

ence of this second kind of jumar than we have for the first. With regard to the third jumar, proceeding from the bull and she-ass, I am persuaded, notwithstanding the authority of Merolle, that it has no more existence than the one supposed to be produced by the bull and mare. The nature of the bull is still farther removed from that of the she-ass, than from that of the mare: And the unfertility of the mare and bull, which is ascertained by the above examples, should apply with greater force to the union of the bull and ass.

## The NOMENCLATURE of APES.

TO teach children, and to address men, are two very different offices. Children receive without examination, and even with avidity, the arbitrary and the real, the true and the false, whenever they are presented to them under the form of precepts. Men, on the contrary, reject with contempt all precepts which are not founded on solid principles. We shall, therefore, adopt none of those methodical distributions by which, under the appellation of *ape*, a multitude of animals, belonging to very different species, have been huddled together in one indiscriminate mass.

What I call an *ape* is an animal without a tail, whose face is flat, whose teeth, hands, fingers, and nails resemble those of man, and who, like him, walks erect on two feet. This definition, derived from the nature of the animal itself, and from its relations to man, excludes all animals who have tails; all those who have prominent faces or long muzzles; all those who have crooked or sharp claws; and all those who walk more willingly on four than on two legs. According to this precise idea, let us examine how many species of animals ought to be ranked under the denomination of *ape*. The ancients knew only

one. The *pithecos* of the Greeks, and the *simia* of the Latins, is a true *ape*, and was the subject upon which Aristotle, Pliny, and Galen instituted all the physical relations they discovered between that animal and man. But this ape, or pigmy of the ancients, which so strongly resembles man in external structure, and still more strongly in its internal organization, differs from him, however, by a quality, which, though relative in itself, is not the less essential. This quality is magnitude. The stature of man, in general, exceeds five feet; that of the *pithecos*, or pigmy, never rises above one fourth of this height. Hence, if this ape had been still more similar to man, the ancients would have been justified for regarding it only as an *homunculus*, an imperfect dwarf, a pigmy, capable of combating with cranes; while man knew how to tame the elephant and conquer the lion.

But, since the discovery of the southern regions of Africa and India, we have found another ape possessing this quality of magnitude; an ape as tall and strong as man, and equally ardent for woman as for its own females; an ape who knows how to bear arms, to attack his enemies with stones, and to defend himself with clubs. Besides, he resembles man still more than the pigmy; for, independent of his having no tail, of his flat face, of the resemblance of his arms, hands, toes, and nails to ours, and of his walking constantly on end, he has a kind of visage with

with features which approach to those of the human countenance, a beard on his chin, and no more hair on his body than men have, when in a state of nature. Hence the inhabitants of his country, the civilized Indians, have not hesitated to associate him with the human species, under the denomination of *Orang-outang*, or *wild man*; while the Negroes, almost equally wild, and as ugly as these apes, who imagine not that civilization exalts our nature, have given it the appellation of *pongo*, which is the name of a beast, and has no relation to man. This orang-outang or pongo is only a brute, but a brute of a kind so singular, that man cannot behold it without contemplating himself, and without being thoroughly convinced that his body is not the most essential part of his nature.

Thus, we have discovered two animals, the pigmy and the orang-outang, to which the name of *ape* ought to be applied. There is a third, to which, though more deformed both in relation to man and to the ape, this appellation cannot be refused. This animal, which till now was unknown, and was brought from the East-Indies, under the name of *gibbon*, walks on end, like the other two, and has a flat face. He likewise wants a tail. But his arms, instead of being proportioned to the height of his body, like those of man, the orang-outang, or the pigmy, are so enormously long, that, when standing on his two feet, he touches the ground with his hands, without

without bending either his body or limbs. This ape is the third and last to which the name ought to be applied: In this genus, he constitutes a singular or monstrous species, like the race of thick-legged men, said to inhabit the island of St. Thomas\*.

After the apes, another tribe of animals present themselves, to which we shall give the generic name of *baboon*. To distinguish them more accurately from the other kinds, let it be remarked, that the baboon has a short tail, a long face, a broad high muzzle, canine teeth, proportionally larger than those of man, and callosities on his buttocks. By this definition, we exclude from the baboon tribe all the apes who have no tail; all the monkeys, whose tails are as long or longer than their bodies; and all those who have thin, sharp pointed muzzles. The ancients had no proper names for these animals. Aristotle alone seems to have pointed out one of the baboons under the name *simia porcaria*†, though he has given but a very imperfect idea of the animal. The Italians first called it *babuino*; the Germans, *barion*; the French, *ba-*

\* See the Dissertation on the Varieties of the Human Species, Vol. III. of this work.

† The denomination *simia porcaria*, which is employed by no other author but Aristotle, was not improperly applied to denote the baboon; for I find in the works of several travellers, who probably never read Aristotle, the muzzle of the baboon compared to the snout of a hog. Besides, these animals have some resemblance in the form of their bodies.

*bonin*; the British, *baboon*; and all the modern writers of Latin, *papio*. We shall call it *baboon*, to distinguish it from the other species which have since been discovered in the southern regions of Africa and India. We are acquainted with three species of these animals: 1. The *baboon* properly so called, which is found in Lybia, Arabia, &c. and is probably the *simia porcaria* of Aristotle. 2. The *mandrill*, or *ribbed-nose*, is still larger than the baboon, has a violet-coloured face, the nose and cheeks ribbed with deep oblique furrows, and is found in Guiney and in the warmest provinces of Africa. 3. The *ou-anderou*, which is smaller than the baboon and mandrill; its body is thinner, its head and face are surrounded with a kind of long bushy mane, and it is found in Ceylon, Malabar, and other southern regions of India. Thus we have properly defined three species of apes, and three species of baboons, which are all very different from one another.

But, as Nature knows none of our definitions, as she has not classed her productions by bundles or genera, and as her progress is always gradual and marked by minute shades, some intermediate animal should be found between the ape and baboon. This intermediate species actually exists, and is the animal which we call *magot*, or the *Barbary ape*. It occupies a middle station between our two definitions. It forms the shade between the apes and baboons. It differs from the

the first by having a long muzzle and large canine teeth; and, from the second, because it actually wants the tail, though it has an appendix of skin, which has the appearance of a very small tail. Of course, it is neither an ape nor a baboon, but, at the same time, partakes of the nature of both. This animal, which is very common in Higher Egypt, as well as in Barbary, was known to the ancients. The Greeks and Romans called it *cynocephalus*, because its muzzle resembled that of a dog. Let us now arrange these animals in their proper order: The *orang-outang* is the first ape; the *pigmy* the second; and the *gibbon*, though different in figure, the third; the *cynocephalus* or *magot* the fourth ape, or the first baboon; the *papio* is the first baboon; the *mandrill* the second; and the *ouanderou*, or little baboon, the third. This order is neither arbitrary nor fictitious, but agreeable to the scale of Nature.

After the apes and baboons, come the *guenons*, or *monkeys*; that is, animals resembling the apes and baboons, but which have tails as long, or longer than their bodies. The word *guenon* has, for some ages, had two acceptations different from that we have here given: It is generally employed to signify small apes, and sometimes to denote the female of the ape. But, more anciently, we called *singer*, or *magots*, the apes without a tail, and *guenons*, or *mones*, those which had long tails. This fact appears from the works

words of some travellers\* in the sixteenth and seventeenth centuries. The word *guenon* is probably derived from *kébos*, or *képos*, which the Greeks employed to denote the long-tailed apes. These *kébes*, or *guenons*, are smaller and weaker than the apes and baboons. They are easily distinguishable from one another by this difference, and particularly by their long tail. With equal ease they may be distinguished from the *makis* or *mancaucos*; because they have not a sharp muzzle; and, instead of six cutting teeth, like the *makis*, they have only four, like the apes and baboons. We know eight species of *guenons*; and, to prevent confusion, we shall bestow on each a proper name: 1. The *macaque*, or hare-lipped monkey; 2. The *patas*, or red monkey; 3. The *malbrook*; 4. The *mangabey*, or monkey with the upper eye-lids of a pure white colour; 5. The *mones*, or varied monkey; 6. The *callitrix*, or green monkey; 7. The *monstac*, or whiskered monkey; 8. The *talapoin*; 9. The *douc*, or monkey of Cochinchina. The ancient Greeks knew only two of these *guenons*,

\* In Senegal there are several species of apes, as the *guenons*, with a long tail; and the *magots*, who have no tail; *Voyage de la Mère*, p. 101.—In the mountains of South America, there is a kind of *mones*, or long-tailed monkeys, which the savages call *cacayes*. They are of the same size with the common kind, from which they differ only by having a beard on their chin.—Along with these *mones*, there are found a number of small yellow animals, called *sagouins*; *Singularités de la Fr. Ant. par Thoret*, p. 103.

or long-tailed monkeys, namely, the mone and the callitrix, who are natives of Arabia and the northern parts of Africa. They had no idea of the other kinds; because these are found only in the southern provinces of Africa and the East Indies, countries entirely unknown in the days of Aristotle. This great philosopher, and the Greeks in general, were too wise to confound beings by common, and, therefore, equivocal names. They call the ape without a tail *pithecus*, and the monkey with a long tail, *kelbos*. As they knew these animals to be distinct species, they gave to each a proper name, derived from their most striking characters. All the apes and baboons which they knew, namely, the *pigmy*, the *cynocephalus*, or *magot*, and the *simia porcaria*, or *papio*, have their hair nearly of a uniform colour. But the monkey, which we have called *mone*, and the Greeks *kelbos*, has hair of different colours, and is generally known by the name of the *varied ape*. This species of monkey was most common, and best known in the days of Aristotle; and, from its most distinguished character, he calls it *kelbos*, which, in Greek, signifies *varieties in colour*. Thus all the animals belonging to the class of apes, baboons, and monkeys, mentioned by Aristotle, are reduced to four, the *pithecus*, the *cynocephalus*, the *simia porcaria*, and the *kelbos*; which we believe to be the *pigmy*, the *magot*, or Barbary ape, the *baboon*, and the *mone*, or varied monkey, not only

only because they agree with the characters given of them by Aristotle, but likewise because the other species must have been unknown to the ancients, since they are natives of countries into which the Greek travellers had never penetrated.

Two or three centuries after Aristotle, we find, in the Greek writers, two new names, *callitrix* and *cercopithecus*, both relative to the *guenons*, or long-tailed monkeys. In proportion as discoveries were made of the southern regions of Africa and Asia, we found new animals, and other species of monkeys; and, as most of these monkeys had not, like the *kelbos*, various colours, the Greeks invented the generic name *cercopithecus* or *tailed ape*, to denote all the species of monkeys or apes with long tails; and, having remarked, among these new species, a monkey with hair of a lively greenish colour, they called it *callitrix*, which signifies *beautiful hair*. This *callitrix* is found in the south part of Mauritania, and in the neighbourhood of Cape de Verd, and is commonly known by the name of the *green ape*.

With regard to the other seven species of monkeys, mentioned above under the appellations of *makaque*, *patas*, *malbrouk*, *mangabey*, *mouflac*, *talapoin*, and *dome*, they were unknown to the Greeks and Latins. The *makaque* is a native of Congo; the *patas* of Senegal; the *mangabey*, of Madagascar; the *malbrouk*, of Bengal; the *mouflac*, of Guiney; the *talapoin*, of Siam;

and the douc, of Cochinchina. All these territories were equally unknown to the ancients.

As the progress of Nature is uniform and gradual, we find between the baboons and monkeys an intermediate species, like that of the magot between the apes and baboons. The animal which fills this interval has a great resemblance to the monkeys, particularly to the mackaque; its muzzle, at the same time, is very broad, and its tail short, like that of the baboons. Being ignorant of its name, we have called it *mainon*, or *pig-tailed baboon*, to distinguish it from the others. It is a native of Sumatra. Of all the monkeys or baboons, it alone has a naked tail; and, for this reason, several authors have given it the denomination of the *pig-tailed*, or *rat-tailed ape*.

We have now enumerated all the animals of the Old World, to whom the common name of *ape* has been applied, though they belong not only to different species, but to different genera. To augment the confusion, the same names of *ape*, *cynocephalus*, *lévos*, and *cercopithecus*, which had been invented by the Greeks fifteen centuries ago, have been bestowed on animals peculiar to the New World, though so recently discovered. They never dreamed that none of the African or East Indian animals had any existence in the southern regions of the New Continent. In America, we have discovered animals with hands and fingers. This similarity was alone

sufficient

sufficient to procure to them the name of *apes*, without considering that, for the transference of a name, identity of genus, and even of species, is necessary. Now, these American animals, of which we shall make two classes, under the appellations of *sapajous*, or monkeys with prehensile tails; and *sagouis*, or monkeys with long tails, which are not prehensile, or want the faculty of laying hold of any object, are very different from the apes of Asia and Africa; and, in the same manner, as no apes, baboons, or monkeys are to be found in the New World, there are neither sapajous nor sagouis in the Old. Though we have already given a general view of these facts, in our dissertation concerning the animals of both Continents, we can now prove them in a more particular manner, and demonstrate, that, of seventeen species, to which all the animals of the Old World called *apes*, may be reduced, and, of twelve or thirteen in the New World, to whom this name has been transferred, none of them are the same, or to be found equally in both Worlds; for, of the seventeen species in the Old Continent, three or four apes must first be retrenched, who certainly exist not in America, and to whom the sapajous and sagouis have no resemblance. In the second place, three or four baboons must likewise be retrenched: They are larger than the sapajous and sagouis, and also very different in figure. There remain only nine monkeys with whom

any comparison can be instituted. Now, all these monkeys, as well as the apes and baboons, have general and particular characters, which separate them entirely from the sapajous and fagoins. The first of these characters is to have naked buttocks, and natural callosities peculiar to these parts. The second is to have *abajones*, or pouches under the cheeks, in which they can keep their victuals. The third is to have a narrow partition between the nostrils, and the apertures of the nostrils themselves placed in the under part of the nose, like those of man. The sapajous and fagoins have none of these characters. The partition between their nostrils is always very thick; the apertures of their nostrils are situated in the sides of the nose, and not in the under part of it. They have hair on their buttocks and no callosities. They have no pouches under the cheeks. Hence they differ from the monkeys not only in species, but in genus, since they possess none of the general characters which are common to the whole tribe of monkeys. This difference of genus necessarily implies greater differences in species, and shows that these animals are very remote from each other.

It is with much impropriety, therefore, that the names *ape* and *monkey* have been applied to the *sapajous* and *fagoins*. We must preserve their names, and, instead of associating them with the apes, we should begin by comparing them

them with one another. These two tribes differ from each other by a remarkable character: All the sapajous use their tail as a finger to hang upon branches, or to lay hold of any object they cannot reach with their hand. The fagoins, on the contrary, have not the power of employing their tail in this manner. Their face, ears, and hair are also different: We may, therefore, separate them into two distinct genera. In giving the history of the species, I shall avoid all those denominations which can only apply to the apes, baboons, and monkeys, and preserve the names they receive in their native country.

We are acquainted with six or seven species of sapajous, and six of fagoins, most of which have some varieties. We have carefully searched all the writings of travellers in order to discover the proper name of each species; because the names they receive in the places they inhabit generally point out some peculiar characteristic, which alone is sufficient to distinguish them from one another.

With regard to the varieties, which, in this class of animals, are perhaps more numerous than the species, we shall endeavour to refer each of them to their proper kinds. We have had forty of these animals alive, each of which differed more or less from one another; and to us it appears that the whole may be reduced to thirty species, namely, three apes, and an intermediate species between them and the baboons; three

baboons, and an intermediate species between them and the monkeys; nine monkeys; seven fapajous; and six fagoins. All the others, or at least most of them, ought to be regarded as varieties only. But, as we are uncertain whether some of these varieties may not be distinct species, we shall endeavour to give all of them proper names.

On this occasion, let us consider terrestrial animals, some of which have a great resemblance to man, in a new point of view. The whole have improperly received the general name of *quadrupeds*. If the exceptions were few, we would not have found fault with the application of this name. It was formerly remarked, that our definitions and denominations, however general, never comprehend the whole; that beings always exist which elude the most cautious definitions which ever were invented; that intermediate beings are always discovered; that several of them, though apparently holding a middle station, escape from the list; and that the general names, under which we mean to include them, are incomplete; because Nature should be considered by unities only, and not by aggregates; because man has invented general denominations with the sole view of aiding his memory, and supplying the defects of his understanding; and because he afterwards foolishly considered these general names as realities; and, in fine, because he has endeavoured

deavoured to comprehend under them beings, and even whole classes of beings, which required different appellations. I can give an example, without departing from the class of quadrupeds, which, of all animals, we are best acquainted with, and, of course, were in a condition to have bestowed on them the most precise denominations.

The name *quadruped* supposes that the animal has *four feet*. If it wants two feet, like the manati; if it has arms and hands, like the ape; or if it has wings, like the bat; it is not a quadruped. Hence this general term, when applied to these animals, is abused. To obtain precision in words, the ideas they present must be strictly true. If we had a term for two hands similar to that which denotes two feet, we might then say that man was the only biped and *bimanus*, because he alone has two hands and two feet; that the manati is a *bimanus*; that the bat is only a biped; and that the ape is a *quadrimanus*, or four-handed animal. Let us now apply these new denominations to all the particular beings to which they belong, and we shall find, that, from about two hundred animals who go under the common name of *quadrupeds*, thirty-five species of apes, baboons, monkeys, fapajous, fagoins, and makis, must be retrenched, because they are *quadrimanus*, or four-handed; and that to these thirty-five species, the loris, or tailless maucauco, the Virginian, murine, and Mexican

opossum, the Egyptian and woolly jerboa's, &c. should be added, because they are four-handed like the apes and monkeys. Thus the list of four-handed animals being at least forty species, the real number of quadrupeds is one fifth diminished. We must likewise retrench twelve or fifteen species of bipeds, namely, the bats, whose fore-feet are rather wings than feet, and likewise three or four jerboa's, because they can walk on their hind feet only, the fore feet being too short. If we subtract also the manati, which has no hind feet, the arctic and Indian walrus, and the seals, to whom the hind feet are useless; and, if we still retrench those animals which use their fore feet like hands, as the bears, the marmots, the coati's, the agouti's, the squirrels, the rats, and many others, the denomination of *quadruped* will appear to be applied improperly to more than one half of these animals. The whole and cloven-hoofed are indeed the only real quadrupeds. When we descend to the digitated class, we find four-handed, or ambiguous quadrupeds, who use their fore feet as hands, and ought to be separated or distinguished from the others. Of whole-hoofed animals, there are three species, the horse, the ass, and the zebra. If to these we add the elephant, the rhinoceros, the hippopotamus, and the camel, whose feet, though terminated by nails, are solid, and serve the animals for walking only, we shall have seven

species

species to which the name of *quadruped* is perfectly applicable. The number of cloven-hoofed animals greatly exceeds that of the whole-hoofed. The oxen, the sheep, the goats, the antilopes, the bubalus, the lama, the pacos, the giraffe, the elk, the rain-deer, the stag, the fallow-deer, the roebuck, &c. are all cloven-footed, and constitute about forty species. Thus we have already fifty animals, ten whole and forty cloven-hoofed, to whom the name *quadruped* is properly applied. In the digitated animals, the lion, tiger, panther, leopard, lynx, cat, wolf, dog, fox, hyæna, badger, polecat, weasels, ferret, porcupines, hedgehogs, armadillos, ant-eaters, and hogs, which last constitute the shade between the digitated and cloven-footed tribes, form a number consisting of more than forty species, to which the term of *quadruped* applies with perfect precision; because, though their fore feet be divided into four or five toes, they are never used as hands. But all the other digitated species, who use their fore feet in carrying food to their mouths, are not, in strict propriety of language, quadrupeds. These species, which likewise amount to forty, make an intermediate class between quadrupeds and four-handed animals, being neither the one nor the other. Hence, to more than a fourth of our animals, the name of *quadruped* does not apply; and to more than a half of them, the application of it is incomplete.

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The four-handed animals fill the interval between man and the animals; and the two-handed species constitute a mean term in the distance between man and the cetaceous tribes. The bipeds with wings form the shade between quadrupeds and birds; and the digitated species, who use their fore feet as hands, fill the whole space between the quadrupeds and the four-handed kinds. But I will pursue this subject no farther: However useful it may be for acquiring a distinct knowledge of animals, it is still more so by affording a fresh proof, that all our definitions or general terms want precision, when applied to the objects or beings which they represent.

But why are these definitions and general terms, which appear to be the most brilliant exertions of the human intellect, so defective in their application? Does the error necessarily arise from the narrow limits of our understanding? Or, rather, does it not proceed solely from our incapacity of combining and perceiving at one time a great number of objects? Let us compare the works of Nature with those of man. Let us examine how both operate, and inquire whether the mind, however acute, can follow the same route, without losing itself in the immensity of space, in the obscurity of time, or in the infinity of related beings. When man directs his mind to any object, if his perceptions be accurate, he takes the straight line,

runs

runs over the smallest space, and employs the least possible time in accomplishing his end. What an expence of thought, how many combinations are necessary to avoid those deceitful and fallacious roads which at first present themselves in such numbers, that the choice of the right path requires the nicest discernment? This path, however, is not beyond the reach of the human intellect, which can proceed without deviating from the straight line. The mind is enabled to arrive at a point by means of a line; and, if another point must be gained, it can only be attained by another line. The train of our ideas is a delicate thread, which extends in length, without any other dimensions. Nature, on the contrary, never moves a step which extends not on all sides, and runs at once through the three dimensions of length, breadth, and thickness. While man reaches but one point, Nature accomplishes a solid, by penetrating the whole parts which compose a mass. In bestowing form on brute matter, our statuaries, by the union of art and time, are enabled to make a surface which exactly represents the outside of an object. Every point of this surface requires a thousand combinations. Their genius is directly exerted upon as many lines as there are strokes in the figure. The smallest deviation would be a deformity. This marble, so perfect that it seems to breathe, is, of course, only a multitude of points at which the artist arrives by a long succession of labour; because human genius, being unable to seize more than

than one dimension at the same time, and our senses reaching no farther than surfaces, we cannot penetrate matter: But Nature, in a moment, puts every particle in motion. She produces forms by exertions almost instantaneous. She at once develops them in all their dimensions. As soon as her movements reach the surface, the penetrating forces with which she is animated operate internally. The smallest atom, when she chooses to employ it, is instantly compelled to obey. Hence she acts, at the same time, on all sides, before, behind, above, below, on the right and left; and, consequently, she embraces not only the surface, but every particle of the mass. How different likewise is the product? What comparison is there between a statue and an organized body? How unequal, at the same time, are the powers, how disproportioned the instruments? Man can employ only the power he possesses. Limited to a small quantity of motion, which he can only communicate by the mode of impulsion, his exertions are confined to surfaces; because, in general, the impulsive force is only transmitted by superficial contact. He neither sees nor touches more than the surfaces of bodies; and, when he wishes to attain a more intimate knowledge, though he opens and divides, still he sees and touches nothing more than their surfaces. To penetrate the interior parts of bodies, he would require a portion of that force which acts upon the mass, or of gravity, which is Nature's chief instrument. If man could employ this penetrating

trating force as he does that of impulsion, or if he had a sense relative to it, he would be enabled to perceive the essence of matter, and to arrange small portions of it, in the same manner as Nature operates at large. It is owing to the want of instruments, therefore, that human art cannot approach that of Nature. His figures, his pictures, his designs, are only surfaces, or imitations of surfaces; because the images he receives by his senses are all superficial, and he has no mode of giving them a body.

What is true with regard to the arts, applies likewise to the sciences. The latter, however, are not so much limited; because the mind is their chief instrument, and because, in the former, it is subordinate to the senses. But, in the sciences, the mind commands the senses as often as it is employed in thinking and not in operating, in comparing and not in imitating. Now, the mind, though bound up by the senses, though often deceived by their fallacious reports, is neither diminished in its purity nor activity. Man, who naturally loves knowledge, commenced by rectifying and demonstrating the errors of the senses. He has treated them as mechanical instruments, the effects of which must be submitted to the test of experiment. Proceeding thus with the balance in one hand, and the compass in the other, he has measured both time and space. He has recognised the whole outside of Nature; and, being unable to penetrate her internal parts by his senses,

senses, his deductions concerning them have been drawn from comparison and analogy. He discovered that there exists in matter a general force, different from that of impulsion, a force which falls not under the cognisance of our senses, and which, though we are incapable of using it, Nature employs as her universal agent. He has demonstrated, that this force belongs equally to all matter, in proportion to its mass or real quantity; and that its action extends to immense distances, decreasing as the spaces augment. Then, turning his views upon living beings, he perceived that heat was another force necessary to their production; that light was a matter endowed with infinite elasticity and activity; that the formation and expansion of organized bodies were effects of a combination of all these forces; that the extension and growth of animals and vegetables follow the laws of the attractive force, and are effected by an augmentation in the three dimensions at the same time; and that a mould, when once formed, must, by these laws of affinity, produce a succession of other moulds perfectly similar to the original. By combining these attributes, common to the animal and vegetable, he recognised, that there existed in both an inexhaustible, circulating store of organic substance; a substance equally real as brute matter; a substance which continues always in a live as the other does in a dead state; a substance universally diffused, which passes from vegetables

vegetables to animals by means of nutrition, returns from animals to vegetables by the process of putrefaction, and maintains a perpetual circulation for the animation of beings. He perceived, that these active organic particles existed in all organized bodies; that they were combined, in smaller or greater quantities, with dead matter; that they were more abundant in animals, in whom every thing is alive, and more rare in vegetables, in which death predominates, and life seems to be extinct, organization being furcharged with brute matter; and that plants are, of course, deprived of progressive motion, of heat, and of life, exhibiting no other quality of animation but expansion and reproduction. Reflecting on the manner in which these last are accomplished, he discovered that every living being is a mould that has the power of assimilating the substances with which it is nourished; that growth is an effect of this assimilation; that the development of a living body is not a simple augmentation of volume, but an extension in all dimensions, a penetration of new matter through all parts of the mass; that these parts, by increasing proportionally to the whole, and the whole proportionally to the parts, the form is preserved, and continues always the same, till growth is completed; that, when the body has acquired its full expansion, the same matter, formerly employed in augmenting its volume, is returned, as superfluous, from all the parts to which it had been assimilated,

simulated, and, by uniting in a common point, forms a new being perfectly similar to the first, and, to attain the same dimensions, requires only to be developed by the same mode of nutrition. He perceived that man, quadrupeds, cetaceous animals, birds, reptiles, insects, trees, and herbs, were nourished, expanded, and reproduced by the same law; and that the mode of their nutrition and generation, though depending on the same general cause, appeared to be very different, because it could not operate but in a manner relative to the form of each particular species of being. Proceeding gradually in his investigation, he began, after a succession of ages, to compare objects. To distinguish them from each other, he gave them particular names; and, to unite them under one point of view, he invented general terms. Taking his own body as the physical model of all animated beings, he measured, examined, and compared all their parts, and he discovered that the form of every animal which breathes is nearly the same; that, by dissecting an ape, we may learn the anatomy of a man; that, taking another animal, we always find the same fund of organization, the same senses, the same viscera, the same bones, the same flesh, the same motion of the fluids, the same play and action of the solids. In all of them he found a heart, veins, and arteries, and the same organs of circulation, respiration, digestion, nutrition, and secretion; in all of them, he found a solid struc-

ture composed of the same pieces, and nearly situated in the same manner. This plan proceeds uniformly from man to the ape; from the ape to quadrupeds, from quadrupeds to cetaceous animals, to birds, to fishes, and to reptiles: This plan, I say, when well apprehended by the human intellect, exhibits a faithful picture of animated Nature, and affords the most general as well as the most simple view under which she can be considered: And, when we want to extend it, and to pass from the animal to the vegetable, we perceive this plan, which had at first varied only by shades, gradually degenerating from reptiles to insects, from insects to worms, from worms to zoophytes, from zoophytes to plants; and, though changed in all its external parts, still preserving the same character, the principal features of which are nutrition, growth, and reproduction. These features are common to all organized substances. They are eternal and divine; and, instead of being effaced by time, it only renews and renders them more conspicuous.

If, from this grand picture of resemblances exhibited in animated Nature, as constituting but one family, we pass to that of the differences, where each species claims a separate apartment, and a distinct portrait, we shall find, that, with the exception of a few large kinds, such as the elephant, the rhinoceros, the hippopotamus, the tiger, and the lion, which ought to have particu-

cular frames, all the others seem to unite with their neighbours, and to form groups of degraded similarities, or genera, represented by our nomenclators in a net-work of figures, some of which are supported by the feet, others by the teeth, by the hair, and others by relations still more minute: And even the apes, whose form seems to be most perfect, or approaches nearest to that of man, present themselves in a group, and require the utmost attention to be distinguished from each other; because the privilege of separate species depends less on figure than magnitude; and man himself, though a distinct species, and infinitely removed from that of all other animals, being only of a middle size, has a greater number of neighbouring species than the very large kinds. In the history of the orang-outang, we shall find, that, if figure alone be regarded, we might consider this animal as the first of apes, or the most imperfect of men; because, except the intellect, the orang-outang wants nothing that we possess, and, in his body, differs less from man than from the other animals which receive the denomination of *apes*.

Hence mind, reflection, and language depend not on figure, or on the organization of the body. These are endowments peculiar to man. The orang-outang, though he neither thinks nor speaks, has a body, members, senses, a brain, and a tongue perfectly similar to those of man: He counterfeits every human movement; but  
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he performs no action that is characteristic of man. This imperfection is perhaps owing to want of education, or to an error in our judgment. You compare, it may be said, an ape in the woods with a man in polished society. But, in order to form a proper judgment of them, a savage man and an ape should be viewed together; for we have no just idea of man in a pure state of nature. The head covered with bristly hair, or with curled wool; the face veiled with a long beard; two crescents of hairs still grosser, by their length and promineney, contract the front, and not only obscure the eyes, but sink and round them like those of the brutes; the lips thick and protruded; the nose flat; the aspect wild and stupid; the ears, the body, and the members covered with hair; the breasts of the female long and flabby, and the skin of her belly hanging down as far as her knees; the children wallowing in filth, and crawling on their hands and feet; the father and mother sitting squat on their hams, both hideous, and besmeared with corrupted grease. This sketch, drawn from a savage Hottentot, is a flattering portrait; for the distance between man in a pure state of nature and a Hottentot, is greater than between a Hottentot and us. But, if we want to compare the ape to man, we must add the relations of organization, the conformities of temperament, the vehement appetite of the males for the females, the same structure of genitals in both sexes, the

periodic courses of the female, the voluntary or forced intermixture of the Negresses with the apes, the produce of which has entered into both species; and then consider, on the supposition that they are not the same, how difficult it is to perceive the interval by which they are separated.

If our judgment were limited to figure alone, I acknowledge that the ape might be regarded as a variety of the human species. The Creator has not formed man's body on a model absolutely different from that of the mere animal. He has comprehended the figure of man, as well as that of all other animals, under one general plan. But, at the same time that he has given him a material form similar to that of the ape, he has penetrated this animal body with a divine spirit. If he had conferred the same privilege, not on the ape, but on the meanest, and what appears to us to be the worst constructed animal, this species would soon have become the rival of man; it would have excelled all the other animals by thinking and speaking. Whatever resemblance, therefore, takes place between the Hottentot and the ape, the interval which separates them is immense; because the former is endowed with the faculties of thought and of speech.

Who will ever be able to ascertain how the organization of an idiot differs from that of another man? Yet the defect is certainly in the material

terial organs, since the idiot is likewise endowed with a soul. Now, as between one man and another, where the whole structure is perfectly similar, a difference so small that it cannot be perceived is sufficient to prevent thought, we should not be surprized that it never appears in the ape, who is deprived of the necessary principle.

The soul, in general, has a proper action totally independent of matter. But, as its Divine Author has been pleased to unite it to the body, the exercise of its particular acts depends on the state of the material organs. This dependence is apparent, not only from the case of idiots, but from people affected with delirium, from sleep, from new-born infants, who cannot think, and from very old men, whom the power of thinking has forsaken. It is even probable, that the chief effect of education consists not so much in instructing the mind, or maturing its operations, as in modifying the material organs, and bringing them into the most favourable state for the exercise of the sentient principle. Now, there are two kinds of education, which ought to be carefully distinguished, because their effects are extremely different; the education of the individual, which is common to man and the other animals; and the education of the species, which appertains to man alone. A young animal, both from natural incitements and from example, learns, in a few weeks, to do every thing its pa-

rents can perform. To an infant, several years are necessary before it acquires this degree of perfection; because, when brought forth, it is incomparably less advanced, weaker, and more imperfectly formed, than the smaller animals. In early infancy, the mind is nothing, when compared to the powers it will afterwards acquire. In receiving individual education, therefore, the infant is much slower than the brute; but, for this very reason, it becomes susceptible of that of the species. The multiplicity of succours, the continual cares, which the state of imbecility for a long time requires, cherish and augment the attachment of the parents. In training the body, they cultivate the mind. The time employed in strengthening the former gives an advantage to the latter. The bodily powers of most animals are more advanced in two months than those of the infant in two years. Hence the time employed in bestowing on the infant its individual education, is as twelve to one, without estimating the fruits of what follows after this period, without considering that animals separate from their parents as soon as they can provide for themselves, and that, not long after this separation, they know each other no more. All education ceases the moment that the aid of the parents becomes unnecessary. This time of education being so short, its effects must be very limited: It is even astonishing that the animals acquire, in two months, all that is necessary for  
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them during the rest of life: If we suppose that a child, in an equal period, were strong enough to quit his parents, and never return to them, would there be any perceptible difference between this infant and a brute? However ingenious the parents, they would not have time sufficient to modify and prepare his organs, or to establish the smallest communication of thought between their minds and his. They could not excite his memory by impressions frequently enough reiterated. They could not even mollify or unfold the organs of speech. Before a child can pronounce a single word, his ears must be struck many thousand times with the same sound; and, before he can make a proper application of it, the same combination of the word and the object to which it relates, must be many thousand times presented to him. Education, therefore, which alone can develop the powers of the mind, must be uninterruptedly continued for a long time. If stopt, not at two months, as in the animals, but even at the age of one year, the mind of the infant, having received no instruction, would remain inactive like that of the idiot, the defect of whose organs prevents the reception of knowledge. This reasoning would acquire redoubled strength, if the infant were born in a pure state of nature, if it were confined to the sole tutorage of a Hottentot mother, and were enabled by its bodily powers to separate from her at the age of two months. Would it not

sink below the condition of an idiot, and, with regard to its material part, be entirely levelled with the brutes? But in this condition of nature, the first education requires an equal time as in the civilized state; for, in both, the infant is equally feeble, and equally slow in its growth; and, consequently, demands the care of its parents during an equal period. In a word, if abandoned before the age of three years, it would infallibly perish. Now, this necessary, and so long continued intercourse between the mother and child, is sufficient to communicate to it all that she possesses: And though we should falsely suppose, that a mother, in a state of nature, possesses nothing, not even the faculty of speech, would not this long intercourse with her infant produce a language? Hence a state of pure nature, in which man is supposed neither to think nor speak, is imaginary, and never had an existence. This necessity of a long intercourse between parents and children produces society in the midst of a desert. The family understand each other both by signs and sounds; and this first ray of intelligence, when cherished, cultivated, and communicated, unfolds, in process of time, all the germs of cogitation. As this habitual intercourse could not subsist so long, without producing mutual signs and sounds, these signs and sounds, always repeated and gradually engraven on the memory of the child, would become permanent expressions. The catalogue of words, though

short,

short, forms a language which will soon extend as the family augments, and will always follow, in its improvement, the progress of society. As soon as society begins to be formed, the education of the infant is no longer individual, since the parents communicate to it not only what they derive from Nature, but likewise what they have received from their progenitors, and from the society to which they belong. It is no longer a communication between detached individuals, which, as in the animals, would be limited to the transmission of simple faculties, but an institution of which the whole species participate, and whose produce constitutes the basis and bond of society.

Even among brute animals, though deprived of the sentient principle, those whose education is longest appear to have most intelligence. The elephant, which takes the longest time in acquiring its full growth, and requires the success of its mother during the whole first year of its existence, is also the most intelligent of all animals. The Guiney-pig, which is full grown, and capable of generating at the age of three weeks, is for this reason alone, perhaps, one of the most stupid species. With regard to the ape, whose nature we are endeavouring to ascertain, however similar to man, he is so strongly marked with the features of brutality, that it is distinguishable from the moment of his birth. He is then proportionally stronger and better formed than the infant: He grows faster: The support

of his mother is necessary for a few months only: His education is purely individual, and consequently as limited as that of the other animals.

Hence the ape, notwithstanding his resemblance to man, is a brute, and, instead of approaching our species, holds not the first rank among the animals; because he is by no means the most intelligent. The relation of corporeal resemblance alone has given rise to the prejudice in favour of the great faculties of the ape. He resembles man, it has been said, both externally and internally; and, therefore, he must not only imitate us, but do every thing which we perform. We have seen, that all the actions which ought to be denominated *human*, are relative to society; that they depend, at first, on the mind, and afterwards on education, the physical principle of which is the long intercourse that necessarily subsists between the parents and children; that, in the ape, this intercourse is very short; that, like the other animals, he receives only an individual education; and that he is not susceptible of that of the species. Of course, he can perform no human actions, since no action of the ape has the same principle, or the same design. With regard to imitation, which appears to be the most striking character of the ape-kind, and which the vulgar have attributed to him as a peculiar talent, before we decide, it is necessary to inquire whether this imitation be spontaneous or forced. Does the ape imitate us from inclination,

tion, or because, without any exertion of the will, he feels the capacity of doing it? I appeal to all those who have examined this animal without prejudice, and I am convinced that they will agree with me, that there is nothing voluntary in this imitation. The ape, having arms and hands, uses them, as we do, but without thinking of us. The similarity of his members and organs necessarily produces movements, and sometimes successions of movements, which resemble ours. Being endowed with the human structure, the ape must move like man. But the same motions imply not that he acts from imitation. Two bodies which receive the same impulse, two similar pendulums or machines, will move in the same manner. But these bodies or machines can never be said to imitate each other in their motions. The ape and the human body are two machines similarly constructed, and necessarily move nearly in the same manner. But parity is not imitation. The one depends on matter, and the other on mind. Imitation presupposes the design of imitating. The ape is incapable of forming this design, which requires a train of thinking; and, consequently, man, if he inclines, can imitate the ape; but the ape cannot even incline to imitate man.

This parity is only the physical part of imitation, and by no means so complete as the similitude, from which, however, it proceeds as an immediate effect. The ape has a greater resemblance

blance to us in his body and members, than in the use he makes of them. By observing him attentively, we easily perceive, that all his movements are brisk, intermittent, and precipitous; and that, in order to compare them with those of man, we must adopt another scale, or rather a different model. All the actions of the ape are derived from his education, which is purely animal. To us they appear ridiculous, inconsequent, and extravagant; because, by referring them to our own, we assume a false scale, and a deceitful mode of measuring. As his nature is vivacious, his temperament warm, his dispositions petulant, and none of his affections have been softened or restrained by education, all his habits are excessive, and resemble more the movements of a maniac than the actions of a man, or even of a peaceable animal. It is for this reason that we find him indocile, and that he receives with difficulty the impressions we wish to make on him. He is insensible to caresses, and is rendered obedient by chastisement alone. He may be kept in captivity, but not in a domestic state. Always melancholy, stubborn, repugnant, or making grimaces, he may be said to be rather conquered than tamed. The species, of course, have never been rendered domestic in any part of the world, and, consequently, is farther removed from man than most other animals: For docility implies some analogy between the giver and the receiver of in-

struction. It is a relative quality, which cannot be exerted but when there is a certain number of common faculties on both sides, that differ only between themselves, because they are active in the master and passive in the scholar. Now, the passive qualities of the ape have less relation to the active qualities of man than those of the dog or elephant, who require no more than good treatment to communicate to them the delicate and gentle sensations of faithful attachment, voluntary obedience, grateful service, and unreserved devotion.

In relative qualities, therefore, the ape is farther removed from the human race than most other animals. His temperament is also very different. Man can inhabit every climate. He lives and multiplies in the northern as well as the southern regions of the earth. But the ape exists with difficulty in temperate countries, and can multiply only in those which are warm. This difference of temperament implies others in organization, which, though concealed, are not the less real: It must likewise have a great influence on his natural dispositions. The excess of heat, which is necessary to the constitution and vigour of this animal, renders all his qualities and affections inordinate. No other cause is requisite to account for his petulance, his salaciousness, and his other passions, which appear to be equally violent and disorderly.

Thus

Thus the ape, which philosophers, as well as the vulgar, have regarded as a being difficult to define, and whose nature was at least equivocal, and intermediate between that of man and the animals, is, in fact, nothing but a real brute, endowed with the external mark of humanity, but deprived of thought, and of every faculty which properly constitutes the human species; a brute inferior to many others in his relative powers, and still more essentially different from the human race by his nature, his temperament, and the time necessary to his education, gestation, growth, and duration of life; that is, by all the real habitudes which constitute what is called *Nature* in a particular being.

## The ORANG-OUTANGS, or the PONGO\* and JOCKO†.

WE shall give the history of these two animals under one article; because it is not improbable they belong to the same species. Of all

\* In the East Indies this animal is called *orang-outang*; in Lowando, a province of Congo, *pongo*; and, in some parts of the East Indies, according to Kjoep, chap. lxxxvi. quoted by Linnaeus, *katarlack*.

Homo sylvestris. Orang-outang; *Bontius*, p. 84.

Satyri sylvestris. Orang-outang dikli; *Icones Arboresc.* at et *Animalium*, Lugd. Bat. apud Vandersee, tab. antepenult.

Tragolydes. Homo nocturnus; *Lin. Syst.* p. 33.

Oran-outang; *Beakman's Travels*.

Orangers-outangs; *Voyages de Gauthier Schoutten aux Indes Orientales*.

Dill; *Charlevoix, Exercit.* p. 16.

Smitten; *Dufman, Voyage de Guinée*, p. 528.

Barris, according to several voyagers, pongo; *Battel, Par-chasi*, &c.

† *Jacks, enjacks*, the names of this animal in Congo; *laris* in Guiney, according to Pylard, p. 369. Nierenberg, p. 179.

Chimpanzee; *Scotin's print*, 1738.

Man of the wood; *Edwards*, p. 213.

Barris; *Barbet's Guiney*, p. 101.

Quojas marrou; *ibid.* p. 115.

Satyris Indicus; *Vulpi Objevo. Med. lib. iii. c. 56*.

Homo sylvestris, ourang-outang; *Tybo's Anatomy of a Pigmy*, p. 108.

Simia satyrus, caudata, ferruginea, lacertorum pilis reversis, naubus testis; *Lin. Syst. Nat.* p. 34.

L'homme