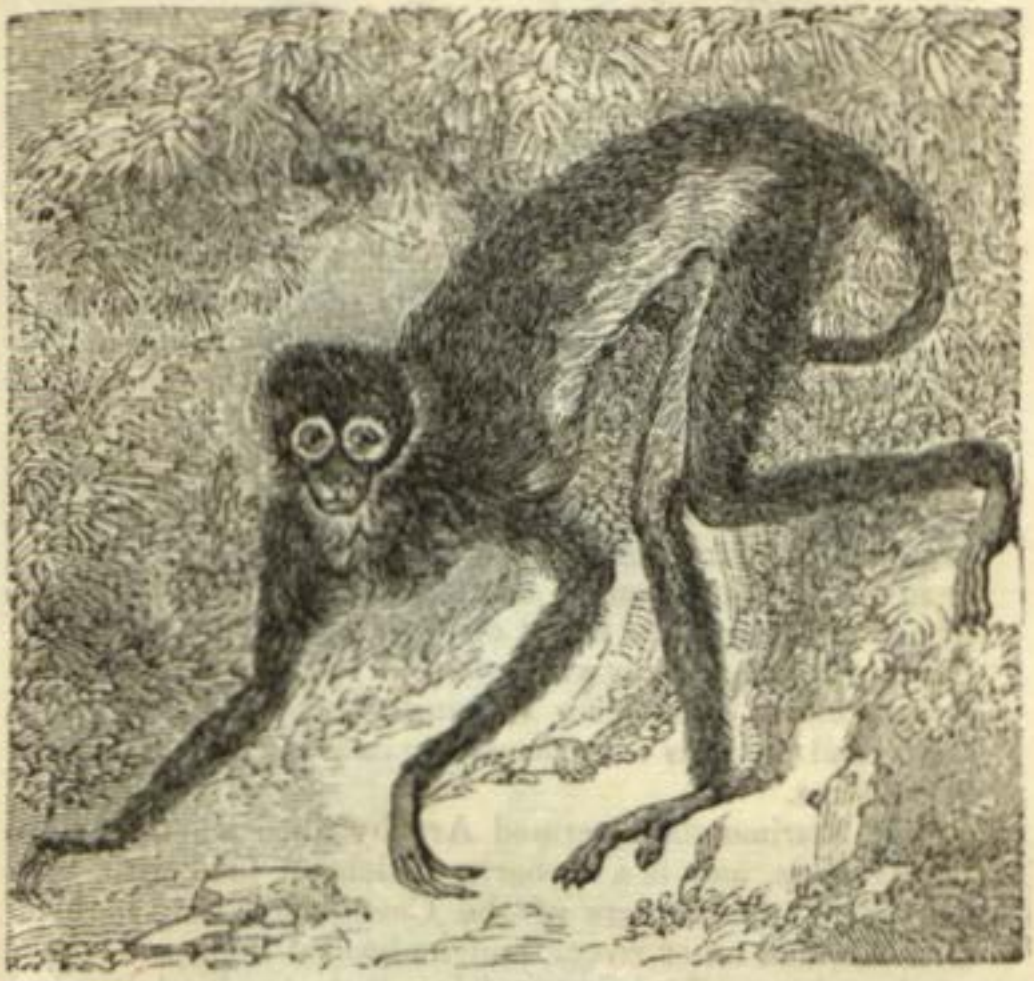
The Chameck (*Ateles subpentadactylus*).

Fur long, flowing, glossy, and jet black. The fore-hands have a minute nailless tubercle in place of a thumb. The face and ears are naked, and of a red flesh-colour, with a tint of dusky brown. Length of head and body, about 20 inches: of the tail, 25 inches. Native country, Peru. (Fig. 55.)

55.—Chameck.

The Marimonda (*Ateles Belzebuth*, Desm.).

Fur smooth and glossy; general colour brownish black, deeper on the hands and feet, but fading on the loins and sides of the haunches to a glossy grayish brown; the long hairs at the angle of the jaw, those of the throat, under parts, and inside of the limbs, dirty straw-colour or



56.—Marimonda.

yellowish white; a space along the under surface of the tail, at its base, rusty yellow; skin of the face blackish brown, becoming of a tanned flesh-colour about the lips and nose and around the eyes. Native country, the borders of the Orinoko, Cassiquiare, &c. (Fig. 56.)

The Coaita (*Ateles paniscus*).

The Quatto of Vosmaer.

General colour black, the fur being long, coarse, and glossy; more scanty on the under parts of the body than on the upper: face and ears of a flesh-colour, with a tanned or coppery tinge. Neither in this nor the Mari-

monda is there any thumb on the fore-hands. Native country, Surinam and Guiana. (Fig. 57.)

In their general habits and manners these three species of Spider Monkeys agree so closely, that the details of one are applicable to the rest. In captivity the Chameck is grave and gentle, but displays extraordinary agility: its intelligence approaches that of the Gibbons. We have seen individuals repeatedly walk upright with great steadiness, cross their compartment to the window, and there gaze for a considerable time with an air amusingly like that of a human being, as if contemplating the state of the weather, the progress of vegetation, or the actions of persons passing by. At the same time the Chameck (and the same observation applies to the others) is not disposed to court the notice of the spectators around it, or invite the attention of strangers. Towards those by whom it is regularly fed it displays confidence and partiality. In its gambols with others of the genus it exhibits great address in avoiding or returning their sportive assaults, and executes with surpassing ease the most fantastic manœuvres.

The Marimonda is termed Aru by the Indians of the Rio Guiania, and is a favourite article of food with the natives of the borders of the Cassiquiare, the higher Orinoko, and other rivers, and its broiled limbs are commonly to be seen in their huts. It is listless and indolent in its habits, and is fond of basking in the warm rays of the sun. Humboldt states that he has frequently seen these animals, when exposed to the heat of a tropical sun, throw their heads backwards, turn their eyes upwards, bend their arms over their backs, and remain motionless in this extraordinary position for hours together. They traverse the branches leisurely, and unite in companies, forming the most grotesque groups, their attitudes announcing complete sloth.

In captivity the Marimonda is gentle, and exhibits nothing of the petulance of the Guenons or the violence of the Macaques. Its anger, when excited, is very transient, and announced by pursing up the lips and uttering a guttural cry, resembling ou-ó. Humboldt notices the

57.—Coaita.

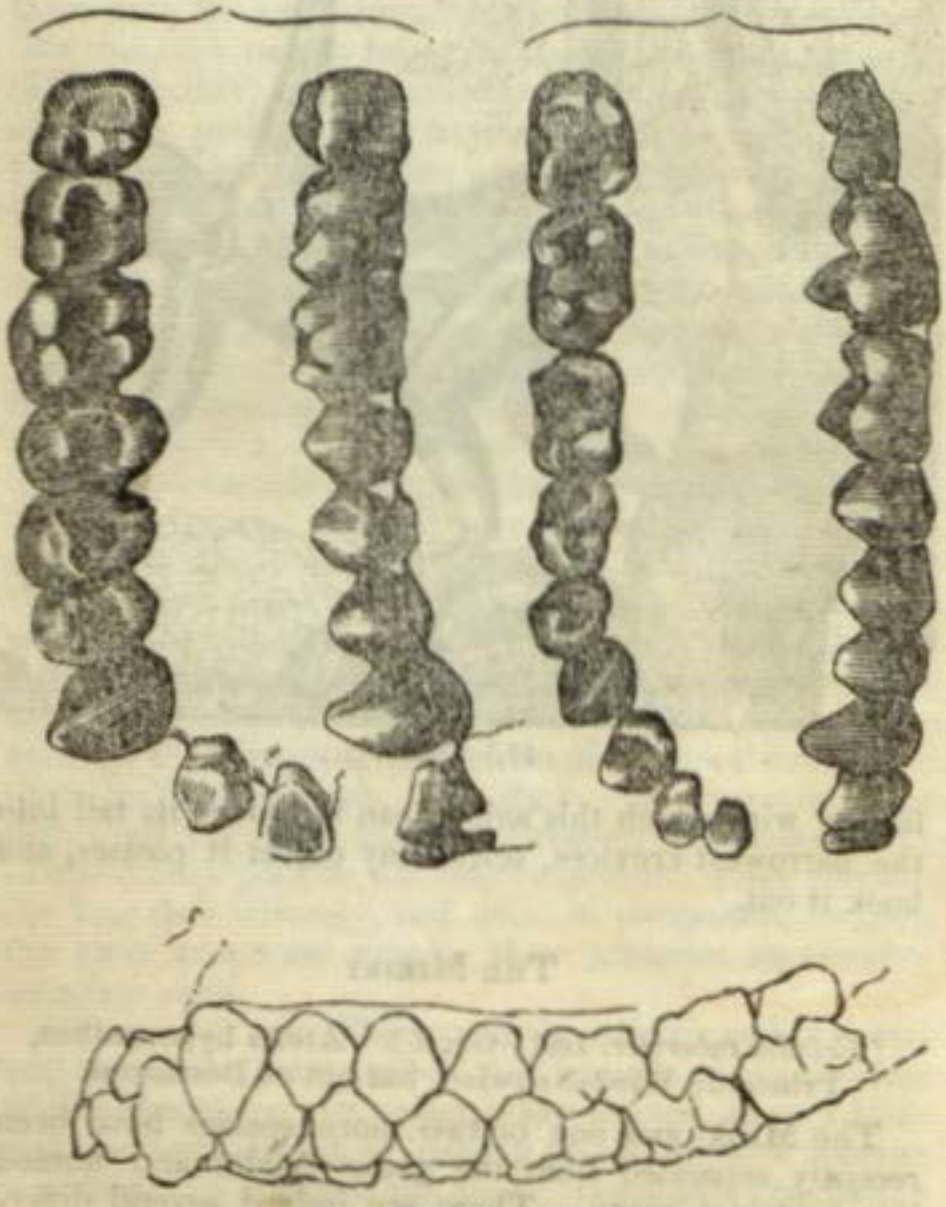
facility with which this animal can introduce its tail into the narrowest crevices, select any object it pleases, and hook it out.

The Miriki

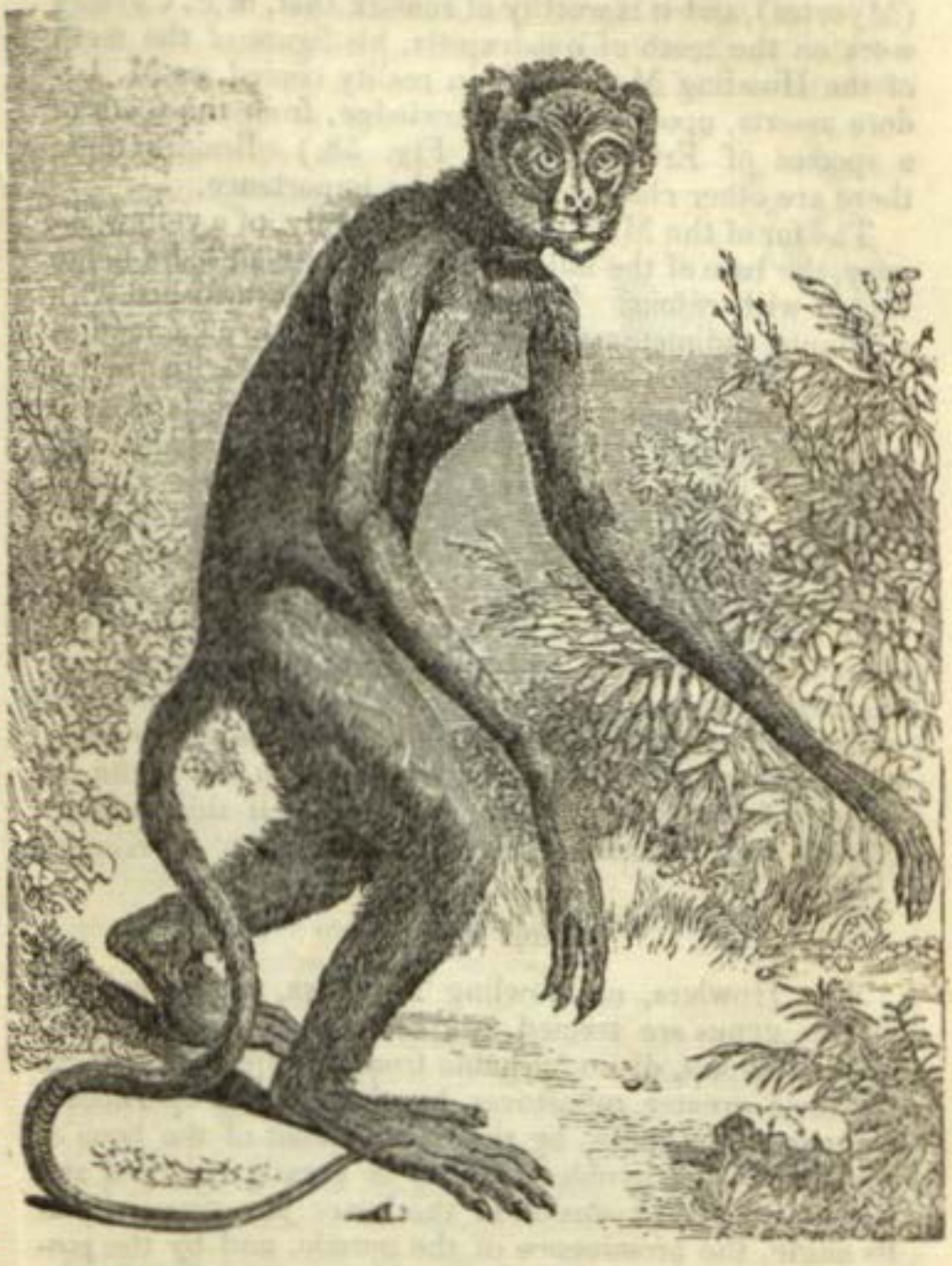
(*Eriodes tuberifer*, Isid., Geoff.). Ateles hypoxanthus, Prince de Wied-Neuwied, but not of Desmarest.

The Miriki and one or two more species have been recently separated from the genus Ateles and formed into a distinct group. There are indeed several differ-

ences between these animals and the ordinary Spider Monkeys, which, if taken together, justify the adoption of the genus Eriodes. The nostrils are rounded, the interval between them is narrow, and their aspect is downwards, not lateral. The molar teeth, instead of being small, are large and quadrangular, and the crown of the first two molars of the upper jaw is boldly and irregularly tuberculate; the incisors are small. The



58.—Teeth of Eriodes.



89.—Miriki.

dentation in fact approaches close to that of the Howlers (Mycetes), and it is worthy of remark that, in F. Cuvier's work on the teeth of quadrupeds, his figure of the teeth of the Howling Monkeys is in reality copied, as M. Isidore asserts, upon his own knowledge, from the teeth of a species of Eriodes. (See Fig. 58.) Besides these there are other characters of minor importance.

The fur of the Miriki is soft and woolly, of a yellowish-gray, the base of the tail and the circumjacent hairs being tinged with rufous. The fore-hands are furnished with a minute rudimentary thumb, in the form of a nailless tubercle; the face is flesh-coloured, sprinkled with grayish hairs. Native country, Brazil. The Miriki in its general habits agrees with the Spider Monkeys. It lives associated in troops in the vast forests, and displays great agility. Fruits form its principal diet. The Prince of Wied-Neuwied states that the Miriki seldom approaches the abodes of man, keeping to the depths of the woods; Spix also states that it lives in troops, which make the air resound with their loud cries incessantly uttered during the day. At the sight of the hunter they ascend with extraordinary rapidity the topmost branches of the trees, and, passing from one to another, are soon lost in the recesses of the forest. The Brazilians call this monkey Miriki and Mouriki; the Botacudas term it Koupo. (Fig. 59.)

Genus Mycetes.

The Howlers, or Howling Monkeys, as the animals of this genus are termed, constitute a natural and well-marked group, distinguishable from the Spider Monkeys by their greater robustness, by the more proportionate contour of the limbs, by the development of the bone of the tongue (os hyoides), which is greatly enlarged and hollow, by the expansion of the lower jaw, especially at its angle, the prominence of the muzzle, and by the possession of a thumb (not opposable) on the fore-hands. The form of the head is pyramidal; the fur of the forehead is directed upwards, that of the rest of the head forwards; on the external surface of the fore-arms it is directed from

the wrist to the elbow; the under parts of the body are almost naked; on the back and shoulders the fur is full, long, soft, and glossy. The tail is strongly prehensile, and naked at its extremity beneath. The hollow drum formed by the os hyoides communicates with the interior of the cartilaginous expansion of the larynx (Fig. 60), in which are several membranous valvular pouches. This apparatus gives to the voice extraordinary volume and intonation. The howlings uttered by the troops of these monkeys are astounding, and usually heard in the morning, at sunset, and during the darkness of night. Shrouded amidst the gloomy foliage of the woods, they raise their horrid chorus, "making night hideous," and startling the traveller who for the first time hears it. It is not, however, only during the night or at daybreak and evening that the Howlers exert their voices: they are affected by electric changes in the condition of the atmosphere, and when, during the day, the gloomy sky fortells the approach of a thunderstorm, their dissonant yells resound through the gloomy woodlands. The range of the Howlers is from Guiana to Paraguay. According to Spix and Humboldt, they subsist principally upon fruits and leaves. The females produce one at a birth, and the mother carries her young clinging to her back until old enough to act for itself. In their disposition the Howlers are melancholy and morose; their movements are tardy and inert; on the ground they never attempt to walk on the hinder limbs alone. When pursued or alarmed, they retire slowly and take refuge in the highest

60.—Drum of Howling Monkey.

branches of the trees, to which, if shot with a bullet or arrow, they often remain suspended by the tail when life is extinct. As they are of large size and fatter than other monkeys, they are in great request with the Indians as food; but are seldom or never kept in confinement, having nothing pleasing in their manners, voice, or appearance.

The Araguato, or Ursine Howler (*Mycetes ursinus*).

Araguato de Caracas of Humboldt. The extent of the face destitute of hair is more circumscribed than in most of the genus, and is of a bluish-black colour, with long scattered black bristles on the lips and chin. The chest and abdomen are well clothed with hair. The fur is long, resembling that of a young bear. The general colour is golden rufous, paler round the sides of the face,

61.—Araguato.

but deeper on the beard In the figure of this species given in Humboldt's work, the hair of the head is represented as all directed backwards from the forehead to the back of the neck; we hesitate not to say, by a mistake of the artist. Native country, Brazil, Venezuela, &c. (Figs. 61, 62.)

62.—Araguato.

It was after landing at Cumana, in the province of New Andalusia, that Humboldt and Bonpland first met the Araguato, while on an excursion to the mountains of

Cocollar and the cavern of Guacharo. The convent of Caripé is there situated in a valley, the plain of which is elevated more than 400 toises above the level of the ocean; and though the centigrade thermometer often descends during the night to 17 degrees, the surrounding forests abound with Howlers, whose mournful cries, uttered when the sky is overcast, or threatens rain or lightning, are heard at the distance of half a league. The Araguato was also met with in the valleys of Aragua to the west of Caracas, in the Llanos of the Apuré and of the Lower Orinoco, and in the Carib missions of the province of New Barcelona, where stagnant waters were overshadowed by the Sagoutier of America, a species of palm with scale-covered fruit and flabelliform leaves, among which it dwells in troops. South of the cataracts of the Orinoco it becomes very rare. Of all the gregarious monkeys the Araguato was observed in the greatest abundance; on the borders of the Apuré Humboldt often counted 40 in one tree, and in some parts of the country he affirms that more than 2000 existed in a square mile. They travel in the forests in long files, consisting of 20 or 30 individuals or more, and proceed with deliberation. An old male usually leads the troop, the rest follow his movements, and when he swings from one branch to another, the whole file one by one perform in "order due" the same action on the same spot. In other species also this habit has been observed. According to Waterton, the Araguato is very partial to the seeds of the vanilla, a creeper which ascends the trees to the height of forty or fifty feet.

Genus Cebus.

The Sapajous, as the animals of this genus are termed, are prehensile-tailed, but the tail is everywhere clothed with fur, so that, though capable of grasping, and naturally curled round at its extremity when not in use, as in the Spider Monkeys and Howlers, it is not, as in these latter animals, an organ of tact, nor so powerful a grasper.

The monkeys of this genus are all diurnal in their habits and for the most part of small size. The French call them Sapajous, Sajous, Saïs, and Capucins: they are also called Weepers (Singes pleureurs), from the plaintive piping noise which many of them utter. Humboldt states that the Creoles of South America call them "Matchi," confounding under this denomination very distinct species. In temper and disposition the Cebi are lively and docile; they show great attachment to some persons, and a capricious aversion to others. They are intelligent, mischievous, and inquisitive. Their activity and address are surprising; in their native forests they live in troops, feeding on fruits, grain, insects, and eggs. So amusing are they in their gambols, that even the apathetic natives will stop their canoes and watch their frolics with interest. They are, from their liveliness and docility, great favourites, and often kept domesticated, but their amusing habits do not protect them from the poisoned arrows of the Indians.

The head is round, the muzzle short, and limbs the well proportioned. The dentation as usual: the incisors of the upper jaw are larger than those of the lower; the canines are often strong and large; the molars are rather small. The ears are rounded. The species are very numerous, and involved in much confusion.

The Horned Sajou

(*Cebus Fatuellus*, Linn.). Sajou cornu, F. Cuvier (not of Buffon).

The general colour of the fur is brown, deepening to an almost black tint on the top of the head, on the middle of the back, and on the legs, hands, feet, and tail. A bandeau of hair rises on the forehead, the extremities of which are elevated in the form of egrets, or pencil-like tufts: these tufts are less conspicuous in the female. The sides of the face are garnished with white hairs. All the naked parts, and the skin under the fur, are violet-coloured. Native country, Brazil: it is found in the provinces of Rio Janeiro. It is not until maturity

that the horns or frontal tufts are acquired. In captivity the horned Sajou is lively and amusing, active and good-tempered. Its habits in a state of nature are not detailed. (Fig. 63.)

63.—Horned Sajou.

The Yellow-breasted Sajou

(*Cebus xanthosternos*, Prince Maxim., Kuhl, Desmar.). Saï à grosse tête, Cebus monachus, F. Cuv.; C. xanthocephalus, Spix.

This is one of the species which has been in confusion, but from which, we trust, it is extricated. The head is large, the forehead broad and covered with very short hair; the limbs are robust, the tail thick: in size this species is superior to the Horned Sajou. The forehead and anterior part of the head, and the hairs of the cheeks, which are full on the malar bones are yellowish white;

64.—Yellow-breasted Sajou.

a dusky line, commencing before the ears, encircles the face; the chest, the shoulders, and the anterior part of the humerus, are orange-yellow; the fore-arms, the legs, the anterior portion of the back, and the tail, are black; the sides of the body and the haunches are reddish brown; the abdomen rich rufous chestnut. The depth of the tints varies with age; the fore-arms and legs are often freckled with rufous, and the tail grizzled with yellowish-white, especially at its base and underneath. (Fig. 64.)

This species inhabit the woods of Rio Janeiro and St. Paul. We have seen a fine specimen from Bahia, Brazil. It is a young male which F. Cuvier figures as the Saï à grosse tête. He adds also the scientific appellation Monachus, which having been already given to a very distinct monkey (Cebus monachus, Fischer; Pithecia monachus, Geoffroy), cannot be retained without confusion. According to Spix, the Yellow-breasted Sajou associates in large troops, which often visit the fields of maize, where they commit great depredations. In captivity it is gentle, mild, and confiding; and though timid, fond of being noticed by those to whom it is familiarized.

The Brown Sajou

(*Cebus Apella*). Sajou, Buffon.

Head round: colouring variable both as to intensity and markings. The following details are taken from specimens we have rigorously examined:—Hair of the temples short, scanty, and directed upwards. On the top of the head the hair is moderately long, and forms a cap with an anterior slightly elevated marginal ridge advancing from the centre of the forehead along the sides of the head, so as produce a somewhat triangular figure; face covered with short dusky hair, that about the lips white; ears large and nearly naked. From the black cap on the top of the head a blackish line extends down before the ears and spreads over the beard-like hairs of the throat. The outer surface of the humerus is grayish, but a black line from behind the ears sweeps over the

shoulder and runs along the anterior margin of the humerus to the fore-arm, which is black, grizzled with brownish-gray. The general colour is brownish-black, passing into black on the middle of the dorsal line, on the haunches, tail, thighs, and legs: the fur is glossy. Another specimen has the sides of the body and outside of the thighs of a glossy pale chestnut brown, and the temples yellowish gray, washed in the middle with black. The Cebus Apella is the Capucin Monkey of Pennant and Shaw, but not the Simia Capucina of Linnæus, which is the Saï of Buffon, the Weeper Monkey of Pennant and Shaw. (Fig. 65.)

65.—Brown Sajou.

The Brown Sajou is a native of Guiana, and is plentifully brought over by vessels trading to the coast, so that it is common in our menageries. Its liveliness and activity are remarkable, and it bears our climate well. There are several instances of its having produced young in France, and each time a single offspring, to which

both parents were strongly attached. In disposition the Brown Sajou is good-tempered, but capricious. It is very intelligent and amusing. A male which was living a few years since in the gardens of the Zoological Society would employ a stone for the purpose of breaking nuts too hard to be crushed by the teeth, or if no stone were at hand he would strike them forcibly against any hard surface, so as to split the shell: we have seen other sajous do the some. This species is continually in the habit of making grimaces; it grins, wrinkling up the face in a very singular manner: its ordinary cry is plaintive, but when in anger the voice is shrill and elevated. In climbing the tail is in constant requisition as a grasper. Though fruits and other vegetable productions constitute the diet of this species in its native forests, they are not exclusively so; insects are highly relished, and there is reason to believe that eggs and young birds are also acceptable. A linnet, which by way of experiment was introduced into a cage where two of these monkeys were confined, was instantly caught by the strongest of them, and killed and eaten with scarcely even the ceremony of stripping off the feathers.

Genus Pithecia.

The monkeys of this genus are termed Saki by the French. The tail is not in the slightest degree prehensile: it is shorter than the body, and generally bushy. The head is round, the muzzle moderately prominent. In the lower jaw the incisors project almost as in the Lemur, being compressed, narrowing at the points, and are closely compacted together; the upper incisors are nearly vertical and square, differing greatly in appearance from those of the lower jaw. The canines are large, strong, and three-sided. The molars bluntly tuberculate.

The Sakis, or Fox-tailed monkeys, live either in pairs or small troops of ten or twelve, and are usually seen on the outskirts of forests bordering rivers. They are to a certain degree nocturnal in their habits: some

indeed have been considered decidedly so, but it would appear that, like the Howlers, they are the most animated just before sunrise and after sunset, at which times they utter their loud cries in concert. All are active and vigilant, and not easy to be surprised or captured.

The Cacajao (*Pithecia melanocephala*)

This monkey is also called in America Caruiri. The body is rather robust, but elongated; the head is ovate, oblong, and depressed on the crown; the ears have a backward situation; the tail is short, and ends abruptly. The face is black, as are also the ears; the head is covered with full long black hairs, directed from the

66.—Cacajao.

occiput forwards to the forehead, where they become parted in the centre. The hairs of the back are long, and of a brownish yellow: this colour passes on the thighs and tail into a brighter or ferruginous tint. The fore-arms and legs are black or blackish. The chin is beardless, and the nose short, broad, and flat. Native country, the borders of the Cassiquiare and Rio Negro; and in Brazil, those of the rivers Solimoëns and Ica. (Fig. 66.)

The present Saki is described by Humboldt, and is doubtless identical with one also described and figured by Spix, which he terms Ouakary, and which he found in the forests between the rivers Solimoëns and Ica (Brazil). He states that these monkeys congregate in troops, frequenting the margins of large streams; and that during their journeys from one part of the forest to another they fill the air with their piercing and disagreeable cries. Humboldt informs us that the Cacajo, or Cacaho, as it is called by the Maratitivitan Indians of the Rio Negro, is not common in the territories which he investigated, for he only saw one individual, which he bought, in an Indian cabin at San Francisco Solano; and from which, after death, he took an accurate drawing. It was young, but he was assured by the Indians of Esmeralda, that though it attains to a considerable size, its tail is not sensibly augmented in length. According to the information obtained by Humboldt, the Cacajao inhabits the forests which border the Cassiquiare and Rio Negro, associating in troops: when kept in confinement it is voracious and listless, but gentle and timid, even shrinking from the society of other small monkeys. Baron Humboldt's specimen trembled violently at the sight of a crocodile or serpent. When irritated it opens its mouth in a strange manner, and its countenance becomes distorted by a convulsive sort of laugh.

From the length and slenderness of its fingers, it grasps anything awkwardly, and when about to seize an object bends its back and extends its two arms, at the same time assuming a singular attitude. It eats all sorts of fruits—the most acid, as well as the sweetest. It is

termed Caruiri by the Cabres of the mission of San Fernando, near the junction of the Orinoco, the Atabapo, and the Guaviare; Mono feo (hideous monkey), and Chucuto, or Mono rabon (short-tailed monkey), by the Spanish Missionaries of the Cassiquiare.

The Couxio, or Jacketed Monkey

(*Pithecia sagulata*, Traill, in 'Mem. Wern. Soc.' iii.).

The confusion in which this species has been involved is very remarkable. The following are its synonyms:—Cebus sagulatus, Fisch; Cebus Satanas, Hoffmans.; Pithecia Satanas, Kuhl and Geoffr.; Simia chiropotes, Humboldt; Pithecia chiropotes, Geoffr., Kuhl, Desm.; Brachyurus Israëlita, Spix.

Head, limbs, and tail black,—the general tint of the back and top of the shoulders is grizzled rusty-brown or brownish-gray, differing in depth in different individuals. The hairs of the body are pale at the roots, sometimes indeed nearly white. The under parts are scantily clad. The hair of the head radiates from a point on the occiput, and on the sides of the forehead forms two conspicuous elevated tufts, with a depression between them. These tufts fold over and conceal the ears, which are black and naked. The face is black and furnished at its sides with full bushy whiskers which meet under the chin, forming an enormous glossy-black beard, directed obliquely forwards, and which gives a peculiar aspect to the physiognomy. The teeth are large,—the canines formidable. The head is large and rounded, and the nostrils very widely separated from each other. On the outer side of the fore-arms the hairs are reverted. Native country, Guiana and the borders of Rio Negro, &c. (Figs. 67, 68.) Of the four distinct specific appellations (viz. Sagulata, Satanas, Chiropotes, and Israëlita), which we regard as belonging all to one animal, that of Sagulata claims the preference, being the name under which the species was first described by Traill. Baron Humboldt, who erroneously regards the Satanas of Hoffmanseg (which he calls Couxio de Grand

67.—Couxio.

Para) and his Chiropotes (which he terms Capucin de l'Orénoque) as distinct, thus describes the latter (a description applicable to each variety, under whatever name it may stand in the works of naturalists):—The Capucin de l'Orénoque (Couxio, P. sagulata) is robust, agile, wild, and very difficult to tame. When irritated, it raises itself up, grinds its teeth, rubs the extremity of its beard, and leaps around the object of its revenge. In these accessions of fury, Humboldt says that he has seen it drive its teeth into thick boards of the Cedrela odorata. It drinks but rarely, and takes the water in the hollow of its hand, which it carries carefully to the mouth, so as to avoid wetting its beard. If aware that it is observed, it does not perform this singular action.

Sir Rt. Ker Porter (see 'Proc. Zool. Soc.' London, 1834, p. 41), in a description of the P. sagulata, distinctly states that the animal drinks frequently, bending down and putting its mouth to the water, apparently heedless of wetting its beard, and indifferent to the observation of lookers-on. He never saw it take the water in the hollow of the hand, as described by Humboldt. Yet that is was observed by the latter we cannot doubt; in our menageries, however, it drinks in the ordinary way of other monkeys. According to Humboldt, the Capucin de l'Orénoque does not associate in troops; a male and female in company wander by themselves through the forests, where their cry may be heard. In the vast wilds of the Upper Orinoco, south and east of the cataracts, this monkey is common, and the Aturian Indians, as well as those of Esmeralda, eat many of these animals at certain seasons of the year. In other parts of Guiana it seems to be much more rare.

The individuals which we have seen in captivity have all displayed a morose and savage temper on the slightest

68.—Couxio.

provocation they would menace the offender with their teeth, wrinkling up the skin of their face and displaying their immense canines, their eyes at the same time gleaming with fury. Towards other monkeys they were reserved, and disliked to be intruded upon.

The Yarke', or White-headed Saki (*Pithecia leucocephala*).

The male and female of this species differ so much, that it is not surprising that they should have been described as distinct species. The synonyms are as follows:—Male—P. leucocephala, Geoffr., Desm.; Saki, Buffon; Yarquè, Buff., 'Supp.'; Yarké, F. Cuv.; P. ochrocephala, Kuhl. Female—P. rufiventer, Geoffr., Desm., Kuhl, &c.; P. rufibarbata, Kuhl; P. capillamentosa, Spix; S. Pithecia, Linn.; Singe de nuit, Buff.; Fox-tailed Monkey, Pennant.

Male.—The whole of the anterior part of the head covered with short close hairs of a white or rusty-white tint varying in depth; occiput jet-black, whence a narrow line is continued over the head to the nose; fur of the body and tail very long, rather harsh, and of a brown colour, more or less inclined to black; under part of chin and throat naked and of an orange tint; abdomen also nearly naked; tail bushy; on the shoulders the long flowing hair has a tendency to divide.

Female.—The hairs of the head, excepting on the anterior part of the forehead, instead of being short, close, and stiff, are long, like those of the body, and radiate forwards and laterally. Between the eyes is a patch of short pale hairs. The fur of the body is long, of a dark or blackish brown tint, freckled paler, the hairs being annulated once or twice at the top with pale rusty-brown. In the male there is no annulation of the hairs. The scanty hairs of under parts are pale rusty-red. The long radiating hair of the head is of the same colour as that of the rest in the upper parts. In Fig. 69, which is that of the female, it is represented too pale. Till recently, the female of the present Saki has been regarded

brought from time to time to Europe; these, however, very rarely attain to maturity, the period of dentition, which is accompanied by such marked changes, being peculiarly critical. In captivity this baboon is ferocious and malevolent; one in the possession of Mr. Wombwell killed a monkey, a beagle, and a Java sparrow, which by accident came within his reach. A splendid specimen died some years ago in Mr. Cross's menagerie. He was accustomed to smoke, and to drink porter, which latter he quaffed with an amusing air of gravity, holding the mug with great address while seated in his arm-chair. His temper was violent in the extreme, and the slightest offence roused him to fury: his appearance was then terrible, and well calculated to alarm the boldest; nor could any man, without weapons, have had any chance in a contest.

The Drill (*Cynocephalus leucophus*).

The Drill is a native of Guinea. The head is large; the muzzle thick, with elevated maxillary protuberances, which, however, are not furrowed. The general contour is robust. The tail is very short, and carried erect. The general colour is greenish olive above, ashy white beneath; the beard is short and orange-coloured; the face and ears are glossy black; the palms copper-coloured. The female is smaller, with a shorter muzzle and paler tint of colouring. The young males resemble the female till their second dentition is complete. It would appear that the Wood Baboon, the Cinereous Baboon, and the Yellow Baboon of Pennant, are the young of the Drill at different stages of growth. (Fig. 54.)

The Drill approaches the Mandrill in size; and though gentle when young, becomes when adult as sullen and ferocious as that animal. Adults are, however, rare in menageries, the acquisition of the permanent teeth being critical: but young specimens are far from uncommon.

69.—Yarké.

by naturalists as a distinct species. The determination of its identity with the Yarké is due to M. Schomburgk, whose opportunities of observing this monkey in its native regions of Guiana have been very abundant, and who a few years since transmitted specimens of both sexes to the Zoological Society, London. More recently he brought other specimens to England. His testimony on the point is clear and decisive.

Buffon, who figures a young male, which he terms Saki, describes the hair of the head as radiating, and of a whitish tint; whence we may suppose that till approaching maturity the males resemble the females in their "chevelure mal rangée," as he calls it, excepting as regards its colour.

The Yarké appears to live in small troops, which tenant the bushes rather than the trees of the forest, living, according to M. de la Borde, upon the fruit of

Insects, and especially spiders, are eagerly sought for and devoured by this monkey; and, as Humboldt states, it gives no little trouble to entomological travellers who may be tempted to keep it domesticated. If it can obtain access to their store-boxes, it will devour every specimen, taking each from the pin without injury to its own fingers.

In their dense and humid forests troops of these monkeys may be seen traversing the branches in single file, the females carrying their young on their backs. The foremost leads and regulates the movements of the rest, and as he leaps from branch to branch with admirable grace and precision, all follow in succession. They ascend the "nebees," or natural ropes of creeping plants which intertwine among the trees, with great rapidity. Towards sunset they ascend to the very tops of the palm-trees, and there sleep in security. Accustomed to dense and humid forests, under a sky often covered with clouds, the Saïmiri endures with difficulty the dry and burning atmosphere of the coasts of Guiana or the adjacent districts; and it becomes melancholy and dejected in proportion as it quits the region of the forests and enters the Llanos. In captivity in our climate, though depressed by its influence, the Saïmiri is very engaging. It has a habit of gazing intently on the faces of those who notice it, a peculiarity alluded to by Humboldt, who says that it will attentively watch the motion of a person's lips in speaking, and that if it can climb on his shoulder, it will touch his teeth or tongue with its fingers.

The usual voice of this species is a low and quickly repeated whistle: but when hurt, or incommoded by wet, rain, or other cause of annoyance, it utters a plaintive cry.

Genus Nocthora.

Head large; muzzle short; eyes large and nocturnal: nostrils separated by a moderate septum. Ears moderate, with an acute folded apex, the free portion being circumscribed. Nails long, narrow, and channelled;

the guava, and also upon bees, demolishing their combs: they also eat all kinds of grain. The female produces only a single offspring at a birth, which she carries on her back.

Genus Callithrix.

Head short and rounded: muzzle short; ears large; general form slender; tail equalling or exceeding the length of the body; not prehensile; nails, excepting on hind thumbs, long and narrow. Fur soft and delicate. Canines moderate; lower incisors vertical and contiguous to the canines. Ears large, and more or less triangular.

The animals of this genus are light, active, and graceful, but so extremely delicate, that they do not endure removal from their own country without the greatest care. With the exception of the Saimiri, we have seen no living example. These little monkeys are termed Sagoins by the French: in their native regions they inhabit the depths of the forests, and are diurnal in their habits; most are gregarious; fruits, insects, eggs, and birds constitute their food, and though habitually gentle and timid, they become animated even to ferocity at the sight of living prey. The ordinary voice of these monkeys is a short reiterated note, which when they are hurt or alarmed is changed to a shrill cry.

The Saimiri, or Squirrel Monkey

(*Callithrix sciureus*, Desm.). Titi de l'Orénoque, Humboldt.

General colour, grayish-olive; the face white, the lips and chin black; the limbs tinged with fine rufous or gold colour; the tail black at its tip; ears large and white; palms flesh-coloured; eyes large and hazel, with a pink circle round the iris; under parts of body grayish-white. Length of head and body 12¼ inches; of tail 17 inches. Native country, Brazil, Cayenne, Guiana. (Fig. 70.)

This slender and elegant little monkey is widely spread: it is one of the earliest of the American species with which naturalists became acquainted; and is most probably the Sapajou de Cayenne of Froger. (See 'Relat.

70.—Saïmiri

du Voy. de Gennes,' 1698.) Its intelligence, its beauty, and sportiveness, render it a favourite in its own country, where it is domesticated in preference to most others of its race. It is frequently imported into Europe, but our climate is very uncongenial. Though the tail of the Saïmiri has no truly prehensile power, it is used as a sort of boa, for protection against cold; and when numbers crowd, huddled together, as they are often seen to do in the woods, they bring it between the hind legs, and twine it over the shoulders and round the neck, interlocking their arms and legs for the sake of warmth. This use of the tail we have observed in specimens in captivity.

Highly sensitive and susceptible, the Saïmiri displays its feelings by the expression of its countenance; in which pleasure, surprise, and fear, as they are experienced, are strongly depicted.

fingers of fore-hands (Fig. 71) not extensible to the full. Tail long, non-prehensile.

71.—Profile and Feet of Douroucouli.

Humboldt proposed the term Aotus for this genus, which, by right of priority, should be retained; it is rejected, however, because its meaning (earless) involves an error.

This genus has been regarded by many naturalists as a transition form between the American monkeys and the Lemurs. It is true that, as far as general aspect and nocturnal habits are concerned, the resemblance between

the Douroucouli and Lemurs is apparent: still, however, the relationship (setting aside that common to all the Quadrumana) is one of analogy, not affinity; for the Douroucouli in its dentation is more remote from the Lemurs than is the genus Pithecia, and in this point it agrees with Callithrix.

The Douroucouli

(*Nocthora trivirgata*, F. Cuv.). Pithecia miriquouina, Geoffr.; Callithrix infulatus, Lichtenst.; Nyctipithecus felinus, and vociferens, Spix.

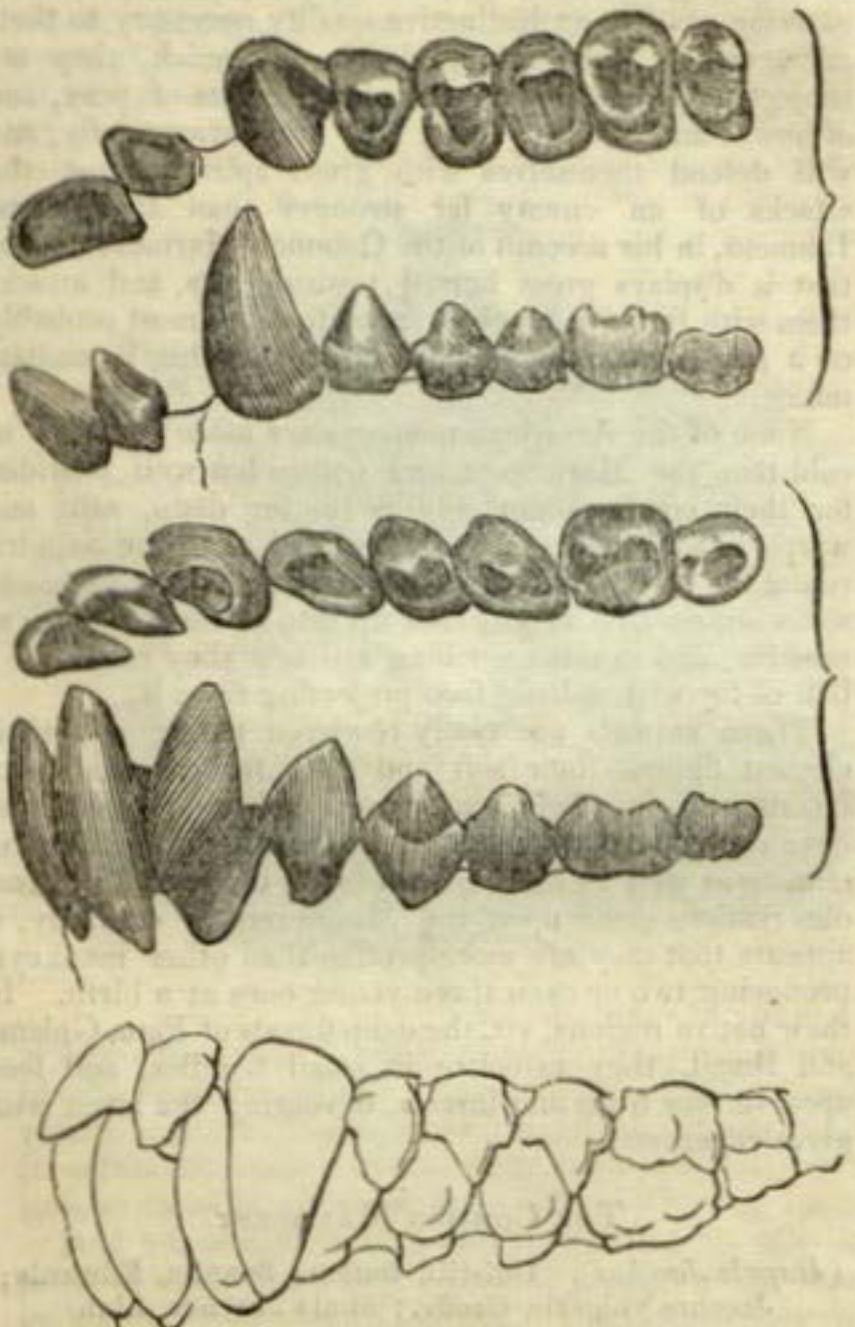
Head round; muzzle short; eyes large, with circular pupils. General colour grayish-brown above, pale rufous below; a whitish triangular mark over each eye, bounded by an intervening mark of black ascending from the root of the nose, and another running from the angle of the mouth, passing the outer angle of the eye. Tail black at the apex. General form slender; palms flesh-coloured; face dusky; nails black. Length of head and body, 13 inches; of the tail, 18 inches. Native country, Guiana, Brazil. (Fig. 72.)

According to Humboldt, the Douroucouli inhabits the dense forests of the Cassiquiare and Esmeralda, at the foot of Mount Duida, and the environs of the cataracts of Maypures, between the 2nd and 5th degrees of N. lat., 300 leagues from the coast of French Guiana. According to Spix it is found near Para, and in the forests of Tabatinga, on the confines of Brazil and Peru.

The Douroucouli is nocturnal in its habits, and sleeps during the day. It is greatly incommoded by light, and seeks the holes of trees or similar places for concealment. When roused it is dull and oppressed, and can scarcely open its large white eyelids. Its attitude during repose is crouching. On the approach of dusk, all the lethargy of the Douroucouli leaves it, and it becomes restless and impetuous, and roams about in quest of insects and small birds. In addition to these, various fruits, seeds, and vegetables constitute its food; but the quantity of solid aliment it consumes is comparatively little: it drinks even less, and but seldom. It glides cat-like through

72.—Douroucouli.

apertures so narrow as to appear incapable of admitting it, and its actions resemble those of viverrine animals. Its beautiful glossy fur is in great request, the natives make tobacco-pouches and other articles of it, which they sell. A male and female are often taken together in the same hole asleep; for the Douroucouli lives not in troops, but in pairs, and is strictly monogamous. The nocturnal cry of this animal is extremely loud and sonorous, and resembles that of the Jaguar: besides this, it utters a mewing noise like that of a cat, and also a



72.—Teeth of Marmoset.

prominent feature in their disposition seems to be extreme caution, an instinctive quality necessary to their preservation; for though nimble and quick, they are subject to the assaults of the smaller beasts of prey, and of hawks and snakes. Still they are not cowardly, and will defend themselves with great spirit against the attacks of an enemy far stronger than themselves. Linnæus, in his account of the Common Marmozet, states that it displays great hatred towards cats, and attacks them with ferocity, an observation founded most probably on a single example which came under his immediate notice.

None of the American monkeys are more sensitive of cold than the Marmozets, and nature has well provided for their comfort: not only is the fur deep, soft, and warm, but the long, full tail is twisted, as in the Saïmiri, round the body, which, during their nocturnal repose in some hollow tree, is gathered up into as small a space as possible, and in this crouching attitude they resemble a ball of fur with a little face projecting from it.

These animals are easily rendered tame; and their elegant figure—their soft and silky fur coloured with blending tints—their nimbleness and diminutive size, have contributed to render them favourites in their native climate as well as in other parts of the world. From observations made upon the Marmozets in captivity, it appears that they are more prolific than other monkeys, producing two or even three young ones at a birth. In their native regions, viz. the deep forests of Para, Guiana, and Brazil, they associate in small families, and feed upon various fruits and insects, devouring the latter with great eagerness.

The Common Marmozet

(*Hapale Jacchus*). Ouistiti, Buffon; Sanglin, Edwards; Jacchus vulgaris, Geoffr.; Simia Jacchus, Linn.

Fur long and soft, variegated black, white, and rusty yellow, the black and white forming alternate undulations. Ears surrounded by a large plume of erect hairs,

white, sometimes tipped with dusky black, and sometimes perhaps largely washed with black, if not quite black. Head and throat dusky black; a white frontal mark above the root of the nose. Tail annulated, dusky black and white. Native country, Brazil, Guiana. (Figs. 73 and 74.)

73.—Marmoset.

Little has been recorded respecting the natural habits of this beautiful animal, beyond the facts of its congregating in small families, of being active and shy, and of its subsisting upon insects and eggs, together with fruits, such as bananas and mangoes, of which it is very fond.

It is frequently brought to Europe, and has not only lived several years, but produced young in the menageries of France and England. Distrustful, especially towards those whom it is not accustomed to see, it retires from observation, and on being touched utters its peculiar whistling cry, or becomes angry and resists the unwelcome

attempt to court its confidence. When undisturbed it displays much liveliness, and exerts its activity, leaping from perch to perch with squirrel-like address, and in all its actions justifying the expression of "nimble marmozet," used by Shakspere.

Extremely sensitive to cold, no little of the Marmozet's time is passed in protecting itself against the changes of temperature to which our atmosphere is subject. All the wool, cotton, or other soft materials with which it is furnished, it will carry to some convenient corner of its cage, or to an inner dormitory, and there completely bury itself in the downy mass, from which it will peep out on a person's approach, but from which, unless induced by the offer of tempting food, it can seldom be induced to emerge altogether. When two or three are confined in the same cage, they huddle themselves together, and lie nestled in their bed.

The Marmozet eats bread, fruits, and finely-minced meat: it feeds in a crouching attitude, and usually holds everything between its two fore-paws, the long hooked nails assisting it. Edwards, in his 'Gleanings,' speaking of one of these animals which came under his own observation, informs us that it fed upon various articles of diet, as biscuits, fruits, pulse, insects, and snails; and that, being one day at liberty, it darted upon a small gold-fish which was in a bowl, killed it, and greedily devoured it. After this occurrence, some small eels were offered to it, which at first frightened it by twisting round its neck, but it soon overcame and eat them.

In the first number of the 'Magazine of Natural History' (1822), an interesting account is given, by Mr. Neill, of the manners of one of these monkeys, which he purchased at Bahia, the capital of the province of San Salvador, Brazil. At first, as he states, it displayed great wildness and even fierceness, screeching most vehemently when any one offered to approach it, and it was a long time before it was so reconciled even to those who fed it as to allow the slightest liberty in the way of touching or patting its body; it was impossible to do this by surprise, or by the most stealthy and cautious approach,

74.—Marmozet

as the creature was not still for a moment, but was continually turning its head from side to side, eyeing every person with the most suspicious and angry look; and its sense of hearing was so exceedingly acute, that the slightest noise, or even a whisper, was sure to rouse it. Its diet consisted of fruits, such as bananas, mangoes, and Indian corn, but when during the voyage these failed, it eagerly fell upon the cockroaches, of which it effectually cleared the vessel. It would frequently eat

a score of the larger kind, which are two inches and a half long, and a great number of the smaller ones three or four times in the course of the day. It was quite amusing to see the Marmozet at its meal. When it got hold of one of the large cockroaches, it held the insect in its fore-paws, and then invariably nipped the head off first: it then pulled out the viscera and cast them aside, and devoured the rest of the body, rejecting the dry elytra (wing-cases) and wings, and also the legs of the insect, which are covered with short, stiff bristles. The small cockroaches it ate without such fastidious nicety In addition to these insects, milk, sugar, raisins, and crumbs of bread were given to it. From London it was conveyed to Edinburgh, where it was living, when Mr. Neill wrote his account, in perfect health: there, contrary to the statement of Linnæus, who says that it is an enemy to cats, it made acquaintance with one, with which it fed and slept, and lived on the best terms imaginable Though it became gradually tamer, it never lost its original wildness and distrust.

The first account of the Marmozet having bred in Europe is given by Edwards ('Gleanings'), who received it from a lady living at Lisbon, a pair of these animals, during her residence there, having produced young. They were at first ugly, and almost destitute of fur, and clung to the breasts of the mother; but as they grew larger, they mounted her shoulders and back: when tired with carrying them, she would detach them from her by rubbing them against a wall or anything in her way: the male would then take charge of them, till she was inclined to resume her duties.

In the year 1819, three young ones, a male and two females, were produced in the menagerie of Paris. Their colour was of a uniform deep gray; the tail was almost destitute of hair; and they were born with their eyes open. M. F. Cuvier, in describing their domestic economy, confirms the account given by Edwards; but confinement in this instance so far destroyed the admirable instinct common even to the most savage animals, that one of the little ones was killed by the

mother before it had an opportunity of asserting the strongest claim to her affection; and the other two, which she eagerly cherished the moment they commenced deriving their nutriment from the natural fountain of life, were deserted by both parents when the supply from that source, probably from improper nourishment, prematurely ceased. During the short time they existed, the task of nursing them almost wholly devolved upon the male parent, which, at first, most assiduously cherished them, placing them, when they claimed his protection, either under him or upon his back, and thus carrying them about. The female avoided, as much as possible, the troublesome charge, receiving them unwillingly from her partner; and the moment she had supplied them with nourishment, again forcing them upon his attention, at the same time uttering a peculiar cry, as if asking him to ease her of a burthen with which she was intolerably fatigued.

In 1832 a pair bred in the Gardens of the Zoological Society, at the Regent's Park, London, and produced twins, which, however, died. Other examples are also upon record.

The Marikina, or Silky Tamarin

(*Hapale rosalia*). Midas Rosalia, Geoffr.

The Marikina is one of the species of the present group, which M. Geoffroy has separated, upon not very tangible grounds, into a genus termed Midas. Fur long, silky, and of a glossy golden yellow; hairs of the head long and falling, parted down the middle of the crown by a line of short rust-brown hairs; ears concealed by the long hair of the head; tail almost tufted at the apex. Native country, Guiana, Brazil. (Fig. 75.)

This species is subject to considerable variation in the richness of its colouring: we have seen specimens of a straw-yellow, with a silvery lustre.

Two or three opportunities have been afforded us of observing this beautiful species in captivity. Judging from these individuals, this animal is more confiding and less irritable than the common marmozet, which, how-

75.—Marikina.

ever, it resembles in its actions. When alarmed or angry, it utters a shrill cry, and slightly raises the long hairs round the sides of its face, displaying its teeth as if threatening to bite. Contrary to Buffon's opinion, who considers it to be more hardy than most of its congeners, it appears to be full as susceptible of the changes of our climate, and indeed dies immediately if exposed to damp or wet.

In this opinion Fred. Cuvier fully coincides. These animals, he observes, are natives of Brazil, and from the delicacy of their constitution they cannot be kept alive in

France without the greatest care to preserve them from the influence of atmospheric changes, and especially from the cold and humidity of the winter season: under the depressing effects of wet and chilly weather, they lose all their sprightliness, droop, and die. Speaking of the individual figured in his splendid work, and which was brought, in 1818, from Brazil to Paris, where it lived for a short time in the Menagerie of the Jardin des Plantes, he states that it was very active and lively, and, like a bird, preferred the topmost perches of the cage. On the least alarm it always concealed itself; and though it appeared gratified with the notice and caresses of those whom it knew, and came to them when called, it never returned any expressions or signs of attachment as other monkeys do when noticed by persons to whom they are attached. It disliked strangers and retired from them, regarding them with looks of defiance, and menacing with its feeble teeth. Fear or anger it expressed by a short, sharp, whistling cry, but sometimes, as if from ennui, it raised its voice into a louder or more prolonged note. In these details the individual described by Fred. Cuvier resembled the specimens which have lived in the vivarium of the Zool. Soc. Lond. The interest which attached to them resulted only from the lustre of their silky fur and from the elegance of their actions, for it was evident that their intelligence was very circumscribed. That prying curiosity, always amusing, sometimes troublesome, which monkeys in general exhibit, appeared to form no part of their character, and the confidence they manifested towards those accustomed to feed them was unmixed with tokens of attachment or gratitude. Still it is difficult to form a correct idea of the character of animals from individuals in confinement; and it cannot be doubted that in its native forests, of which it is one of the ornaments, the Marikina, like the squirrel of our woods, displays habits and manners calculated to excite the interest of the observer. Of these, however, nothing is definitely known. According to Prince Maximilian, the Marikina is more rarely found in Brazil than in Guiana.

CHAPTER VI.

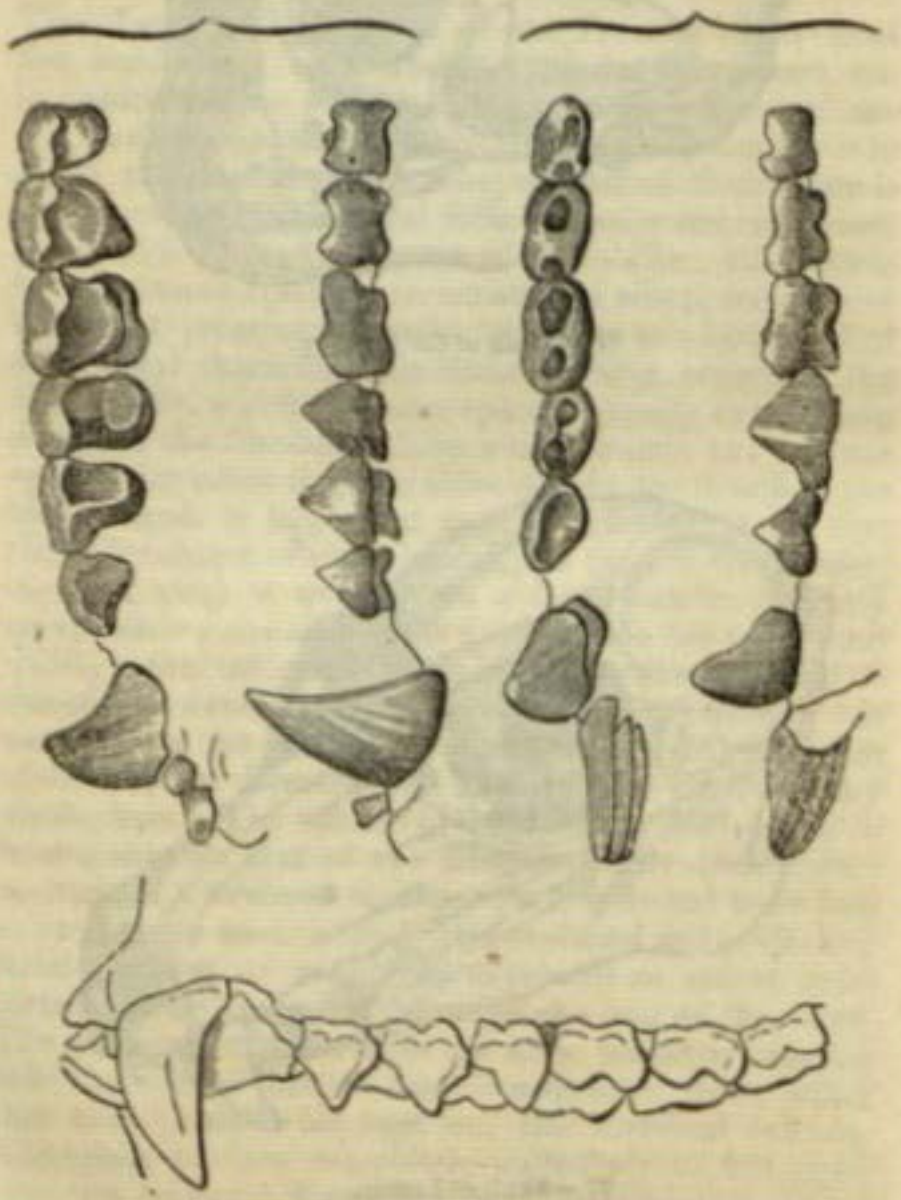
Lemurs (*Lemuridæ*).

The Lemurs (Les Makis of the French) differ from the monkeys of both worlds in dental characters, but in quadrumanous structure they approach those of the old, having opposable thumbs on the fore-hands as well as on the hinder pair. The contour of their body is very peculiar: the general form is slender and elongated, the head is pointed and somewhat fox-like; the nostrils have a sinuous opening, terminating a sharp, naked, and somewhat prominent muzzle; the eyes are large and of a nocturnal character; the limbs are long, especially the hinder pair, which in some species greatly exceed the anterior; the fore-hands have a true thumb, but in some species the index-finger is abbreviated; the thumb of the hinder-hands is large, and greatly expanded at the tip; the index-finger of these hinder pair (and in the Tarsier, the next also) is armed with a long, subulate, slightly curved claw; the other nails are flat; the fur is full and woolly; the tail varies, it is never prehensile, and is sometimes wanting: habits pre-eminently arboreal. If we compare the skull of the monkey (Fig. 76) with that of the ordinary Lemurs (Fig. 77), we shall observe many distinctions. The volume of the Lemur's skull, taken in relationship to that of the face, is greatly diminished; no trace of a forehead remains, but the frontal bone falls so completely back behind the developed and projecting facial portion, or muzzle, as to present an almost level surface along the nasal bones to the top of the head. The occipital condyles have the same posterior situation as in the dog, so that the head is suspended from, rather than even partially balanced on, the vertebral column. The orbits are not completely walled within, but open into the temporal fossæ, and have an obliquely lateral

76.—Skull of the Monkey.

77.—Skull of Lemur.

aspect: the nasal bones run the whole length to the tip of the snout, or nearly so; the lower jaw is long and narrow, and consists of two rami perfectly separate at the chin. Here, indeed, we first meet with the symphysis of the lower jaw unobliterated even in the most advanced period of life. In man and the monkeys this suture is not apparent, even in the youngest subjects;



78.—Teeth of Lemur.

but in the lower mammalia, excepting in the Pachydermata, as a general rule, it is always present. The teeth are as follows :—Four small incisors above in pairs, with an intermediate space between them for the reception of the points of the lower incisors and lower canine teeth. The lower incisors (in the true Lemurs) are four in number, but they are accompanied by the lower canines, which, except that they are stronger and larger, resemble the incisors in form and direction. They are long, pointed, compressed, in close contact with each other, and directed obliquely forwards. The canines of the upper jaw are compressed, pointed, and sharp on their posterior edge. The molars are crowned with sharp angular tubercles.

Dental formula of the genus Lemur (Fig. 78) :—

Incisors, $\frac{4}{4}$; canines, $\frac{1—1}{1—1}$; molars, $\frac{6—6}{6—6}$. The first false molar below is stout, and resembles a canine, whence has arisen the idea that it is so really, and that the lower incisors were 6 instead of 4.

Genus Lemur.

Head long, muzzle pointed, eyes moderate and oblique; ears short and hairy; tail long and bushy; mammæ two, pectoral. All are natives of Madagascar; arboreal, nocturnal. Their movements are light, sweeping, elegant, and precise. Their usual voice is a low inward grunt, but they often break forth into an abrupt hoarse roar, producing a startling effect. The term Lemur (from the Latin *Lemures*, Ghosts) was first adopted by Linnæus in allusion to the nocturnal habits and stilly sweeping movements of these singular animals.

The Ruffed Lemur

(*Lemur Macaco*). Le Vari, Buffon

This is one of the largest and most beautiful of the genus, exceeding a cat in size. Its fur is of admirable texture, being full, fine, and silky; the tail is long and

bushy. The general ground is pure white, on which large black patches are tastefully arranged; the tail is black; a full ruff of longer hairs than those of the body surrounds the face: whence its English appellation. (Fig. 79.)

79.—Ruffed Lemur.

Of the native habits of this and the other Lemurs in the deep forests of Madagascar little is known: they avoid the presence of man, and though harmless, will defend themselves with great resolution, inflicting severe wounds with their sharp canines. They associate together in troops, and after sunset their hoarse loud roar may be heard in dissonant chorus, resounding among the recesses of the woodland wilderness. The roar of the Ruffed Lemur is peculiarly deep and sonorous. During the day the Lemurs sleep in their retreats. Fruits, insects, reptiles, small birds, and eggs constitute their food.

deep, harsh, guttural note, represented by the syllables *quer, quer*. When irritated, its throat becomes distended; and in the posture then assumed, and in the puffed state of the fur, it resembles a cat attacked by a dog.

In 1833 a young male lived for a short time in the menagerie of the Zool. Soc., London. Its aspect and movements were very lemurine: its large eyes, which it opened when the dusk of the evening came on, were brilliant, and gave an animated expression to its countenance not exhibited during the day, when it rested crouching on its perch, lethargic and motionless. It lived chiefly upon bread sopped in milk, refusing meat, either dressed or raw.

Genus Hapale,

Illiger (Jacchus and Midas, Geoff.; Saguinus, in part, of Lacépède).

The Marmozets, or Ouistitis, as the monkeys of this genus are termed, are distinguished from the rest of the American groups by some peculiarities in their dentation.

Dental formula:—incisors, $\frac{4}{4}$; canines, $\frac{1-1}{1-1}$; false molars, $\frac{3-3}{3-3}$; true molars, $\frac{2-2}{2-2}=32$. (Fig. 72.) Of the incisors of the upper jaw the two middle are the largest; those of the lower jaw equal the lower canines in length: the tubercles of the molars are acute. The muzzle is short; the nose is salient, with nostrils widely separate; the limbs are short; the fingers slender, and all, excepting the hind thumbs, which are remarkably short, are furnished with sharp, long, compressed, hooked claws, like those of a squirrel. The fur is full and soft; the tail longer than the head and body, and generally bushy. General contour, stature, and actions, squirrel-like. The Marmozets, or Ouistitis (so called from their sharp whistling cry), are diurnal in their habits; they are irritable in their temper, but timid, and by no means remarkable for intelligence. The most

many yards, pitches so lightly on its fingers as hardly to attract the notice of the ear. If it take a leap from a table to the back of a distant chair, or even to the upper angle of an open door, it never misses its hold. Under the points of the fingers are elastic cushions, which no doubt assist it in performing these feats. It is a very affectionate animal, and a most amusing companion. One in a state of domesticity and suffered to go at large, when tired of playing about in the evening, made its perch on the uppermost leg of his master, as he sat cross-legged before the fire. Having obtained leave, he used to take his seat,

80.—White-fronted Lemur.

When taken young, these animals soon become familiar, and are fond of being noticed and caressed, exhibiting considerable attachment to those who attend them; but we have known them bite severely persons who have irritated them.

In captivity, with due care, they bear our climate well, though they are impatient of cold, as might be inferred from their soft thick fur. They are fond of sitting perched on the fender before a fire, and in this situation they will spread their hands, half close their eyes, and testify unequivocal satisfaction. During the day they sleep in a ball-like figure on their perch; and if two be in a cage together, they sit close to one another with their tails wrapped boa-like round each other's body, so as to make one round ball, from which, on being disturbed, two heads suddenly make their appearance. Though less intelligent than monkeys in general, they are more gentle and confiding: they will put their heads to the bars of their cage, to have them scratched and rubbed, and by their actions invite notice. They have little of the prying, mischievous, petulant disposition of monkeys, so that with due precautions they may be trusted in a room at liberty. When presented with food, they usually take it in their hands; but we have seen them feed upon soft bread without holding it. They lap fluid like a dog. They bound and leap with the most astonishing agility, gracefulness, and address; and when in motion the tail is elevated in a sigmoid form, and not trailed after them. Strong light greatly incommodes them: their eyes gleam at night; and the pupil is transverse, dilating with the advance of evening dimness.

The White-fronted Lemur (*Lemur albifrons*).

Fur ruddy or bronzed-gray above: male with the forehead and sides of the face white; female with the same part of a deep gray. The female and the Lemur Anjuanensis (Maki d'Angouan) are distinct, contrary to the opinion of Lesson. (Figs. 80 and 81.)

The White-fronted Lemur is gentle, affectionate, and lively: it leaps with great agility, and after a spring of

81.—White-fronted Lemur.

wrap his boa-like tail round his shoulders and back, and take his nap.

The Flocky Lemur

(*Maki à Bourre* of Sonnerat). Lemur Langier, Lichanotus Laniger, Indris Laniger.

This species, which was first described and figured by Sonnerat as the Maki à Bourre, has been, we know not why, regarded as a species of Indris (Lichanotus, Illiger), and placed in that genus. Cuvier doubted its alliance to that group; and for ourselves we hesitate not in referring it to the genus Chirogaleus, Geoffr., founded for the reception of certain Lemurs described and figured by Commerson, but till lately unknown to European naturalists.

The fingers of both fore and hind hands are furnished with long pointed claws, the thumbs only having flat nails.

The Flocky Lemur is about a foot in the length of the head and body, the tail being nine inches long. The

colour is pale ferruginous above, white beneath; the fur is extremely soft and curled, deepest about the loins. Face black; eyes large and greenish-gray. (Fig. 82.)

In the museum at Paris we examined a species of Chirogaleus closely allied to (perhaps identical with) the Flocky Lemur: it was labelled Chirogaleus Milii. Head broad and flat; ears moderate and hairy. Fur soft, full, curly, and glossy, of a fine fawn-brown, paler between the eyes, which are large and surrounded by a brown disk. The hairs are all lead-coloured at the base: chin, throat, under surface, and inside of limbs white. Tail fawn-brown. Teeth as in the genus Lemur. Nails minute, flat, but sharp-pointed; those of the thumbs as usual. Length of the head and body about 14 inches; of the tail 12. Of two specimens one was presented to the museum by M. Goudot; the other, alive, by M. le Baron Milius. Native country, Madagascar.

82.—Flocky Lemur.

The Short-tailed Indris

(*Lichanotus brevicaudatus*). L'Indri, Sonnerat?; Indris brevicaudatus, Geoffr.

The genus Lichanotus (or Indris) differs in some details of dentation from the genus Lemur, to which in most points it is closely allied. The following description of the Indris was taken from a fine specimen in the Paris Museum. The anterior part of the face nearly naked; the forehead, temples, throat, and chest white; the ears, the occiput, shoulders, arms, and hands black. The lower part of the back brown, which colour divides on the haunch into two lines, which run down the buttocks and spread on the thighs, leaving the crupper, tail, and posterior part of the thighs white; the root of the tail is tinged

83.—Short-tailed Indris.

with yellow. Anterior part of thighs and feet deepening into black; heels white, with an anklet of grayish-white; breast brown. Flanks and lower part of belly white; and also the inside of the arms. Fur beautifully soft and woolly. Thumbs very large and powerful; fore-toe small and united to the next, almost to the last joint: it is armed with a long sharp nail. The nails of the thumbs and fingers, and also of the toes, the first excepted, are small, flat, subkeeled, and pointed. Length from muzzle to root of tail, two feet; of the tail, three inches; of the hind feet, seven inches and a half. (Fig. 83.)

The Indris is a native of Madagascar, where it is said to be frequently trained by the natives for the chace. Its voice resembles the wailing cry of a child. The word Indris is said to signify in the Madagascar language a "man of the woods."

The Diadem Lemur (*Propithecus diadema*, Benn.).

Mr. Bennett proposed the genus Propithecus for this Lemur, which is a native of Madagascar, and which appears to us, notwithstanding the length of the tail, to belong in reality to the genus Lichanotus. It is in fact a long-tailed Indris. Of its habits nothing is known.

Face nearly naked, with short blackish hairs about the lips, and equally short yellowish-white hairs in front of the eyes. Above the eyes, the long, silky, waved, and thickly-set hairs which cover the body commence by a band of yellowish white crossing the front and passing beneath the ears to the throat. This is succeeded by black, extending over the back of the head and neck, but becoming freely intermingled with white on the shoulders and sides, the white gradually increasing backwards, so as to render the loins only slightly grizzled with black. At the root of the tail fulvous, that colour gradually disappearing until the extreme half of the tail is white with a tinge of yellow. Outer side of the anterior limbs, at the upper part, of the slaty-gray of the sides, below which it is pale fulvous. Hands black, except tufts of long fulvous hairs at the extremities of the thumb and

fingers, extending beyond and covering the nails. Outer sides of the hinder limbs, after receiving a tinge of fulvous from the colour surrounding the root of the tail, of a paler fulvous than the anterior limbs: this becomes much deeper on the hands, which are fulvous, except on the fingers, where there is a very considerable intermixture of black, the terminal tufts, equally long with those of the anterior bands, being, as in them, fulvous. The under surface white throughout, except the hinder part of the throat, where it is of the same colour with the

84.—Diadem Lemur.

sides of the body. Hairs generally long, silky, waved, erect, and glossy; shorter and more dense on the crupper, where they offer a sort of woolly resistance. General character of those on the tail, that of the body hair, but shorter. Thumb of anterior hands slender, placed far back, and extremely free; thumb of hinder hands very strong. Length of body and head, measured in a straight line, one foot nine inches; of the tail, one foot five inches. Anterior limbs, exclusive of hands, seven and a half inches in length from the body; posterior limbs, fifteen inches and a half. Muzzle shorter than in the Lemurs generally; the distance from the anterior angle of the orbit to the tip of the nose (one inch and a quarter) being equal to that between the eyes. Ears rounded, concealed in the fur: length one inch; breadth one inch and a half. (Fig. 84.)

In a young specimen which we examined at Paris the yellow tint on the limbs was very bright and golden.

Genus Stenops (*Loris* and *Nycticebus*, Geoffr.).

In the genus Stenops the dentation is the same as in the Lemur, but the tubercles on the crowns of the molars are more acute. The animals of this group are termed Loris, or Slow Lemurs. They are characterised by the head being round, the muzzle short and acutely pointed; the eyes large, full, bright, and approximating to each other; the ears short, round, open, and almost buried in the fur; the tail completely rudimentary, and the limbs slender. Two species are known, both natives of India and its islands, especially Ceylon, Java, Sumatra, &c.

These animals have been long celebrated for the slowness and caution of their movements, to which may be added a remarkable tenacity of grasp, in conjunction with the power in the limbs of exerting a long continuance of muscular contraction. In the arteries both of the anterior and posterior extremities there is a peculiarity first detected by Sir A. Carlisle, and met with in the limbs of the Sloth and a few other instances. No sooner has the main artery, a single tube, reached the

commencement of the limbs, but it assumes another character: instead of continuing its course as a simple tube, giving off branches as it proceeds, the usual mode, it becomes suddenly subdivided into a congeries of small tubes intertwined together, and communicating with each other freely, thus forming an elongated plexus, which may act as a sort of reservoir, and carry onwards a large volume of blood. The relation of this plexus to the bulk of the limb it supplies with blood is greater in point of volume than that of the simple artery in ordinary animals.

The Slow-paced Loris (*Stenops tardigradus*).

Fur soft and full; colour brownish gray, a deep chestnut stripe passing down the middle of the back; this

85.—Slow-paced Loris.

stripe, continued on to the head, gives off a branch which encloses each ear, and another which encircles each eye, and extends to the angles of the mouth. Figure short; hind limbs longer than the fore limbs. Eyes large, nocturnal, with transverse pupils; muzzle short and pointed. Length 12 or 13 inches. (Fig. 85.)

The Slender Loris (*Stenops gracilis*).

Muzzle produced, slender, acute; figure slight; limbs very long, thin, and meagre. General colour rufous-gray; the under parts whitish; space round the eyes dusky; fur soft; a whitish or white frontal spot points to the interval between the eyes. Length of head and body, nine inches. (Figs. 86 and 87.)

The Slow-paced and Slender Loris are eminently nocturnal and arboreal: they sleep during the day on their perch, in a crouching attitude, with the body drawn together, and the head doubled down upon the chest. At night they prowl among the forest boughs in search of food: their large glaring eyes now glow with peculiar lustre; not an insect, not a bird escapes their scrutiny: they mark their victim; stilly, and imperceptibly as the minute-finger traverses the dial-plate, do they advance upon their prey; and not less surely does the minute-finger attain a given mark than they their prey: when it is once within range of their grasp, they seize it by a rapid instantaneous action. Besides birds, insects, and eggs, fruits also form part of their diet.

Of all the Lemuridæ which we have seen alive, none appear to be so susceptible of cold or so incommoded by daylight, nor are any so apparently dull and inanimate from morning till evening. They appear as if in a state of continual torpor; yet if exposed to the influence of warmth, they will rouse up, not only on the approach of twilight, but even during the hours of day, if shielded from the glare of the sun. When fairly awake, and comfortably warm, they delight to clean and lick their full soft fur, and will allow themselves to be caressed by those accustomed to feed them.

86.—Slender Loris.

Mr. Baird, in an interesting paper in the 'Magazine of Nat. Hist.' vol. i., 1829, remarks that all the known Mammalia close their eyelids in a direction upwards and downwards, and, in general, the upper eyelid is the one possessing the greatest degree of motion. He found, however, that in his Slow-paced Lemur the eyelids were brought together in a diagonal direction, or outwards and inwards, which gave the animal at the moment of shutting its eyes a most peculiar look. It was the under or outer eyelid that had the greatest degree of motion, the upper or inner one being almost fixed; and he concludes that the orbicularis oculi must be very powerful. After the death of the animal, and when Mr. Baird had left this country on a second voyage to India, the eye was dissected by Dr. Knox, who found that the peculiar

movement of the eyelids above described did not depend on any peculiar structure, but merely on the greater degree of strength of the orbicularis muscle.

Mr. Baird also observed another peculiarity in the species. "Beneath the tongue proper," says he, "if I may so call it, which is somewhat like that of the cat, though not rough, is another tongue, white-coloured, narrow, and very sharp-pointed, which he projects along with the other one when he eats or drinks, though he has the power of retaining it within his mouth at pleasure." Mr. Baird, however, had not been able to see any particular purpose to which he applied it; but he saw him use this double tongue when eating flies, of which he was exceedingly fond, snapping them up most eagerly when presented to him, and catching them himself when they were reposing in the evening upon the walls of the room.

Pennant, Vosmaër, Sir W. Jones, Mr. Baird, M. d'Obsonville, and others have published detailed observations made upon Loris in captivity, and their accounts coincide with the facts which have come under our own notice.

Vosmaër's specimen (S. tardigradus) ate fruits, such as pears and cherries, with relish; and also dry bread and biscuit; but if dipped in water, would touch neither. When offered water, it smelt it, but drank not. Eggs were favourite diet. "Il aimoit à la fureur les œufs," are the words of Vosmaër, who, concluding from its appetite for eggs that it would eat birds, gave it a live sparrow, which it instantly killed with a bite, and ate the whole very greedily. He gave it a live cockchafer, to try whether it would eat insects: it took the offering in its paw, and devoured it completely. Vosmaër afterwards gave it a chaffinch (pinçon), which it ate with much relish, and afterwards slept for the remainder of the day. He often saw it still awake at two hours past midnight; but from half-past six in the morning its sleep was so sound, that its cage might be cleaned without disturbance to its repose. If forcibly awakened during the day in order to teaze it, it was vexed, and bit the stick; but

87.—Slender Loris.

with a very slow motion, repeating the cry Ai, ai, ai, drawing out the Ai each time into a plaintive, languid, and trembling note, in the same manner as is reported of the American sloths. When it was thus harassed for a long time and thoroughly roused, it crawled two or three times round its cage, and then slept again. Mr. Baird informs us that he obtained his specimen at Pulo-Penang (Prince of Wales Island); and at the time he wrote, it had been nearly ten months in his possession. Its food consisted of fruit and small animals, such as birds and mice. The plantain was the fruit of which it was most fond, and was the only food Mr. Baird saw it eat when he first got it into his possession. The necks of fresh-killed fowls formed the major part of its sustenance during the voyage. It was particularly fond of small birds. these, when put into the cage, it killed speedily, and, stripping off the feathers, soon devoured them, eating

the bones as well as the flesh. Veal was preferred to all other butcher's meat, and it was fond of eggs: meat boiled, or otherwise cooked, it would not touch. Sugar appeared to be grateful to its palate, and it ate gum-arabic. The juice of oranges was also greatly relished, and, unlike Vosmaër's specimen, it readily fed upon bread sopped in water and sprinkled with sugar; and lapped water eagerly like a cat.

Genus Tarsius.

The Tarsiers, of which two species are known, are distinguished by the rounded figure of the head, and the extreme shortness of the muzzle; by the enormous size of the eyes; and the extraordinary length and slenderness of the hinder limbs, of which the tarsus is thrice as long as the metatarsus. The fingers both of the anterior and posterior limbs are elongated and slender; the hind thumb is well developed, with a small triangular nail, and the first and second fingers are furnished with small, pointed, narrow claws. The ears are large, naked, and capable of being folded. Tail long, covered with short hair. The first description of the Tarsier (T. spectrum) is due to Daubenton, who gave it this title in allusion to the length of the tarsi. Gmelin, misled by its apparently anomalous structure, placed it in his genus Didelphis (the receptacle alike of opossums and kangaroos), under the name of D. macrotarsus. Pennant, misled by the tarsi, termed it the Woolly Gerboa. M. F. Cuvier considers its dentation to approximate to that of some of the bats.

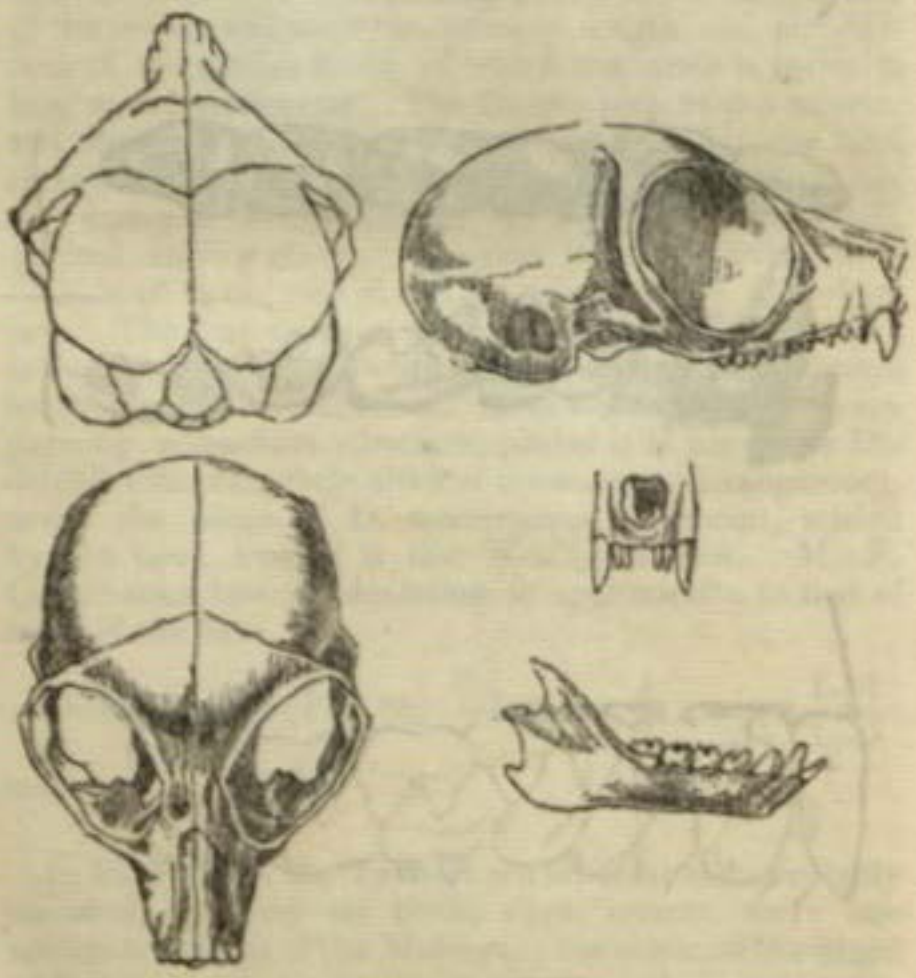
Dental formula (Fig. 88):—Incisors, $\frac{4}{2}$; canines, $\frac{1-1}{1-1}$; molars, $\frac{6-6}{6-6}$ = 34.

In their habits the Tarsiers are arboreal and decidedly nocturnal, preying on birds, eggs, insects, &c.: one species is a native of the Moluccas; the other, of the island of Banca.

88.—Teeth of Tarsiers.

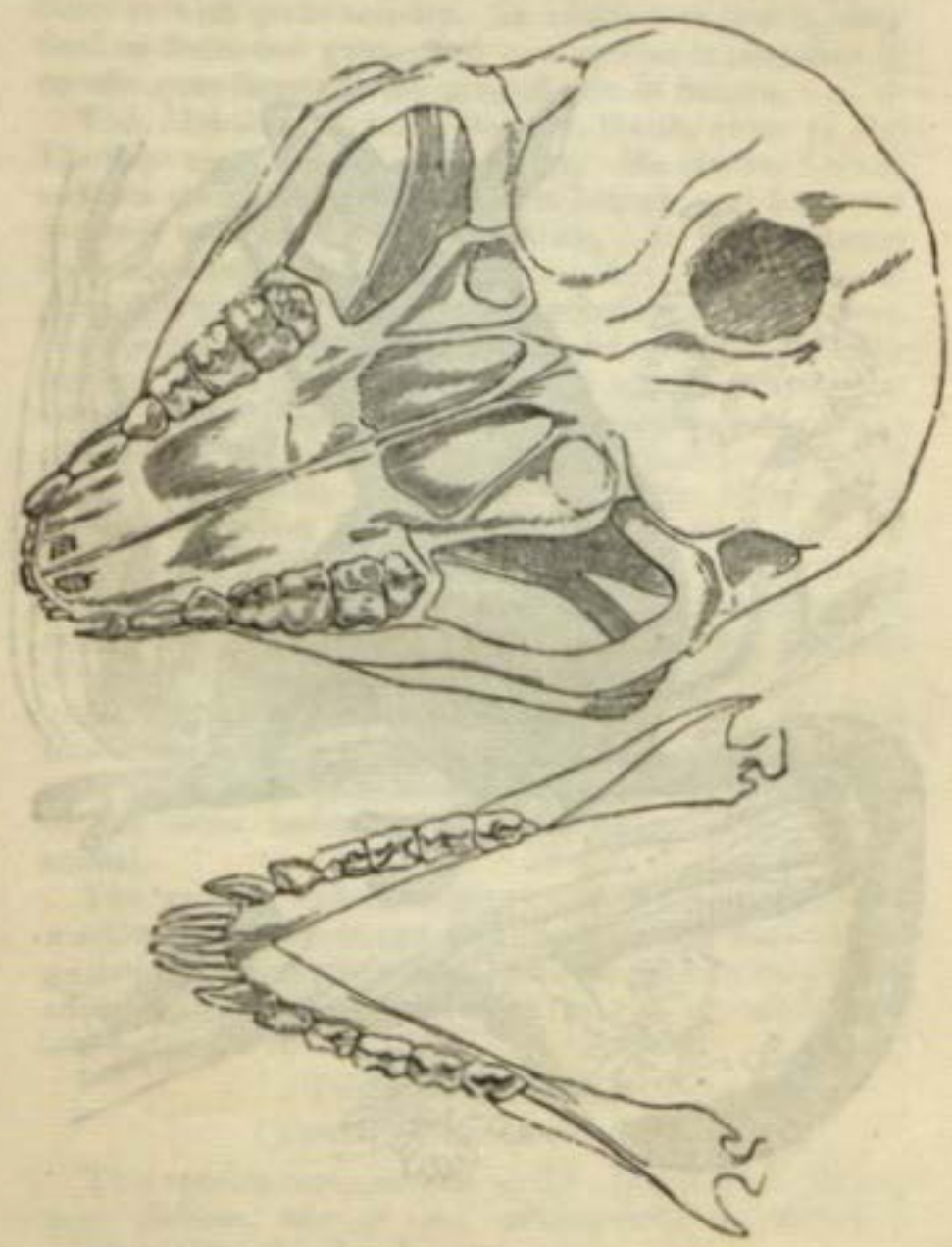
The Moholi (Galago Moholi).

We select as an example of the genus Galago (Otolicnus, Ill.), the Moholi of Southern Africa. The Galagos, though they approach the Lemurs in the dental characters, differ from those animals in many well-marked and important points. The ears are large, membranous, naked, and, as in the long-eared bats, capable of being folded down over the external orifice. The posterior limbs are greatly developed, and especially at the tarsal portion. The eyes are large and full; the head is round; the muzzle pointed; the tail long; the fingers, both of



89.—Skull of Moholi.

the fore and hind hands, long and slender, with the usual sharp claw on the first finger of the hinder pair. The fur is full, soft, and woolly. The skull (Figs. 89, 90) is more globular, and with larger orbits than we find



90.—Base of Skull of Moholi and lower Jaw, natural size.

in the Lemurs: it is more elevated above, and broader. (Fig. 91.)

The Galagos are nocturnal animals: during the day they sleep on the branches, their ears being folded down;

91.—Moholi

on the approach of night they are all animation, and, with ears expanded and glistening eyes, they begin their prowl for food. They watch the insects flitting among the leaves: they listen to the buzzing of their wings amidst the foliage, and dart upon the incautious flutterer with great activity. In addition to insects, they feed on fruits and gum; and one species is abundant in certain gum-forests in the great desert of Sahara.

The Moholi was found by Dr. Smith, close to the Limpopo river, in about 25° S. lat. He observed these animals springing from branch to branch, and from tree to tree, with extraordinary facility. In their manner they considerably resembled the monkeys, particularly in grimaces and gesticulations. According to the natives, the species is entirely nocturnal, and rarely to be seen during the day, which the animal spends in the nest which it has formed in the forks of branches or in cavities of decayed trees; and in these nests, constructed of soft grass, the females bring forth and rear their young (generally two at a birth). Dr. Smith states that the food of the Moholi consists principally of pulpy fruits, though there is reason to believe it also consumes insects, as remains of the latter were discovered in the stomachs of several individuals which he examined.

Dr. Smith, for the reasons stated in his work, considers this animal different from Galago Senegalensis. He gives an elaborate anatomical description and good figures of the more important and interesting parts of this animal.

The general colour is gray, with wavy or brindled markings of a darker tint, and the limbs are washed with yellow; under-parts white; tail red-brown; ears flesh-coloured. Length from nose to tip of tail sixteen inches.

The Banca Tarsier

(*Tarsius Bancanus*, Horsfield).

This species was obtained by Dr. Horsfield in Banca, near Jeboos, one of the mining-districts, where it inhabits the extensive forests.

The fur is deep, soft, thick, and woolly, enveloping the head, body, limbs, and root of tail, where it terminates abruptly. The general colour is brown inclining to gray, especially on the inside of the limbs and the under parts; a rufous wash appears on the head and outer

22.—Banca Tarsier.

surface of the limbs. The tail, which equals the head and body in length, is nearly naked, except at its base: towards the extremity it is covered with a soft down, which forms, near the tip, a very obscure tuft. The backs of the hands are covered with a very soft down: the palms are naked, and provided with several prominent cushions, calculated to assist in climbing and perching with safety on the branches. Of its habits no details have been collected. (Fig. 92.)

Genus Chiromys.

This genus was established by Cuvier for the reception of that extraordinary animal the Aye-Aye, respecting the affinities of which so many conflicting opinions have been advanced.

The Aye-Aye

(*Chiromys Madagascariensis*)

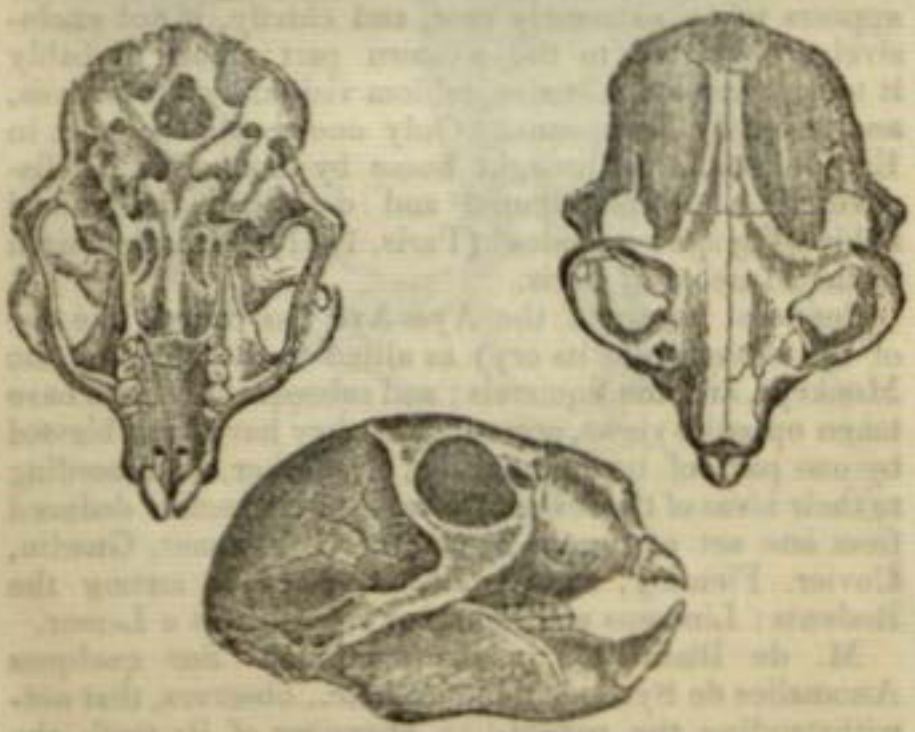
This animal is a native of Madagascar, where it appears to be extremely rare, and chiefly, if not exclusively, restricted to the western part: most probably it tenants remote solitudes, seldom visited by the natives, and never by Europeans. Only one specimen exists in Europe, viz. that brought home by Sonnerat, its discoverer, who first figured and described the animal in his 'Voyage aux Indes' (Paris, 1781). It is deposited in the Museum of Paris.

Sonnerat regarded the Aye-Aye (so called, like one of the sloths, from its cry) as allied to the Lemurs, the Monkeys, and the Squirrels; and subsequent writers have taken opposite views, according as they have been biassed by one part of its organization or another, or according to their ideas of the respective value of characters deduced from one set of organs or another. Pennant, Gmelin, Cuvier, Fleming, and Swainson, place it among the Rodents; Linnæus and Schreber regard it as a Lemur.

M. de Blainville, in his pamphlet 'Sur quelques Anomalies de Système dentaire,' &c., observes, that notwithstanding the rodent-like character of its teeth, the

rest of its organization, its manners, and habits prove it to be a true Lemur, having absolutely no relationship with the Rodents, no affinity to them, in spite of all that many naturalists have imagined; and, after a careful examination of the specimen and skull, we coincide in this opinion.

The teeth consist only of incisor and molars (see skull, Fig. 93): the incisors are two in each jaw, strong and powerful: those below are compressed laterally, but are deep from back to front; their roots are carried backwards each in an alveolus, or socket, extending almost the whole length of the ramus of the jaw; they are acutely pointed, their apex resembling a ploughshare. These teeth strongly remind one of the huge curved canines in the lower jaw of the Hippopotamus. The upper incisors are not so obliquely pointed, and are also smaller than the lower. Between the incisors and the molars an unoccupied space intervenes. The molars are 4 on each side above, 3 below, small, and of simple structure. The



93.—Skull of Aye-Aye.

head is moderate and rounded, and the muzzle is rather short and pointed. The eyes are very large and nocturnal. The osseous ring of the orbits is complete (Fig. 93). The ears are large; and obscure furrows on their internal aspect seem to denote that, as in many bats, they are capable of being folded down: they are, in fact, bat-like, black, naked, and smooth.

The fore paws have each five fingers; that which represents the thumb is short, and arises beyond the base of the rest; these are long and slender: the middle finger is very thin, but it is exceeded in strength by the third or ring finger; the thumb is not opposable, and, like the other fingers, is furnished with a strong, sharp, hooked claw. The arms are short in proportion to the posterior limbs; the latter being long, and terminating in prehensile feet. The thumb is well developed and protected by a flat nail: the toes are of moderate length and stoutness, but the first is the shortest, and, as in the Lemurs, is armed with a straight pointed claw; the rest have large hooked claws. The tail is long and bushy, with coarse black or brownish-black hairs; the general colour is ferruginous-brown, passing into gray on the sides of the head, the throat, and belly; the feet are nearly black. Beneath the brown outer-coat there is on the back and limbs a fine thick under-coat of soft yellow wool, which appears more or less through the outer. In the female the teats are two and ventral. Length of head and body 1 foot 6 inches; the tail being nearly the same. (Fig. 94.)

According to Sonnerat, who kept two of these animals, a male and female, in captivity, it would appear that the habits of the Aye-Aye are nocturnal. By day they see with difficulty, and the eyes, which are of an ochre colour, resemble those of an owl. Timid and inoffensive, they pass the day in sleep, and when roused up their motions are slow, like those of the Loris: they have also the same fondness for warmth; their thick fur indeed sufficiently proves their impatience of cold. During the day the Aye-Aye conceals itself in its secluded retreat, some hole or excavation, whence it issues forth on the approach

94.—Aye-Aye.

of darkness in quest of food: its diet consists of buds and fruits, together with insects and their larvæ; for the latter it searches the crevices and bark of trees, drawing them forth by means of its long finger, and so conveying them to its mouth. Sonnerat kept his specimens alive for two months, feeding them upon boiled rice, in taking up which they used their long slender fingers, much in the same manner as the Chinese do their chop-sticks. Sonnerat remarks that, during the whole of the time these animals lived, he never observed them set up their long

bushy tail, like a squirrel, but that, on the contrary, it was always kept trailing at length.

Considering the length of time that has intervened since the discovery of the Aye-Aye by Sonnerat, and visited as the island of Madagascar has been by Europeans, it is somewhat strange that no additional specimens should have been obtained, and that not a single notice of a living individual having been seen or captured should have appeared.

Genus Galeopithecus.

This genus contains those strange animals the Colugos, called Flying Lemurs, Flying Cats, Flying Foxes, &c., by voyagers. The first notice of the Colugo is by Bontius, who terms it "Vespertilio admirabilis." It was afterwards figured by Seba, under the name of Felis volans Ternatanus: Linnæus subsequently placed it among the Lemurs under the title of Lemur volans. Cuvier places it at the end of the Bats. The query then at once arises, to what group is the Colugo to be referred? M. Geoffroy, who denies its relationship to the Bats, observes that it is still less a Lemur, and that its head is altogether that of a true "Carnassier." Notwithstanding this authority, in our views its affinities, intermediate as they may be between the Lemurs and other groups, place it within the pale of the Lemurine family.

The Colugo

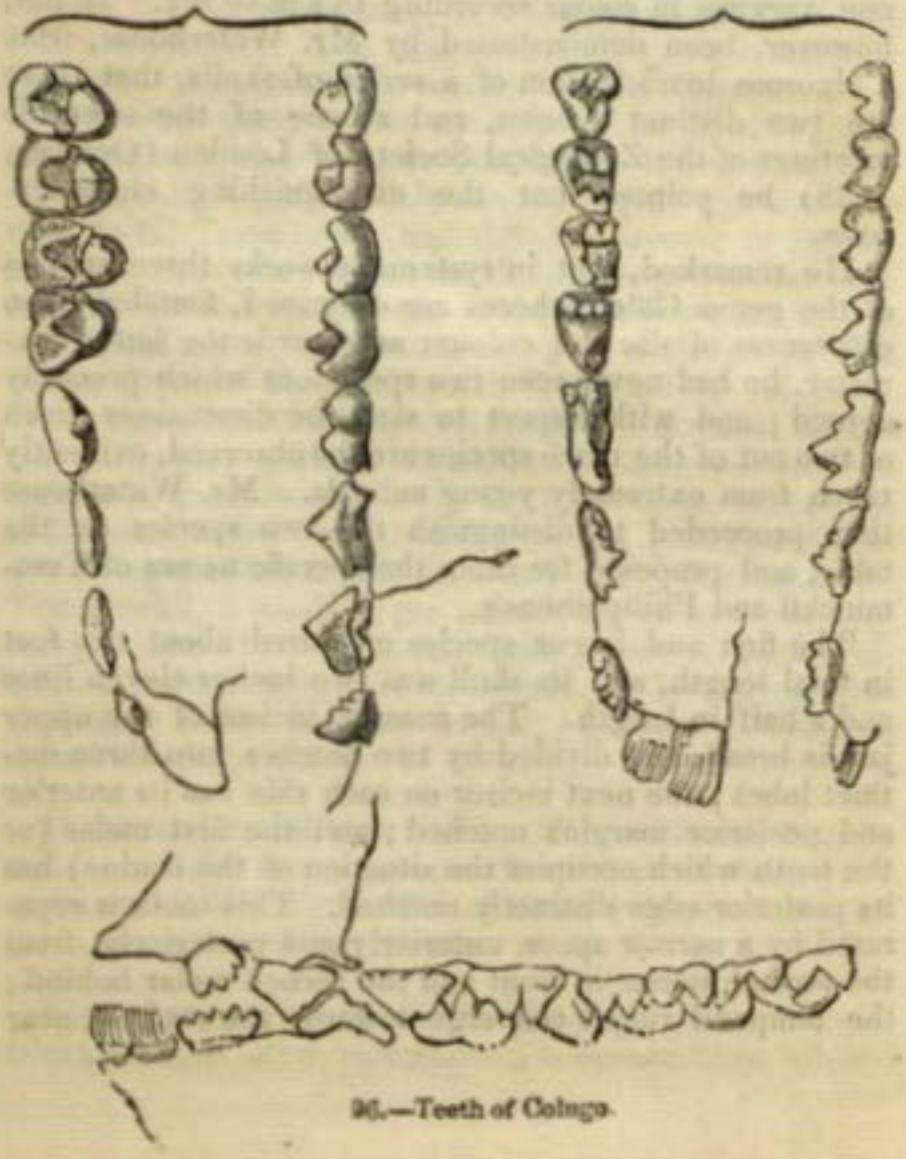
is an animal of the size of a cat, furnished with an extensive parachute consisting of a lateral membrane, not only between the anterior and posterior limbs, but also between the posterior limbs, so as to include the tail, which is of considerable length: the fingers of the fore paws are also included in this extensive membranous expansion. The whole of the upper surface of the body and lateral membranes is covered with woolly fur, but the under surface is nearly naked. The parachute is capable of being folded up; but when on the stretch for action it forms a wide expanse, not indeed endowing its possessor

with true powers of flight, but enabling it to take long sweeping leaps from tree to tree with the utmost facility. (Fig. 95.)

95.—Colugo.

The general aspect of the head is Lemurine: the muzzle is produced; the nostrils are lateral, naked, and sinuous; the eyes moderate; the ears short and pointed. The anterior limbs are long: the hands are divided into five fingers; the first, or thumb, separated from the rest, though not antagonizing with them, is short; the remaining four are nearly equal; all are armed, not with flat nails, but with large deep, hooked, sharp-edged, retractile claws. The hinder limbs slightly exceed the fore limbs in length, and the feet are similar in character to the fore hands.

Fred. Cuvier gives the Dental Formula as follows:—
Incisors, $\frac{4}{6}$; canines, $\frac{0-0}{0-0}$; molars, $\frac{6-6}{6-6}$ = 34.
(Fig. 96.) Mr. Waterhouse, whose excellent paper on the skull of the Colugo is in the 'Zoological Transactions,' vol. ii., gives the dentation thus:—
Incisors, $\frac{2-2}{4}$; canines, $\frac{0-0}{1-1}$; false molars, $\frac{2-2}{2-2}$; true molars, $\frac{4-4}{4-4}$ = 34.



96.—Teeth of Colugo.

The upper incisors are placed laterally in pairs, with a wide interval between each pair, occupying the anterior part of the jaw: the first is small, compressed, and jagged or pectinated; the second is similar, but somewhat larger. The two false molars above rise up with sharp points; the molars are crowned with acute insectivorous tubercles. The lower incisors are deeply and finely pectinate. (Figs. 97 and 98, Nos. 4 and 5.) The canines are serrated.

Some naturalists have considered the species of Colugo to be three; while Fischer and others recognise only one, varying in colour according to age or sex. It has, however, been demonstrated by Mr. Waterhouse, from a rigorous investigation of a series of skulls, that there are two distinct species, and at one of the scientific meetings of the Zoological Society of London (October, 1838) he pointed out the distinguishing characteristics.

He remarked, that in systematic works three species of the genus Galeopithecus are described, founded upon differences of size and colour: as regards the latter character, he had never seen two specimens which precisely agreed; and with respect to size, the dimensions given of two out of the three species are, he observed, evidently taken from extremely young animals. Mr. Waterhouse then proceeded to distinguish the two species on the table, and proposed for them the specific names of Temminckii and Philippinensis.

The first and larger species measured about two feet in total length, and its skull was two inches eleven lines and a half in length. The anterior incisor of the upper jaw is broad, and divided by two notches into three distinct lobes; the next incisor on each side has its anterior and posterior margins notched; and the first molar (or the tooth which occupies the situation of the canine) has its posterior edge distinctly notched. This tooth is separated by a narrow space, anteriorly and posteriorly, from the second incisor in front and the second molar behind; the temporal ridges converge towards the occiput, near

which, however, he observed, they are separated usually by a space of about four lines. This is probably the Galeopithecus volans of authors; but the identity cannot be said to be certain.

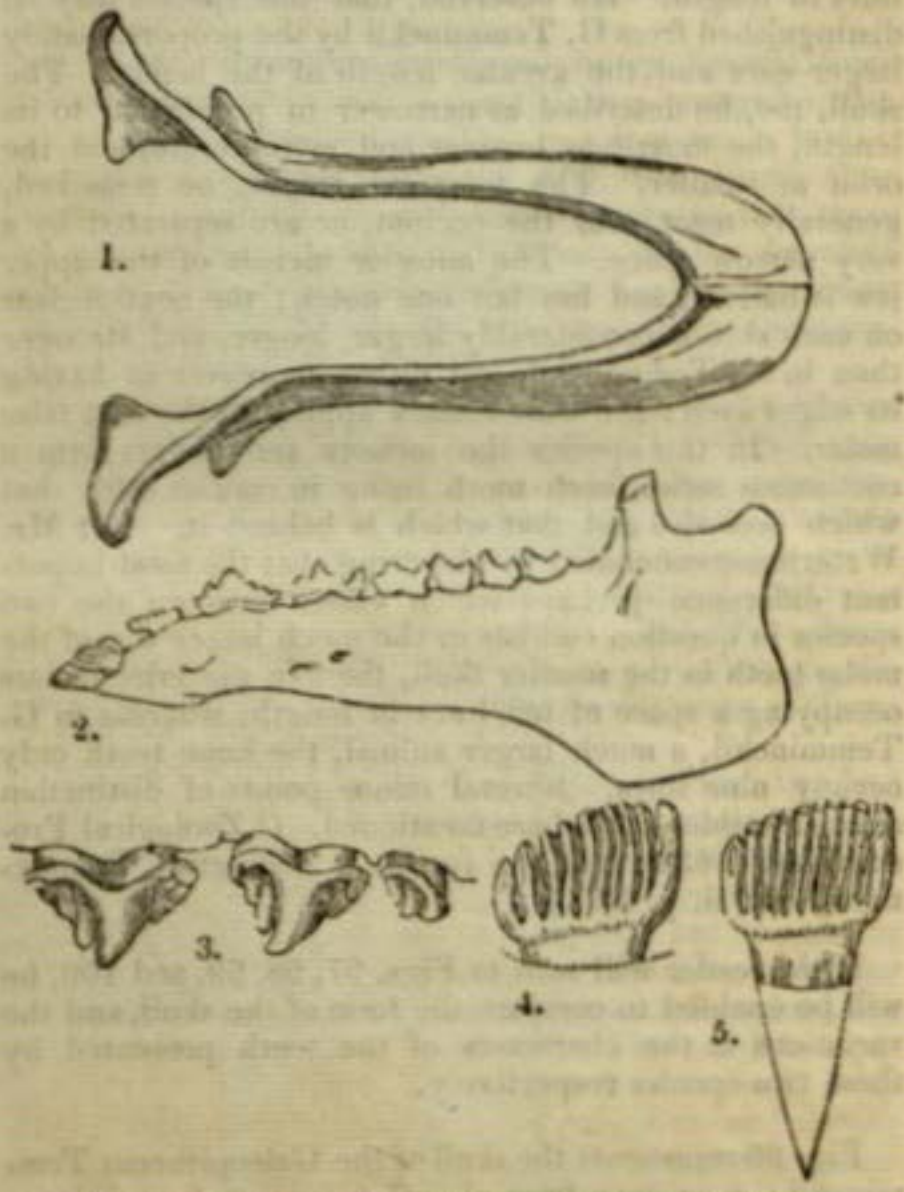
The second species, G. Philippinensis, was described by Mr. Waterhouse as being usually about twenty inches in length, and its skull as measuring two inches seven lines in length. He observed, that this species may be distinguished from G. Temminckii by the proportionately larger ears and the greater length of the hands. The skull, too, he described as narrower in proportion to its length, the muzzle as broader and more obtuse, and the orbit as smaller. The temporal ridges, he remarked, generally meet near the occiput, or are separated by a very narrow space. The anterior incisor of the upper jaw is narrow, and has but one notch; the next incisor on each side is considerably larger, longer, and stronger than in G. Temminckii, and differs moreover in having its edges even: the same remark applies to the first false molar. In this species the incisors and molars form a continuous series, each tooth being in contact with that which precedes and that which is behind it. But Mr. Waterhouse concluded by observing that the most important difference perhaps which exists between the two species in question consists in the much larger size of the molar teeth in the smaller skull, the five posterior molars occupying a space of ten lines in length, whereas in G. Temminckii, a much larger animal, the same teeth only occupy nine lines. Several minor points of distinction existed besides those here mentioned. ('Zoological Proceedings,' 1838; and see further, 'Zoological Transactions,' vol. ii. p. 335.)

If the reader will turn to Figs. 97, 98, 99, and 100, he will be enabled to compare the form of the skull, and the variations in the characters of the teeth presented by these two species respectively.

Fig. 99 represents the skull of the Galeopithecus Temminckii: *a*, as seen from above; *b*, as seen from below.

Fig. 97 represents the lower jaw and teeth of the same species (G. Temminckii): 1, the under side of the lower jaw; 2, side view of the same; 3, the three foremost teeth on either side of the upper jaw; 4, 5, outer and inner incisors of the lower jaw.

Fig. 100 represents the skull of G. Philippinensis: *a*, the upper side; *b*, the under side.

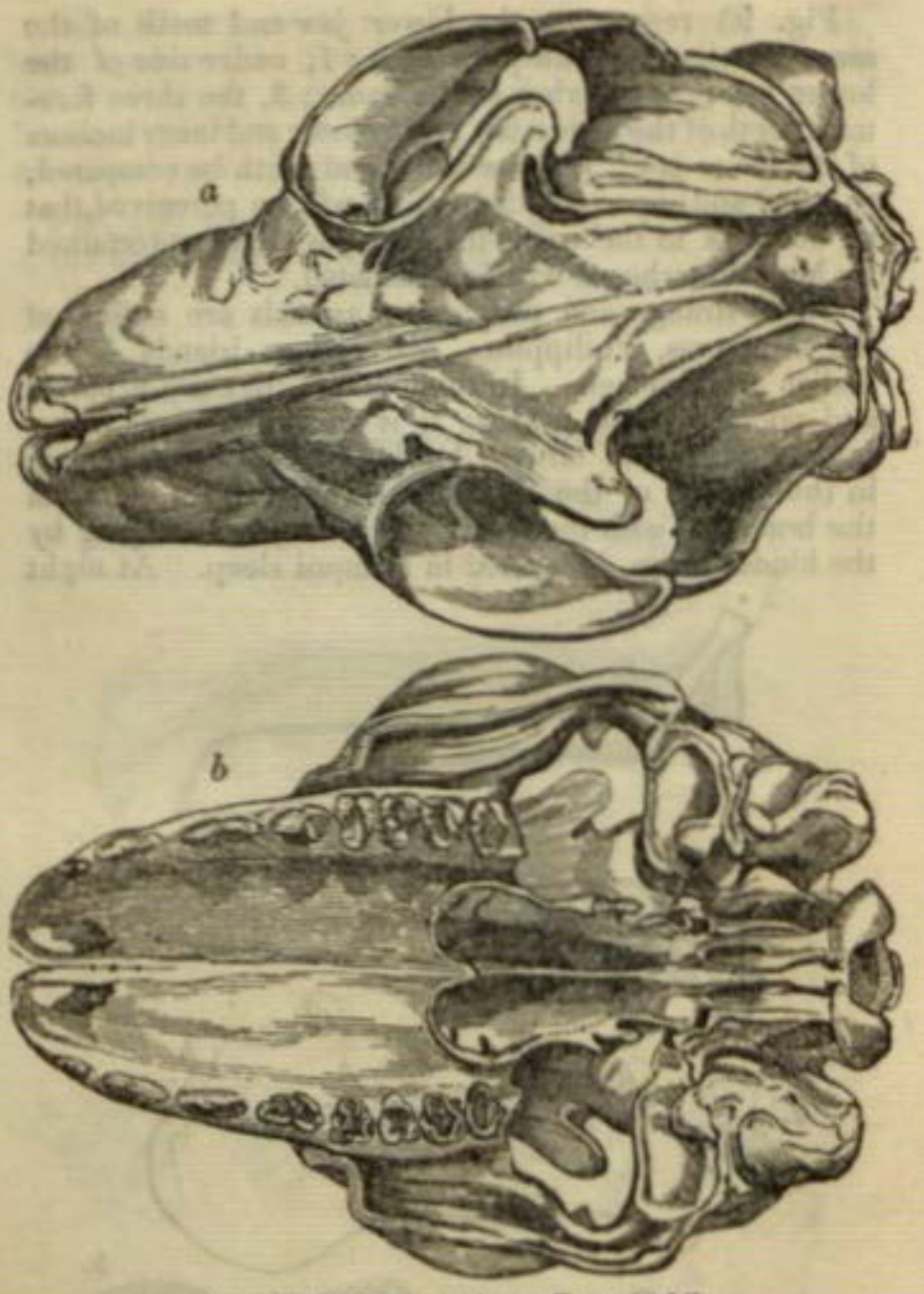


97.—Lower Jaw and Teeth of Galeopithecus Temminckii.

Fig. 98 represents the lower jaw and teeth of the same species (G. Philippinensis) : 1, under side of the lower jaw ; 2, side view of the same ; 3, the three foremost teeth of the upper jaw ; 4, 5, outer and inner incisors of the lower jaw. If these skulls and teeth be compared, so many and important distinctions will be perceived, that all doubt as to the correctness of the views entertained by Mr. Waterhouse will be dissipated.

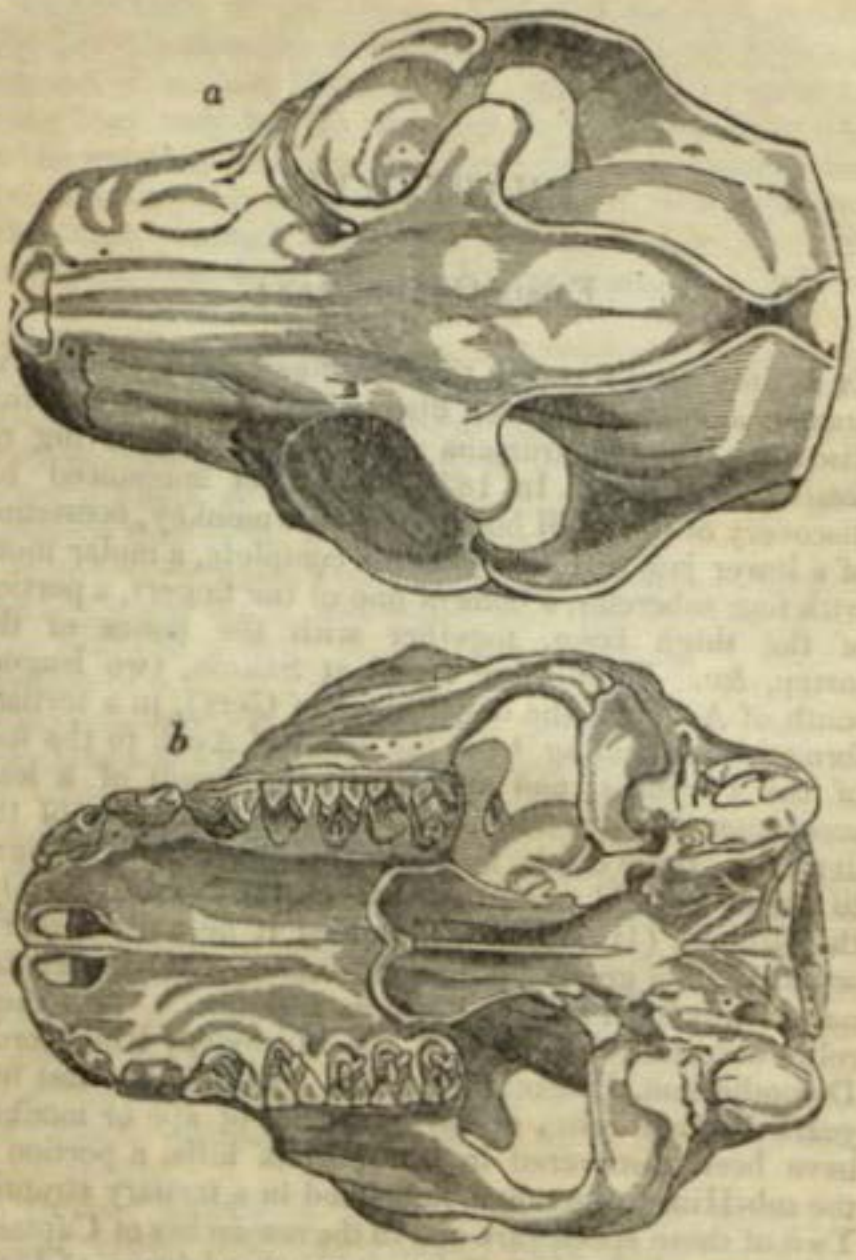
These strange and perplexing animals are natives of the Moluccas, Philippines, and various islands of the Indian Archipelago. In their habits they are arboreal and nocturnal, and feed, as it is supposed, upon fruits, insects, eggs, and birds. During the day they remain in the depths of the forests, suspended like a bat from the branches, with the head downwards, and clinging by the hinder claws, immersed in tranquil sleep. At night

98.—Lower Jaw and Teeth of Galeopithecus Philippinensis.



99.—Skull of Galeopithecus Temminckii.

they rouse up, are active in traversing the trees in every direction and sweeping from one to another with great address, in search of food. Though of a disagreeable odour, their flesh is eaten by the natives. The females



106.—Skull of Galeopithecus Philippinensis.

are said to produce two young at a birth, which adhere to the teats of their parent. Camelli, in a MS. on the subject in the British Museum, asserts the female to have a double abdominal pouch, in which the young are carried, but in this statement he is certainly erroneous.

CHAPTER VII.

Fossil Quadrumana.

It is only very recently that the fossil relics of quadrumanous animals have been discovered; previously to this discovery, the Quadrumana were regarded as having no fossil prototypes. In 1836 M. Lartet announced his discovery of the fossil bones of a large monkey, consisting of a lower jaw with its dentation complete, a molar tooth with four tubercles, a bone of one of the fingers, a portion of the thigh bone, together with the bones of the instep, &c. They were found at Sanson, two leagues south of Auch (in the department of Gers), in a tertiary formation extending from the south of Auch to the foot of the Pyrenees, and apparently the result of a long succession of water alluvia. From the characters of the dentation, there can be no doubt that the animal belonged to one of the old world sections of the Simiæ, namely, the Gibbons (Hylobates), if indeed it be not the representative of a genus no longer extant. M. Lartet has named this fossil species Pithecus antiquus. With these relics occurred those also of the Mastodon, Rhinoceros, Deinotherium, Palæotherium, &c. Within the last few years the fossil relics of three species of ape or monkey have been discovered in the Sewalik hills, a portion of the sub-Himalayan range, imbedded in a tertiary stratum. Two of these species are due to the researches of Captains Falconer and Cautley, and one to the labours of Lieutenants Baker and Duvaud. Of these fossil Simiadæ, one, as the fragments indicate, exceeded in size any living species of the present day: the second was also a large animal, superior to the Entellus monkey in size; the third appears to have been about equal to the Entellus, and was probably an orang

In the basin of the Rio des Velhas in South America, Dr. Lund, a Swedish naturalist, has discovered the fossil remains of extinct Quadrumana; and it is interesting to know that they belong to a form closely related to that of the existing American monkeys termed Sapajous; but the animals must have far exceeded any living species. The larger, indeed, must have been upwards of four feet in height. Dr. Lund terms it Protopithecus Brasiliensis; the other, and smaller, he terms Callithrix primævus. We have then evidences of the existence of Quadrumana at a remote epoch, in continental Europe, Asia, and America; but what is more unexpected, we have proofs that, at some era, they existed in our island (if then an island), when, as we may imagine, its surface was very different from what it now appears.

The first example, a portion of the lower jaw, containing the last molar teeth, was found with the teeth of sharks (in 1837) in a deep layer of whitish sand, beneath a stratum of blue clay on the banks of the river Deben, at Kingston, near Woodbridge, in Suffolk. This bed of clay is in many places overlaid by crag, and may probably be assigned to the age of the London clay. In the stratum of sand the fossil teeth and portions of the lower jaw of an opossum were also discovered. (See 'Mag. Nat. Hist.' 1839, pp. 448, 450.) The extinct monkey, as proved by the characters of the molar tooth, belonged to the genus Macacus, or at least to a genus very closely related to it. The tooth, it may be observed, is somewhat narrower than in any recent species of Macacus, but the posterior fifth tubercle presents, as in most of that group, two cusps, instead of being simple as in the genus Semnopithecus.

In the 'Annals of Natural History,' Nov. 1839, Professor Owen describes a second tooth found in the same locality, which he identifies as the second molar of a Macaque; and from being well worn, it is evident that the individual to which it belonged was aged at the time of its death. It differs from the corresponding tooth of a recent Macaque, in having a slight ridge along the base of the interior part of the crown, and the same cha-

racter occurs also in the molar previously alluded to, and which was rigorously examined by the same philosophic anatomist. M. d'Orbigny's remark respecting the beds above the chalk in the neighbourhood of Meudon seems applicable in the present case, viz., that "in the lower part of the plastic clay, new features are discovered to obtain, demonstrating, in an especial manner, that various genera of Mammals were living at the epoch when that layer was formed."

That the Simiæ should have existed in our latitudes at the time of the deposition of the London clay is not surprising, when we consider the tropical character of the fossil fruits so abundant in that deposit: we say London clay (as the geologists designate it), because the blue stratum, beneath which these fossil teeth were found, belongs undoubtedly to that formation. Mr. Wood, in reference to one of these relics, observes, "As this fossil certainly belongs to some quadrumanous animal, there is no formation to which it could be so appropriately assigned as that of the London clay; the tropical character of the Fauna as well as the Flora of that period being such as to justify an assumption of a warmer climate quite suitable to the existence of our macacus." Besides the teeth of animals of the monkey tribe, a fragment of the jaw of an opossum, in which one of the false molars is retained, has been discovered in the same deposit.

THE END.

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