

SOME OBSERVATIONS ON MONKEYS

Striking Affinities Apparent Between Homo and Simia, Both Mentally and Morphologically—Although Certain Differences Hold Good in the Mean, Abnormal Specimens of Homo May be Found Who Show Many Supposed Criterion of Simianism

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AMONG the many interesting books of the late Prof. St. George Mivart stands the very excellent little volume "Lessons in Elementary Anatomy," which appeared in 1877, and which is a most useful treatise, carrying many instructive illustrations. At the close of this work Professor Mivart says: "Having now completed our elementary investigation and exposition of the various organs and parts which make up man's body, and having noted the more important differences which the corresponding structures may present in other vertebrate animals, it may be well, shortly, to recapitulate some of the leading distinctions in a different sequence and arrangement, in order to bring out more clearly not only the peculiarities, but also the affinities evidenced by various anatomical relations between the body of man and those of other vertebrates."

The results throughout anatomical literature along this line of inquiry and comparison, will stand for the advantage man has reaped, in all ages, from just such investigations, when they have been correctly and intelligently made and employed. Mivart, in the little work above mentioned, first contrasted many of the points in the skeleton of man with what we find in fishes. In a similar manner comparisons were made with the salient points in the anatomy of the batrachians, the reptiles, the birds, the monotremes, the marsupials, and the mammals; finally, his last table sets forth how man differs from

all members of his order, except the three highest genera, the orang (*Simia*), the gorilla and chimpanzee (*Troglodytes*), and the gibbon (*Hylobates*)—that is, with respect to his anatomy. In this he enters more extensively than into the other comparisons he makes; there are thirty-five points recorded in the list, wherein man differs from the highest apes, and five wherein he differs from all members of his order.

MANY POINTS CONTRADICTED

These comparisons I have gone carefully over many times, not infrequently with the actual material at hand. From these perusals I am convinced that Mivart must have compared only such osteological and other characters as occur in the skeleton and general organization of the very highest types of men with such corresponding ones as had been brought to light in the simians during the time he wrote and before—or about half a century ago. As a matter of fact, among the very lowest races of men—and in abnormal specimens—we meet with examples which will contradict nearly every point Mivart attempts to make in the final tabulation referred to above. If we confine ourselves to the skull alone, it will be seen that this is true. I was convinced of this about a year ago, when I carefully examined and compared some 20,000 human skulls, of all races, in the collection of the United States National Museum at Washington.¹ To refer to a few of these, I may

¹ This comparison forms the basis of an extensive memoir, with many photographic and line-drawing illustrations, which has been accepted for publication by the Medical Department of the Army.



A MACAQUE MONKEY

Especially worthy of note is the form of the ear in this specimen, since it is pointed posteriorly. In rare cases in man a point of the ear may be found turned in. (Fig. 11.)

say that it is not true that "the cranio-facial angle varies from 90° to 120° ," nor that the "superciliary ridges are little developed;" neither is "a long styloid process" always present in the skulls of *Homo*.

As a matter of fact, while the characters referred to by Mivart as exemplifying the anatomical organization of man, contrasted with that of the simians or apes, are generally to be found in the higher races of men—more particularly the highest races—they are frequently absent in lower ones, as for instance among negroes, native Australians, and the like, where we meet with examples that are quite ape-like in some parts of their anatomical organization. As for that, I have examined negro skulls wherein the jaws were very large and powerful; the nasal spine almost aborted; the superciliary ridges prominently developed; the maxillo-premaxillary suture present in the adult; the cranio-facial

angle very small, and so on through the category. These characters, as found in the skulls of negroes, are fully set forth in my recent work on "The American Negro," and in numerous articles on the subject, published during the past thirty-five years.

ANTHROPOIDEA DIFFER WIDELY

Anatomically, the *Anthropoidea* differ widely among themselves—that is, the higher apes, the monkeys, gibbons, and marmosets; this is also true of many races of men. This is quite apart from their anatomy or physical organization; for in that matter the morphology of the lowest form of monkey is quite as complex as that of the highest type of man. To be sure, the brain of the latter possesses the greater number of convolutions, and there are other structural differences; but, part for part, the organization of the one is reproduced in the other. Some structures may be



A SOUTH AMERICAN TYPE

Head of a black spider monkey (*Ateles paniscus*); en face.
Adult male. (FIG. 12.)



ONE OF THE SMALLER APES

Same specimen as shown in Fig. 12 seen on right profile.
(Fig. 13.)



HAND AND FOOT OF ATELES

Palmar aspect of left hand of Black Spider Monkey shown in right-hand cut, with aborted thumb. The left-hand cut shows the right foot of the same individual. This graphically resembles a human hand. The great toe, which is well developed, has the appearance of a finger, and the palmar surface extends backwards more than might be anticipated. The nails resemble greatly those of the human hand. Photograph natural size. (Fig. 14).

missing in man's anatomy, and present in the ape's; but this in no way contradicts the aforesaid statement. So, too, for the organs themselves as a whole—the eye, or the ear, or the tongue of a monkey is just as perfect and complex as are the corresponding organs in man.

Elliot, in his great work (three volumes) on "A Review of the Primates," says: "In this review the orangoutang is placed lowest in the scale or farthest from man; and the genus *Pongo* is considered to possess but one species certainly, and one very doubtful. The author is fully aware that this opinion is by no means shared by some of his colleagues, who would recognize a large number of species; but after examining all the material of orangs contained in all of the large museums of the world, the writer was able to discover no character that would prove the existence of more than one species. The opinions as to the position the orang should occupy in reference to man have varied greatly, yet despite the views of so great an authority as that of his friend, the late Sir Richard Owen, who would place the orang before the gorilla in its relation to man, the author, from the result of his own studies and the evidence produced by others, considers that the

testimony in its entirety shows that the gorilla, low as he may be in the scale of intelligence, has more of an affinity for man than the orang, while both are far exceeded in man-like qualities by the chimpanzee." (Vol. i, p. xxvii.)

Passing next to a brief consideration of the mental and physical attributes of apes, monkeys, and their various near congeners, as compared with the corresponding ones in man, I may truthfully state that simply tons of books and articles have been published on that subject. Notwithstanding this fact, how very, very few there are, even in the highly intellectual classes, that can intelligently discuss the mental and physical differences that exist between man and the apes and their near kin. As a matter of fact, articulate speech, as possessed by the former, is the main distinctive character between them. Even this distinction is not wholly true, for all apes and all monkeys have a language of their own, which has been largely translated by students of it. As to the emotions, apes possess them as well as man, and, with respect to some of them quite as pronounced. There is no question but that all the *senses* are as well developed in apes as in man, as sight, hearing, smell, and so on.

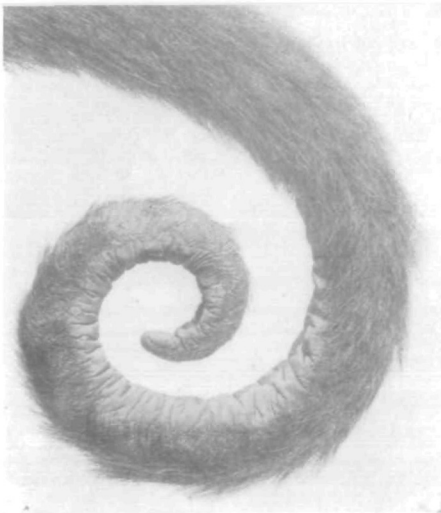
Long ago, Professor Huxley said that "a man born dumb, notwithstanding his great cerebral mass and his inheritance of strong intellectual instincts, would be capable of few higher intellectual manifestations than an Orang or a Chimpanzee, if he were confined to the society of a few dumb associates. And yet there might not be the slightest discernible difference between his brain and that of a highly intelligent and cultivated person. The dumbness might be the result of a defective structure of the mouth, or of the tongue, or a mere defective innervation of these parts; or it might result from congenital deafness, caused by some minute defect of the internal ear, which only a careful anatomist could discover.

"The argument, that because there is an immense difference between a man's intelligence and an ape's, therefore there must be an equally immense difference between their brains, appears to me to be as well based as the reasoning by which one should endeavor to prove that, because there is a 'great gulf' between a watch that keeps accurate

time and another that will not go at all, there is therefore a great structural hiatus between the two watches. A hair in the balance-wheel, a little rust on a pinion, a bend in a tooth of the escapement, a something so slight that only the practiced eye of the watch-maker can discover it, may be the source of all the difference."

Through the kindness of Mr. Edward S. Schmid, of Washington, D. C., who presented me with the material, I am enabled to offer, as illustrations to the present article, various reproductions of photographs which I have made of two species of monkeys, and which aim to show facial expressions as well as the morphology of hands, feet, and tail. In Fig. 11 we have the portrait of the common Macaque monkey of India (*Macacus rhesus*), a form which stands between the African mangabeys and the baboons. Special attention is invited to the form of its ear and its general physiognomy. Note that the ear is *pointed* posteriorly. In the human species we sometimes meet with cases where this point is present and turned down. Darwin gives an excellent account of this structure in his work on "The Descent of Man" (pp. 15-17), and I have personally seen some excellent examples of it, the best one being in the case of a very low, black negro in New Orleans. This point is not present in the ears of all apes and monkeys, among others it is absent in the large, black spider monkey (*Ateles paniscus*), here shown in Figs. 12 and 13. In the foetal Orang it is directed upward.

In passing I may say that the black spider monkey belongs in a group wherein the tail is prehensile, and to a large extent fulfills the function of a fifth hand. Its form is well shown in Fig. 15, and this structure, as well as the hand and foot portrayed in Fig. 14, all belonged to the black spider monkey mentioned above (Figs. 12 and 13). This species gets its name, *Ateles*, from the fact that it possesses no thumb, that digit of the hand having, in time, entirely aborted. (Right hand cut of Fig. 14.) The lines of the palmar surfaces of the hands and feet in monkeys is an interesting field for comparative study, but up to the present time but little has been published on the subject.



ATELES' FIFTH HAND

Some monkeys are afforded practically an additional hand by a prehensile tail such as this. Although it is not used for tactile examination of objects, for purposes of locomotion it serves as well as any other member. However, it is probable that such an equipment is genetically inferior to the two hands and two feet supplied man. (Fig. 15.)