

The gorilla : being a sketch of its history, anatomy, general appearance and habits / by Leonard J. Sanford.

Contributors

Sanford, Leonard J. 1833-1896.
National Library of Medicine (U.S.)

Publication/Creation

[United States?] : [publisher not identified], [1862?]

Persistent URL

<https://wellcomecollection.org/works/z8seja54>

License and attribution

This material has been provided by This material has been provided by the National Library of Medicine (U.S.), through the Medical Heritage Library. The original may be consulted at the National Library of Medicine (U.S.) where the originals may be consulted.

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>

THE GORILLA;

BEING A SKETCH OF ITS HISTORY, ANATOMY,* GENERAL
APPEARANCE AND HABITS.

BY LEONARD J. SANFORD, M.D.

(Read before the Connecticut Academy of Arts and Sciences, December 18th, 1861.)

SOME writer has observed that "Africa every year produceth some strange creature before not heard of, peradventure not extant." In this spirit, many have contemplated the Gorilla Ape—an incredulity not to be wondered at, for it must be acknowledged that its antecedents and history are bad. Too often in the past, has the world heard the cry, 'gorilla,' when there was no gorilla, and the public faith now, is hardly equal to accepting the veritable animal, though as an inducement to recognition, he presents to us his very bones. But unfortunately, with this otherwise indubitable proof in 1846, came innumerable fictions which attributed wonderful achievements and superhuman intellectual as well as physical power to the animal. Those who were permitted the vision, said the bones were bones, but of what creature, who could tell?—The conjectures on this question have ranged the newly arrived animal from a specimen of monkey, up to Mr. Harris's Pre-Adamic Man.

Gradually however, fiction has given place to fact; the change has been working through a period of fifteen years, and now, we are in possession of the animal's zoological position and know him tolerably well, in temperament and habits.

In the present article we propose to 'show him up' so far as the sources of information at our command will suffice.

* In the description of its anatomy, we have compared the gorilla with other anthropoid apes, and with man, in order to show its apish characteristics to the best advantage, and also to be able, in a more intelligible manner, to indicate its position among the apes relatively to man. The writer would here state that the anatomical specifications of the gorilla which he has given, are mainly obtained from a, nearly complete, skeleton of the animal in his possession.

The natives of Africa have always regarded the gorilla with a feeling of superstitious dread. To some of them, he is a mysterious demon. Those who believe in the transmigration of souls, consider him as a compound of man and brute—their explanation being, that at the death of a wicked man, his spirit enters the body of a lesser ape, which immediately becomes a gorilla, and which, when so inhabited, can neither be killed nor conquered. Others see so much of human attributes about the animal that they acknowledge him as a kinsman, one however so superior to themselves, that they dare not cultivate any intimacy or even acquaintance with him. These, and so many other superstitions and traditions are believed in by the various human tribes of Africa, that comparatively few among them, can know the gorilla as simply the immense ferocious ape that he is.

We have no means of knowing when this species was first recognized. The name Gorilla was applied to some animal of the ape kind, longer ago than the beginning of the Christian era, for, in the *Periplus* of the Carthaginian voyager Hanno, who was sent to circumnavigate the African continent, in the sixth century before Christ as it is supposed, is the following passage: "On the third day after our departure thence, having sailed by those streams of fire, we arrived at a bay called the Southern Horn; at the bottom of which lay an island like the former, having a lake, and in this lake another island, full of savage people, the greater part of whom were women, whose bodies were hairy, and whom our interpreters called Gorillæ. Though we pursued the men, we could not seize any of them; but all fled from us, escaping over the precipices, and defending themselves with stones. Three women were however taken; but they attacked their conductors with their teeth and hands, and could not be prevailed on to accompany us. Having killed them, we flayed them, and brought their skins with us to Carthage. We did not sail farther on, our provisions failing us."* According to Pliny, these skins were placed in the temple of Juno, and the name *gorillas* was changed to *gorgones*. Two of them yet remained in the temple at the time Carthage was taken by the Romans. "Penetravit in eas (Gorgades Insulas) Hanno Pænorum imperator, prodiditque hirta feminarum corpora, viros pernecitate evassisse, duarumque gorgonum cutes argumenti et miraculi gratia in Junonis templo posuit, spectatas usque ut Carthaginem captam."

Hanno's gorilla, may have been the progenitor of the animal known at the present time by the same name, but this is improbable unless the race has wonderfully improved in its later generations, for, the gorilla with which we are acquainted is non-

* Voyage of Hanno (Falconer's translation), page 13.

gregarious, and the males are not so cowardly and ungallant as to forsake their females in time of peril, and again, even the females could hardly be captured by hand alone. The above reference better applies, we think, to the Chimpanzee—an ape which is common on the banks of the Gambia and Congo rivers.

Purchas, in his "Pilgrims," published in London in 1623, records the adventures of the African traveller Andrew Battel, who had met with two species of apes—he quotes concerning them from Battel, in Part II of the work, p. 984, as follows, "The greatest of these two monsters is called (by the Portuguese) *pongo* in their language, and the lesser is called *engeco*. The *pongo* is in all proportions like a man, for he is very tall, and hath a man's face, hollow eyed, with long haire upon his brows. His body is full of haire, but not very thicke, and it is of a dunish color. He differeth not from man but in his legs, for they have no calfe. He goeth alwaies upon his legs, and carrieth his hands clasped on the nape of his necke when he goeth upon the ground. They sleepe in trees, and build shelter for the raine. They feed upon the fruit that they find in the woods, and upon ants, for they eate no kind of flesh. They cannot speake, and have no understanding more than a beast. The people of the countrie, when they travaile in the woods, make fires where they sleepe in the night, and in the morning, when they are gone, the *pongos* will come and seat about the fire till it goeth out, for they have no understanding to lay the wood together. They goe many together, and kill many negroe that travaile in the woods. Many times they fall upon elephants which come to feed where they be, and so beat them with their clubbed fists and pieces of wood that they will runne roaring away from them. The *pongos* are never taken alive, because they are so strong ten men can not hold one of them; but they take many of their young ones with poisoned arrows. The young *pongo* hangeth on his mother's belly with his hands fast clasped about her, so that, when the country people kill any of the females, they take the young which hangs fast upon the mother. When they die among themselves, they cover the dead with great heapes of boughs and wood, which is commonly found in the forests."

This description savors considerably of the fabulous, for no species exists among all the apes we venture to assert, making so near an approach to humanity as Battel's *Pongo*;—what that word means in the Mayomba dialect, we have been unable to ascertain; but, in the report of him just quoted, we see more of the gorilla in what *pongo* is, than in what he *does*.

It is thought by many, that the ape referred to by T. E. Bowditch, in his account of a mission from Cape Coast Castle to Ashantee, published in London in 1819, is the gorilla; but his

description is too meagre in details to admit of a decision; the name, however, by which he calls it, *ingena*, suggests that animal, for this is the Mpongwe name for the gorilla. In that part of the work where he relates his visit to the Gaboon, he says: "The favorite and most extraordinary subject of our conversation on natural history was the *ingena*, an animal like the orang-oetang, but much exceeding it in size, being five feet high, and four, across the shoulders. Its paw was said to be even more disproportioned than its breadth, and one blow of it to be fatal. It is seen commonly by them when they travel to Kaybe, lurking in the bush to destroy passengers, and feeding principally on wild honey, which abounds. Among other of their actions reported without variation by men, women and children of the Mpongwe and Sheekai [Shekiani], is that of building a house in rude imitation of the natives, and sleeping outside on the roof of it."*

We might cite numerous accounts of apes more or less anthropoid, which have been seen in Africa in the earlier centuries of our era, but they are all so vague as to render it impossible to decide in any instance, on a particular species;—we learn this much from them however, that there were in Africa, in the olden time, apes innumerable, and of many grades, from those of large size, power and intelligence, to diminutive monkeys that were more than liliputian. The tribes of men in the African wilds, though surrounded by these animals and always aware of their existence, have learned but little concerning their peculiarities and habits; acknowledging them as rightful cohabitants of the country, and hence possessing inalienable rights which should be respected, they have not ventured on much interference—not even for purposes of investigation;—and for the more ferocious specimens, they have entertained so profound a respect and dread, as to be unwilling to incur any risks of danger for the sake of a better acquaintance. For reasons such as these, the Africans have been slow in acquiring information about their neighbors, the apes, and that most formidable one, the gorilla, they have known scarcely at all, except by tradition. Their traditions accord to him wonderful powers, and achievements *ad libitum*; in story too he is perpetuated, and thus, many of the poor deluded inhabitants have come to regard the creature, either as a demi-god or demon, having no kindly purposes towards them—in fact they imagine him to be their direst and most dangerous enemy.

When the gorilla stories were first divulged abroad, the subject of them was regarded as an improbability; but his existence was placed beyond a doubt, before the world, in 1846. Towards the close of that year, the Rev. J. Leighton Wilson, a missionary in the Gaboon region of Western Africa, came in

* Mission to Ashantee, p. 440.

possession, accidentally, of the skull and some other portions of the skeleton of a species of ape which he was convinced was unknown to zoologists. These remains he forwarded to the Society of Natural History at Boston, in whose proceedings they were subsequently described by Dr. Savage and Professor Jeffries Wyman. The new animal was found to belong to the genus *Troglodytes*, and these gentlemen proposed as his distinguishing cognomen, *gorilla*. Whether they thus named him on the supposition that he was the same species as seen by Hanno, the old Carthaginian navigator, we are not informed.

The term *Troglodytes* (from *τρογλή*, a cavern, and *δύω*, to inhabit,) was first applied to the apes by Linnæus, we believe, and it now includes four varieties, viz: The chimpanzee (*Troglodytes niger*), the kooloo-kamba* (*Troglodytes kooloo-kamba*), the nshiegombouvé (*Troglodytes calvus*) and the gorilla (*Troglodytes gorilla*). The chimpanzee was originally known as the *Homo sylvestris* or Pigmy, which name was given by Tyson in 1699. Linnæus calls it, in his "Systema Naturæ," the *Homo-Troglodytes*. It became more generally known, however, as the *Simia Troglodytes*, from Blumenbach. The name it now bears, *Troglodytes niger*, was given in 1812, by Geoffroy St. Hilaire of Paris.—It is proper to add here, that this naturalist makes a new genus for the gorilla, which he has named *Gorilla*, and has called the only species of the genus thus named *ngina*. All the above species inhabit equatorial Africa. Besides them, six other varieties of tail-less apes are known to naturalists, viz; two species of the orangutan (*Simia Satyrus*) found in Borneo and Sumatra; and four species of the gibbon (*Hylobates*), including the siamang, which are distributed through Java, Borneo, Sumatra, Malacca and Siam.

Since 1847, at which time the gorilla was fairly introduced to the world, our knowledge of him has been gradually increasing. In 1853, Prof. Owen, of London, received from the Gaboon, a gorilla's carcass, in a cask of spirit,—it was in so imperfect a state of preservation however, that but little more than its skeleton was available for examination; the results, together with such meagre accounts of the appearance and habits of the animal as had been obtained from the natives, formed a very interesting paper which Prof. Owen subsequently published. With this memoir, the subject rested until the latter part of the year 1859, when the enterprising American traveller, Paul B. DuChaillu, returned to this country, bringing a full collection of gorilla skeletons and stuffed carcasses, which he had obtained during his four years exploration tour in equatorial Africa. Mr. DuChaillu claims to be the first white man who has seen the gorilla and studied its habits, in its native jungles; the facts are

* Kooloo, the sound which it utters, and Kamba, a native word signifying to utter.

recorded in an interesting way in his published volume.* We shall take the liberty of using some of the author's statements, in a report of the animal, which we now undertake.

In its size, the fully developed gorilla is the largest anthropoid ape known—it varies though, in this particular, as much as does man; the range, among adult males, is said by DuChaillu to be from five feet two inches, to six feet two inches. One specimen, whose proportions are given, measured in length, five feet nine inches; the chest had a circumference of sixty-two inches, and the arms extended, spanned nine feet.†

The bones comprising the skeleton, are massive, and they possess a greater density of structure than in animals generally. In number, position, and form, they approach human bones closely, and when articulated in the skeleton, are quite suggestive of that higher animal. For convenience of description and comparison, the skeleton may be divided into 1. The vertebral column, or central axis. 2. The head and face, or superior development of the central axis. 3. The thoracic arch and upper extremities. 4. The pelvic arch and lower extremities.

The number of pieces in the *vertebral column*, both in man and the gorilla, is twenty-four, and in their division into classes they correspond, except in the dorsal and lumbar regions; to the former, the ribs are attached, and there are twelve, thirteen or fourteen, in that series, according as there are twelve or more pairs of ribs. In the processes of the several vertebrae, there is little to contrast; the cervical group departs most, from that of man. The *vertebral column* however, is far from being conformable: In man it presents three, opposite curvatures, which are compensating. In all the apes, there is a single curvature in the form of a bow, which, acting like a spring, protects the animals from sudden shocks in leaping, or running on all fours; the same purpose is answered in man, by a combination of curvatures, which the better adapts him to maintain the upright posture. Moreover, out of deference to position in walking, is doubtless owing the difference which exists in the place of connection of the head with the vertebral column. In the gorilla, the articulating point is so far back on the base of the skull, that the animal could not well support his head if standing erect—the labor of doing it would make him conversant with a most intractable ailment—headache.

In the conformation of the *skull*, a great difference is apparent between all the apes and man. In the latter, the bones of the face are arranged perpendicularly, or nearly so, under those of the cranium. So that the facial angle (the angle formed between

* *Adventures in Equatorial Africa* by Paul B. DuChaillu—published by Harper and Bros. N. Y. 1861.

† For the dimensions of the gorilla as given by Dr. Gray, see this Journal, vol. xxxii, p. 427.

a line drawn from the projecting part of the forehead to the incisor teeth of the upper jaw, and another, passing from the jaw horizontally backwards), is large, measuring 75° or more; while in the apes, as in all brutes, the facial bones retreat anteriorly from the perpendicular, from the forehead towards the chin—giving a comparatively small angle.

This bestial characteristic is not very prominent in the quadrumana; in the gorilla, we should say that the slant of its face is such that the entire outline of the skull, viewed laterally, would very nearly represent a rhomb.

The gorilla has not many manlike features about its skull: The anterior part, or face, is quite large; the *cranium*, or head proper, comparatively small;—and the two are separated by immense *supra-orbital* ridges, which deprive the animal almost entirely, of a forehead: The *cranium* is also terminated with equal abruptness behind—the *occipital* bone making nearly a right angle, at its junction with the *parietal*. The *cranium* is still further peculiar, in the male, in possessing a large bony crest upon the exterior, which extends its whole length along the median line—it is formed by the union of the *parietal* bones with each other. The *lower jaw*, is shaped much like man's; but in size, it is another thing altogether. The difference in this particular is indicated by a comparison of weights, which the writer made of two adults skulls, of man and the male gorilla, in his possession. The skulls—lower jaw not included—weighed the same, within a fraction of an ounce, (*viz.*, 18 oz's.); while the jaws weighed, —the gorilla's, *ten* ounces,—man's, *two and a half* ounces.

The *teeth* again, are analogous. Their number we believe is the same in all the anthropoid apes, with that in the human species; but the gorilla has the advantage over all, in respect to size and strength. They are of exceeding hardness and whiteness, and are firmly implanted by long fangs. The *molar* teeth, or grinders, are probably more subservient to crushing food, than comminuting it,—the articulation of the lower jaw with the *temporal* bone not favoring so free a lateral motion, as the grinding process requires. Correspondent with this massive organ, are the muscles which move it: The *temporal* takes origin from the entire side of the head as high up as the median line; the *masseter* and *pterygoid* muscles also, are large and powerful.

The skull of the gorilla, as we have seen, differs widely from that of the human species; so are there many points of contrast between it, and those of other apes. In cranial capacity, all these animals are far below man, and when compared among themselves, *two* certainly, the chimpanzee and kooloo-kamba, have a larger brain cavity than the gorilla,—consequently, if mental development has any relation to the amount of brains possessed, they would take rank above him. The bony crest which surmounts the *cranium* of the male gorilla, is another non-human

endowment, and it places the possessor retrograde among his congeners, for they are without it, excepting only the orang-oetan. In the quadrumana generally, the top of the head is regularly round and smooth. Again, in the gorilla, the face is not so broad in proportion to length, as in the kooloo-kamba. In this species, the peculiar development of the cheek (*malar*) bones, gives a great breadth to the face, and this, in conjunction with a more symmetrical nose and mouth, enables the animal to wear a countenance which is strangely human. A plump-faced member of the genus homo, with a convict crop of hair, a slight forehead, high cheek bones, flat nose, wide mouth and a moderate supply of whiskers, may have the satisfaction of knowing that, in so far, he impersonates an African kooloo-kamba.

In the gorilla, the orbital cavities are larger, and nearer together, than in the chimpanzee; his nose too, is compressed, and the jaws are more projecting, and quadrate in outline. These peculiarities make up an expression of countenance more beastly and savage, than any of his fellows could offset; they give to the face a decidedly carnivorous look, to which, among the apes, the orang-oetan makes the nearest approach—though he is amiable in the comparison. It is due the gorilla however, to state, that when young, he has not so markedly these brutish features; but after the infantile period is passed, the face undergoes a wonderful metamorphosis which brings them out. In infancy, his skull, and that of the chimpanzee and its allies, have most of human resemblances; and at this period, like all babies, they are scarcely distinguishable from each other.

In leaving the skull, we may remark, that if the ape class of the mammalia were ranked according to the approach which their skulls make to the human standard, several species would take precedence of the gorilla.

An extraordinary feature in the skeleton of the troglodytes, and one which is almost generic, is the *great length of the anterior extremities as compared with the posterior*. In the human species, the lower limb is the longest, by an inch or two. In the kangaroo, and other animals whose mode of progression is largely by *leaping*, the lower extremities very much exceed in length the upper; while in quadrupeds generally, the locomotive organs correspond very nearly with each other, both in length and size. The arms are most extensive in apes and monkeys, for the reason that these creatures lead, chiefly, an arboreal life, and so they require greater length and strength in that member. The longest arms are found in the siamang (the highest of the gibbons) and orang-oetan, in whom they reach the ground, when the animals stand erect. The chimpanzee, erect, reaches a little below the knee, and the gorilla, a little above it, he therefore comes nearest to man, whose reach is to the middle of the thigh,—and con-

siderably near it is too, if their arms, in the measurement from shoulder to hand, be compared. If judged of by the position at the side, there is a greater discrepancy, for the reason that its much shorter thigh, brings the hand to a lower level in the gorilla: Also it has affinity with the human arm in another particular, for the arm bone (*humerus*), sustains to those of the fore arm (*radius* and *ulna*), the relative proportions of these bones in man. In both, the fore arm is shorter than the arm; in apes generally, it is as long, or longer. The *humerus*, in the gorilla, is longer than the same bone in the chimpanzee; yet in the latter, the anterior extremity is the longest, on account of its more extended fore arm.

The motions of *pronation* and *supination* are performed very readily and perfectly in the gorilla, we think, judging from the character of the elbow articulation, and the muscles which subserve those movements.

The gorilla's *hand* exalts him in the quadrumanous series; the *siamang* is his only competitor in an approach to the human hand; theirs represents it almost, on a more elongated scale.* In most of the apes, this member is little better than a paw, in consequence of the *great length and narrowness of the palm, and the length of the fingers with the comparative shortness and backward position of the thumb*. The *thumb* it is, chiefly, which impresses perfection on the hand of man: Its articulation with the *wrist* is such as to permit great range and freedom of motion; it may be brought in apposition with any of the fingers, thus qualifying the hand for the most delicate manipulations. The bone which unites the thumb to the *carpus* (wrist), is the *os-trapezium*; its surface for the articulation is, in man, the gorilla and *siamang*, a rounded, but not deep concavity. In other species, it is so deep and angular, that the head of the *metacarpal* bone of the thumb is more fixed, and its motions restrained.

The entire number of carpal bones in man, the gorilla, and chimpanzee, is *eight*; the orang-utan, gibbons, and most of the lower monkeys, have *nine*.

The bones uniting the anterior extremity with the body, are the *scapula* (shoulder-blade bone) and *clavicle* (collar bone). The former, is broader in the gorilla than in the chimpanzee, and comes nearer to the proportions of that bone in man. But in the *clavicle* there is a yet greater similarity, both in form and

* DuChaillu gives the following measurements of the hand and foot of a large female gorilla, viz: length of the hand, $7\frac{1}{2}$ inches; length of the foot from the hair comprising the heel, $8\frac{1}{2}$ inches; round of hand above the thumb, $9\frac{1}{4}$ inches; do. do. under the thumb, 9 inches. *Length of the fingers*; thumb, $1\frac{2}{5}$ inches; first finger, 4 inches; second do., $4\frac{1}{4}$ inches; third do., $3\frac{3}{4}$ inches; fourth do., $3\frac{1}{2}$ inches. *Circumference of the fingers*; thumb, $2\frac{3}{4}$ inches; first finger, $3\frac{1}{2}$ inches; second do., 4 inches; third do., $3\frac{1}{2}$ inches; fourth do., 3 inches. *Circumference of the toes*; thumb, $3\frac{1}{4}$ inches; first finger, $2\frac{3}{4}$ inches; second do., $2\frac{1}{4}$ inches; third do., $2\frac{1}{2}$ inches; fourth do., $1\frac{1}{2}$ inches. See Du Chaillu's "Adventures," &c., p. 301.

size. This bone, as its name imports, is a key or brace to the shoulder, and in this function it is very important in all *climbing* or *flying* animals. In those not thus addicted, it is more rudimentary, and in those where the anterior extremity is employed merely as an instrument of progressive motion on a plane surface, it is entirely wanting.

The *pelvis* (basin) in the gorilla, is decidedly anthropoid. In no other ape do the *iliac* (hip) bones bend forward enough to produce a pelvic concavity. Their apish characteristics, are, great length, straightness, and narrowness in proportion to length. The tuberosities of the *ischia* are broad, thick, and curved outwards; the *pubic* bones are broad and deep, but flattened from before backwards. The whole pelvis is placed more in a line with the spine than in man, and the *sacrum* and *coccyx* which complete it behind, have a much less concavity. Moreover, the diameters of its superior aperture, are below the average in the human subject. In all these points the gorilla deviates from man less than any of his allies.

The *posterior extremities* of the gorilla, are characteristically short; in this feature they seem to outdo all other nether limbs among the quadrumana. The relative length of the thigh, to the leg, is about the same as in man; in both, the thigh is longest by about *two* inches (average). In the other apes we have been comparing, the two divisions of the posterior extremity preserve a corresponding relationship—and in conjunction, they make a longer limb than the gorilla's, without an exception the writer thinks, among the larger species. In man, the lower extremity tapers gradually, and gracefully, from the groin to the foot. In the gorilla, the large muscles which invest the thigh bone give to that part a square and massive form, while the leg is so devoid of them, that it has no calf, and hence no volume or symmetry. Plainly it is of little account to its owner for walking in the erect position, and we should apprehend his downfall, even if he attempted to maintain it at rest, very long. According to Professor Owen, the *glutæi* muscles, which form the buttock, and lift and rotate outward the thigh in walking, are most developed, in a quadrumanous series, in the gorilla. But this does not prove him any more a biped. We think with Mr. B. G. Wilder,* of Boston, that the form and direction of the *glutæi*, in apes, is more favorable to leaping, than continuous walking.

Nor does the structure and articulation of the *foot*, favor pedal locomotion. The foot is not sufficiently plantigrade to allow it, and a yet greater interference lies in the position of the great toe. By position, this member, in the chimpanzee and gorilla, is a true thumb, being situated posteriorly and inferi-

* Contributions to the Comparative Myology of the Chimpanzee by B. G. Wilder, p. 371. From Proceed. Bost. Soc. Nat. Hist., April 17, 1861.

only to the other toes—according to Owen it diverges from them, in the latter animal, at an angle of 60° from the axis of the foot; hence the feet are well adapted to grasping and climbing. The small size of the foot, and its articulation with the leg at the expense of the heel in the apes, excepting only the gorilla, present other hindrances to upright walking. The gorilla has a well formed heel, and a foot so large that it exceeds the hand in size,—herein, he obtains another human characteristic. The contrary relationship between the two organs, subsists in other apes.

For the various reasons above set forth, we now assert, without hesitation, that the mode of progression in the anthropoid apes, the gorilla included, is on all fours; they may assume at will, in the case of many species, an upright posture, and even may be able in some instances, to maintain it a short time in walking or rather waddling, but their true method of locomotion is quadrupedal.

The anthropoid apes take rank in relation to man, according to the degree of approach of their skeletons to his. By this criterion the gorilla has a high, perhaps the highest position. His skull as we have seen, has fewer human resemblances than those of some other species, but in the rest of his bony framework he stands much nearer the archetype. A comparison of the entire skeleton, among the series, leaves us in some doubt as to the exact place he should occupy. Professors Wyman and St. Hilaire put the chimpanzee first, and the gorilla second; while Prof. Owen states, that the tailless quadrumana recede from the human type, in the following order: viz., gorilla, chimpanzee, orang-oetan, gibbon.

The muscular system of the apes, throughout its entire structure and arrangement, conforms very closely to that of man. So also the structure and form of the *lungs* and *heart*, and the distribution of the *blood vessels* and *nerves*, are all but identical with the corresponding organs in man. But the *brain*, though having the elliptic form of its human congener, differs from it considerably in size* and points of structure. In bulk, and in the number and size of its convolutions, the discrepancy is great. The *cerebellum*, relatively to the *cerebrum*, is larger than in man. This disparity of size, consequent upon the larger cerebellum, is a characteristic of the brute creation, and it increases up to a certain limit, as we recede from man in a descending series. It is indicative of excessive animalism, or rather of a preponderance of the purely animal functions.

* The weight of brain, in a full grown gorilla, is from 10 ounces to 12 ounces, troy; in the chimpanzee and kooloo-kamba, it is somewhat greater than this. In the full grown negro, it ranges from 3 pounds 1 ounce, to 3 pounds 9 ounces 4 drams, troy.

The brain of anthropoid apes is distinguished from that of other brutes, in possessing a process of structure known as the *hippocampus minor*—this is a minute, nipple shaped, body, which is found in the posterior cornu or horn of each *lateral* (the largest cavities of the brain) *ventricle*. Its existence in the apes, to the exclusion of all other animals except man (for this, so far as known, is a fact), is the more remarkable, inasmuch as the posterior lobes of the brain, which contain the cornua, are very inconsiderably developed in them.

In the circle of their functions, and in the phenomena of periodicity, the apes, again, make a close approach to the human species.

The dissections which have been made of the gorilla's carcass, show an identity almost, in character and relations of the soft parts, with those of the other species of the Troglodytes.

The *skin* of the gorilla, in the young as well as in the adult, is of jet black color, and is very thick and firm. The skin of the female, is generally darker than that of the male. Black, with few exceptions, appears to be the skin-color of apes, though some do not obtain it till after the period of adolescence. The face of the chimpanzee, when young, is yellow, while that of the young nshiego-mbouvé, is astonishingly white. The skin of each is clothed all over with hair, which also is black or gray. The hair of a fully grown, but not aged gorilla, is said to be of iron-gray color—the black hair is intermixed with gray, and so ringed, as to produce this particular shade. The longest and darkest hair—sometimes over two inches long—is on the anterior extremity; from the shoulder to the elbow, it grows downwards; on the forearm, upwards. The back of the hand is hairy to the division of the fingers, which have a more downy coating. The posterior extremities, likewise, are covered with coarse hair, which is thickly set, except upon the toes.

The gorilla, in general configuration, is quite like the apes, but his larger size, and more compact organization, deprive him of their agility of motion—and so, by good right, of their name. In motion and manner, he must be an awkward and ungainly ape. He is accomplished, however, by possessing great strength—in this particular, as also in ferocity of disposition, we conceive him to be something terrible. His *physique*, judged of by man's, is graceless and shabby in the extreme; in the comparison, we are justified in characterizing him, as Buffon has done the sloth, "a bungled composition of nature."

The gorilla is supposed to have originated in Africa—at any rate he makes his abode in the equatorial belt, of that continent. According to DuChaillu, his range of migration is between 3° north, and 3° south latitude, and as far into the interior, as Captain Barton's Lake Tanganyika. Over this region of

country the animal holds undisputed sway; not even the elephant and lion are competitors with him there; they and all lesser beasts, flee before him. The adult male gorilla has no sense of fear; he runs from no enemy, and is not the aggressor, usually, in an encounter. When the hunter comes in his way, he rises erect and opens wide upon him his fiendish eyes, giving utterance at the same time, to deafening and protracted roars of warning; and by way of bidding defiance, he distributes upon his massive drumlike chest, blows, whose vibration can be heard, it is said, "at least a mile off."(!) If the hunter then makes no retreat, the brute advances towards him, repeating as he moves, the terrific roar and thumps. The right shooting distance is six or eight yards. If a ball takes effect in the head or chest, the animal falls and dies quickly,—for, like man, he has not a strong tenacity of life. If the hunter misses the mark, woe be to him, for the alternative is, to kill or be killed; before he can reload, the beast is upon him, and one blow of his large fist, suffices to crush in the unfortunate man's skull, or frightfully lacerate his trunk.* The female gorilla is not thus fearless and courageous; she seeks to escape when pursued, unless the safety of her young is imperilled; for them, it is said, she will resist, even unto death.

The *roar* of the male gorilla to which we have referred, is described by DuChaillu, as the most singular and awful noise heard in the African forest, he says, "it begins with a sharp *bark*, like an angry dog, then glides into a deep bass *roll*, which literally and closely resembles the roll of distant thunder along the sky, for which I have sometimes been tempted to take it, where I did not see the animal. So deep is it that it seems to proceed less from the mouth and throat, than from the deep chest and vast paunch."

In his *diet*, the gorilla is reported as being a strict vegetarian. If this is true, we must regard his canine teeth as rudimentary tusks, and as such, useful either for purposes of

* This statement concerning the way in which the gorilla attacks his foe, is made on the authority of Mr. DuChaillu. We question its authenticity however, for the reason that the gorilla having *nails* instead of *claws* at the extremities of the fingers, would hardly be able to make an extensive *lacerated* wound with his hands. On this ground Mr. Charles Waterton denies that the animal is at all pugilistic in an encounter. Mr. Waterton says, in the London Athenæum for Oct. 19th, 1861, "Let me remark here (notwithstanding what anatomists may teach to the contrary), that the gorilla and every other ape have received their long and brawny forelegs, *not* for offensive or defensive measures, but solely, like the sloth, to enable them to pass from branch to branch with a rapidity like unto that of an arrow from the hunter's bow,—their hinder legs acting as mere props in the transit. Anatomists ought to know that the gorilla, being an ape, has *non retractile claws*; so that it *never attacks its foe, or defends itself, with the forefeet, but invariably with the mouth*. Wherefore, I condemn unhesitatingly Mr. DuChaillu's description of a gorilla giving the negro a 'tremendous blow with its immense open paw.'" (See the narrative cited on p. 63 of this Journal).

prehension, or as weapons of offense. DuChaillu states that his favorite diet consists of, "the wild sugar cane; pine apple leaves; certain berries which grow close to the ground; the pith of some trees, and a kind of nut with a very hard shell." Such food seems quite insufficient for so large and powerful an animal,—most vegetable food, as compared with animal, containing a comparatively small proportion of nutritive substance. If this kind suffices, he must, like herbivorous animals generally, require to spend a great deal of time in feeding. His large paunch or stomach is much like theirs, and is peculiarly adapted to the digestion of vegetable aliment.

The gorilla, in his mode of life, is said to be a restless and nomadic creature, not remaining stationary, long, in any locality, but roaming about in many forests; this is not improbable, for a moderate region of country would not supply him with a sufficiency of food for a very long time.

He is *non-gregarious*—only the members of the same family live and move together. DuChaillu met, and heard of, no exceptions to this; he tells us also, that they are usually found in dark and gloomy places, preferring the jungles to open woods. At night, the young animals lodge in trees, while the old ones sleep and keep guard near by, below.

It is not yet known whether the gorilla is tameable. DuChaillu is convinced that it is not, but we think he decides the question on insufficient evidence. His observations with reference to this point were limited to *three* young animals,—the first of which survived his capture but about a month, the second lived only three days, and the third, died on the tenth day. He says concerning them, "no treatment of mine, kind or harsh, subdued the young monsters from their first and lasting ferocity and malignity." To the sin of untameability they added the vice of treachery, and so long as they lived, these little brutes required all their master's kind efforts, with obstinacy and rebellion.

But Mr. DuChaillu's declaration that the gorilla is untameable, vanishes, if the following biography of a young animal is true.—We extract it from a letter by R. B. Walker, which is published in the London Athenæum for Sept. 21st, 1861.—Mr. Walker is the proprietor of a mercantile agency located near the Gaboon, in Western Africa,—he says, "The statement of the untameability of the young of the gorilla, is untrue. In proof whereof, let me ask Mr. DuChaillu, whose memory, usually so very good, seems to have failed him signally in this particular instance, if he has forgotten the young female gorilla, of from two to three years of age, called Seraphine, which lived at my factory for four months in 1859, and which he repeatedly saw there? I assert, without fear of contradiction by Mr. DuChaillu or any other person (and I could name scores of Europeans who saw it), that

this animal was perfectly tame, docile and tractable,—far more so, indeed, than many Negro children of the same age. Not only was she on perfectly good terms with all grown up people in and about the factory, but was exceedingly attached to her keeper Curtis, whom she could not bear to be out of her sight, but regularly accompanied him about the factory and in his walks in the town and neighborhood. She was familiar and quiet with myself and clerks, and was only displeased when children approached her; and for these she seemed to have, in common with most large apes and monkeys, a very great dislike. She was seldom tied up, and even then only by a very small cord, which she could easily have broken or cut with her teeth had she felt so inclined. She allowed herself to be clothed, seeming to like it; and actually went to breakfast with a friend of mine, Mr. Barbotin, commandant of the steam transport, *le Rénaudin*; upon which occasion she conducted herself to the admiration of everybody. When at times put on the table, or amongst vessels of glass or earthen ware, she was most careful not to break anything. She finally died from dysentery and chagrin,—the latter caused by her keeper being prevented by his other occupations from paying her so much attention as she had been in the habit of receiving."

We think Mr. Walker's young animal must have been more docile than the average of her species, for it is certain, that as a race, gorillas are, in very constitution, stubborn and rebellious. But if the animals were taken young, and properly cared for and kindly treated for a term of months or years, we see not why their native ferocity of disposition should not be subdued,—kindness and patience are able to conquer almost any animal.

Concerning DuChaillu's experiments, we are convinced that they were insufficient to warrant any conclusions.

We close this article with an extract or two from DuChaillu's work, which illustrate the romance and the danger of gorilla hunting. The author describes, in the following graphic style, his first meeting with an old male, and the results:

"Suddenly Miengai (a native guide) uttered a little *cluck* with his tongue, which is the native's way of showing that something is stirring, and that a sharp look-out is necessary. And presently I noticed, ahead of us seemingly, a noise as of some one breaking down branches or twigs of trees. This was the gorilla, I knew at once, by the eager and satisfied looks of the men. They looked once more carefully at their guns, to see if by any chance the powder had fallen out of the pans; I also examined mine, to make sure that all was right; and then we marched on cautiously.

"The singular noise of the breaking of tree branches continued. We walked with the greatest care, making no noise at all. The countenances of the men showed that they thought themselves engaged in a very se-

rious undertaking ; but we pushed on, until finally we thought we saw through the thick woods the moving of the branches and small trees which the great beast was tearing down, probably to get from them the berries and fruits he lives on. Suddenly, as we were yet creeping along, in a silence which made a heavy breath seem loud and distinct, the woods were at once filled with the tremendous barking roar of the gorilla.

"Then the underbrush swayed rapidly just ahead, and presently before us stood an immense male gorilla. He had gone through the jungle on his all-fours ; but when he saw our party he erected himself and looked us boldly in the face. He stood about a dozen yards from us, and was a sight I think never to forget. Nearly six feet high (he proved four inches shorter), with immense body, huge chest, and great muscular arms, with fiercely glaring large deep gray eyes, and a hellish expression of face, which seemed to me like some nightmare vision : thus stood before us this king of the African forests.

"He was not afraid of us. He stood there, and beat his breast with his huge fists till it resounded like an immense bass-drum, which is their mode of offering defiance ; meantime giving vent to roar after roar.

"His eyes began to flash fiercer fire as we stood motionless on the defensive, and the crest of short hair which stands on his forehead began to twitch rapidly up and down, while his powerful fangs were shown as he again sent forth a thunderous roar. And now truly he reminded me of nothing but some hellish dream creature—a being of that hideous order, half man half beast, which we find pictured by old artists in some representations of the infernal regions. He advanced a few steps—then stopped to utter that hideous roar again—advanced again, and finally stopped when at a distance of about six yards from us. And here, as he began another of his roars and beating his breast in rage, we fired and killed him.

"With a groan which had something terribly human in it, and yet was full of brutishness, it fell forward on its face. The body shook convulsively for a few minutes, the limbs moved about in a struggling way, and then all was quiet—death had done its work, and I had leisure to examine the huge body. It proved to be five feet eight inches high, and the muscular development of the arms and breast showed what immense strength it had possessed."*

Having heard how Mr. DuChaillu killed gorillas, let us learn how a huge specimen killed one of his men,—he and his aids came upon one of the party, wounded on the ground—he thus describes the encounter.

"Our little party separated, as is the custom, to stalk the wood in various directions. Gambo and I kept together. One brave fellow went off alone in a direction where he thought he could find a gorilla. The other three took another course.

"We had been about an hour separated when Gambo and I heard a gun fired but a little way from us, and presently another. We were al-

* *Adventures in Equatorial Africa*, p. 98.

ready on our way to the spot where we hoped to see a gorilla slain, when the forest began to resound with the most terrific roars. Gambo seized my arms in great agitation, and we hurried on, both filled with a dreadful and sickening fear. We had not gone far when our worst fears were realized. The poor brave fellow who had gone off alone was lying on the ground in a pool of his own blood, and I thought at first quite dead. His bowels were protruding through the lacerated abdomen. Beside him lay his gun. The stock was broken, and the barrel was bent and flattened. It bore plainly the marks of the gorilla's teeth.

"We picked him up, and I dressed his wounds as well as I could with rags torn from my clothes. When I had given him a little brandy to drink he came to himself, and was able, but with great difficulty, to speak. He said that he had met the gorilla suddenly and face to face, and that it had not attempted to escape. It was, he said, a huge male, and seemed very savage. It was in a very gloomy part of the wood, and the darkness, I suppose, made him miss. He said he took good aim, and fired when the beast was only about eight yards off. The ball merely wounded it in the side. It at once began beating its breasts, and with the greatest rage advanced upon him.

"To run away was impossible. He would have been caught in the jungle before he had gone a dozen steps.

"He stood his ground, and as quickly as he could reloaded his gun. Just as he raised it to fire, the gorilla dashed it out of his hands, the gun going off in the fall, and then in an instant, and with a terrible roar, the animal gave him a tremendous blow with its immense open paw, frightfully lacerating the abdomen, and with this single blow laying bare part of the intestines. As he sank, bleeding, to the ground, the monster seized the gun, and the poor hunter thought he would have his brains dashed out with it. But the gorilla seemed to have looked upon this also as an enemy, and in his rage flattened the barrel between his strong jaws.

"When we came upon the ground the gorilla was gone. This is their mode when attacked—to strike one or two blows, and then leave the victims of their rage on the ground and go off into the woods."*

Our traveler's negro associates seem to have exhibited less courage in the presence of live gorillas, than he did. Unless the game was a young animal, or a solitary female, they were loth to encounter it.

To kill an adult male, is regarded as a great achievement among the natives, "it gives the hunter a life long reputation for courage and enterprise, even among the bravest of the negro tribes." Mr. DuChaillu states, that "the hunters are their most valued men. A brave and fortunate one is admired by all the women; loved—almost worshiped—by his wives; and enjoys many privileges among his fellow villagers. But his proudest time is when he has killed an elephant or a gorilla and filled the village with meat. Then he may do almost what he pleases."

New Haven, Dec. 1861.

* *Ibid.*, p. 342.