Some reflections on the structure of a woodland giant.

(On the peculiarities of the skeletons of two Gorillas in the State Darwin Museum of Moscow)

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It would not be easy to find another creature of the tropical forests so well provided with the external conditions of life, as the biggest modern anthropoids, who were discovered only a little more than a century ago in the jungles of Equatorial Africa.

Being essential a vegetarian the Gorilla can find his food anywhere. He needs not be afraid of droughts in the damp soil of the tropical forest and the grown-up gorilla- male ensures both his own and his family's safety, the stregth of the lion and deftness of the leopard beang hardly able to resist enormous muscle — and jaws' power of the gigantic native of the Congo — or Cameruns forests.

Leaving aside the «Mountain» Gorillas, who resides as a protected creature in the Belgian reservation, and speaking especially about the Gorillas of the coast-region, we may be sure that his powerful structure and his strength have developed not in the fights with beasts of pray, but with his rivals of the same species. So we have here a clear case of the so called secondary sexual feature: it is well known that the difference between the size of males and females of this ape is very great, the males being nearly twice as big as the females.

So we may say that we have here a rather case when the powerful structure of the male is the result of mainly **intrespecial** fights and of those with animals of other species.

It is mainly during the fights with rivels of the same species that the powerful muscles of the body heve developed and also the crests of the scull which tower it like helmets where the muscles of the mighty both jaws are fastened.

All this makes — as is well known — the male-gorillas so different from gorilla-femals, who have no the skeleton-attributes of the males: the great protruding fangs and the scull-crests.

But one thing is remarkable here: the astonishing variation of size and development of these crests.

Partly connected with different local-races and partly as an individual peculiarity [1] , this variability is clearly seen on two old males belonging to the same subspecies in the Darwin Museum.

As is well known, there are cases when the skull of a grown-up gorilla male has no typical crests at all and in connection with it, the fangs are developed but slightly.

A good exemple of such specimen are may see on a skeleton in our Darwin Museum.

The specimen was obtained from a zoological dealer in Leipzig. Misled by the absens of crests the man was sure that the skeleton was that of a gorilla female. As such it was ordered by correspondence by our Museum.

But hier, from the first sight it bekame clear that it could belong only to a gorilla male, the skeleton being larger than that of an average ape of this sex.

But the most remarkable is then the structure of the skull, the crests being total laking. It wasthis fact, that made the trader think that the skeleton belonged to a female gorilla inspite of the big size of the anomals body.

Examining the skull of this strange creature one cannot wondering at that fact that the Suturae are opened everywhre, making the skull look juvenile.

[1] See **Harold Jefferson Coolidge**, Jr.: **A Revision Of The Genus Gorilla**. — Cambridge, U.S.A. — 1929.

But the great bolk of the animal is in sharp striking contradiction to this so to say unshaped structure of the skull.

One can explain this contradiction only in two ways: either the gorilla, notwihstanding his large stature was killed being not fully grown and but for the shot he would have continued to grow reaching finally the size, perhaps more than that of the once famous Tring-Gorilla.

Or- and that is much more probable — we have here a case of anomalous infantilism and this anomalous gorilla would have had to live to the end of his days without the usual attributes of an old male, without the crested skull and accordingly without the powerfull cranial muscles and fangs.

In both cases it would be natural to put the following question: can these attributes of the adult male Gorilla be so vitally, if side by side with the typical representatives of these spesiments can live and achieve more than the average bulk animals whose skull has stopped developing at a juvenil stage?

And we should not think that apes like that which has just been described can be found but very rarely. We have an interesting photo given to us 40 years ago by a firm in Hamburg (it does not exist now), which specialized in big anthropoids. This photo shows an adult Gorilla male with only rudiments of occipital crest, without any trace of the saggital one.

We may also remaind of an old male Gorilla skull without any traces of this crest on Table 5 of the splendid Monograph by Harold D. **Coolidge** jr. to say nothing about the crestless skull of a somewhat doubtful form called «Pseudogorilla mayema» by D.G. **Elliot** [2] and preserved in the Senkenbergian Museum in Frankfort am Main.

All this shows that adult «crestless» gorilla males are not so rare to be found especially if we take into consideration that the total amount of gorilla sculls in the museums is not very great.

Of course it is not difficult to explaine such cases of permanent juvenility of some male gorillas, bearing in mind that all the typical characters of an adult male which they lack (scull-crests, powerful jaw-museles, nightly canin-tooth) are secondary- sexual signs, weapons for fighting of the males among themselves and not the means of defending from other animals.

And it is easy to imagine that these permanently juvenile Gorilla-males either refrained from fights for females at all or having joined a battle with normal males regularely suffered a defeat and remained «bachelors» for life.

Let us pass to another Gorilla skeleton, possesed by our Museum. There is no doubt of it being unique in the collections of the world.

As to its size it is even some larger than that of our two «normal» specimens.

Absolutaly obliterated Suturae of the skull show that the gorilla was an old one. The teeth which are eaten up to a great extend shows the same.

But the most paradoxical in the structure of the skull is the greatest asymmetry or, speaking precisely, mutilation of the face-bones, which has partly touched the cerebral portion of the cranium.

The whole skull is as twisted and wrung in a most rude way: all the face-bones are pushed sharply to the right and the horizontal level of the eye-orbits is directed sideways and upwards in such a way that the left eye-orbit is higher than the right one approximately by two thirds of the orbit.

It is easy to understand that all this asymmetry affected all the structure of the animals head. According to our inquiries this Gorilla was completely blind of one eye.

No less fatally affected this deformity of the scull the structure of the mouth: the jaws don't meet correctely and the incisors don't close up.

It is very remarkable that in spite of these imperfect jaws, the little actuality of their functions the saggittal crest and consequently the masseter — and temporal muscles must have been developed in a proper way.

Naturally arises the question: how to concilite this obvious inferiority of the half- blind giant with a mutilated face and twisted jaws with the Theorie of the severe conditions of living, the «Struggle for life»?

[2] See: «**A Review of the Primates**» by D.G. **Elliot**. Volume III Plate XXXII. — 1912.

The character of the deformation of all face-bones and the complect obliteration of the Cranial suturae shows that the deformity appeared when the animal was a yung one.

It might have been the result of a mechanical trauma, or inflected in a fight, or when the ape was playing with its relatives, or — which is the most probable of all — the deformity was arised in the mother's belly in the quitness of the embryonic life.

But whatever it might be, even considering the age of an adult Gorilla being approximately twice as long as that of mankind (as it was in the case of the well- known giant gorilla «Bobby» who died in the Berlin Zoo in the age of thirteen after reching puberty) — we must admit that our defective specimen has lived many decades in his native forests without having suffered from his obvious inadaptation.

We can assert with confidence that a man with such defects could have lived as far as to our Gorillas age only if he had been taken the most loving care of, whereas our half-blind gorilla would have probably lived still many more years, would he not fallen as victim of a hunters bullet.

Old Gorilla males can live in their natural home to a very old age. This can be proved by the skull of a very aged Gorilla of our Museum with half eaten up black and carious teeth.

And although such senile skulls are less remarkable of course than those of the two anomalous males, which has been discribed in this paper, — such senile specimens deserves full attention.

Even admitting that our toothless «patriarch» Gorilla once had his teeth in proper order and that to get the Gorillas usual food (tubers, leaves, roots and fruits) even the remnants of molars are sufficient, — still the example of this old toothless male only supports what has been said about the severity of the «struggle for existance» which we read in the popular exposition of the Darwin's theorie.

These perennial «bachelors» (without skull-crests) and these innate life-invalids (half blind with disformed faces and jaws), these toothless, decrepit old Gorillas might have been lived still many years in their native junles, if they have not been killed by some hunters.

Of course, taken alone, the examples like those which just have been discribed, perhaps are not convincing enough, but in addition to other testimonies and arguments of similar kind and taking into consideration that the named Anthropoids are relative rare in museums, — the above description of some Gorilla-skulls in possetion of the Darwin-museum may justify our short essay, our scepsis in respect to the estimation of the vital role of some structure's of some very distant relatives of ours.

Explanation of the Plates.

Plate I. — Fig. 1. Crestless Skull of an adult giant Gorilla-male

Fig. 2. — Deformed Skull of an adult Gorilla male

Fig. 3. — Skull of a very old Gorilla-Male with half eaten teeth

Plate II. — Fig 1. Skeleton of the giant Gorilla with crestless

Skull. Fig. 2. — Skeleton of old Gorilla with deformed Skull

Fig 3. Four Skeletons of Gorilla males in the Darwin Museum:

Skeletons «a» and «b»: normal Gorillas, to show the variability of the skull crests and especially for comparison with the skeletons «c» and «d»: the two abnormal specimens, concerning the great dimension of them.