

ON THE TYPICAL QUADRUMANA ;
WITH ESPECIAL REFERENCE TO ST. HILAIRE'S DIVISION
INTO CATARRHINE AND PLATYRRHINE GROUPS.

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THE marvellous notions which, even at the present time, possess the minds of the natives of the regions inhabited by the Quadrumana, are easily accounted for, when we recollect that Linnæus himself hesitated as to the true affinities of the higher forms. In the last edition of the *Systema Naturæ*, which was published during his lifetime, (the twelfth edition, A.D. 1766,) he has considered the *Chimpanzee* as a wild species of man, under the names of "*Homo nocturnus* and *H. sylvestris*," describing him as "lying concealed during the day, and going forth during the night; speaking with a hissing sound; thinking, reasoning, believing that the world was made for him, and would eventually be restored again to his sole dominion."* All this, it is true, he states only "on the authority of numerous travellers," but still it shews the superstitious notions which occupied the minds not only of civilised, but of highly educated men, concerning them,—and that, notwithstanding the fact that Gmelin tells us this species was seen in London in 1738; and it is remarkable that the only alteration made in this last edition is the insertion of the word "*ratiocinatur*," *i.e.*, he is capable of reasoning.

* *Homo nocturnus*. *Homo sylvestris*. Orang Outang, corpus album, incessu erectum, nostro dimidio minus. Pili albi, contortuplicati. Oculi orbiculati, iride, pupillaque aureâ. Palpebræ anticè incumbentes. Die cœcutit, latet. Noctu videt, exit, furatur. Loquitur sibilo; cogitat (*ratiocinatur*, ed. xij); credit sui causa factam tellurem, se aliquando iterum fore imperantem, si unquam fide peregrinatoribus multis.—*Linnæi Syst. Nat.*, ed. x. 1758.

But it is not the purpose of this communication to enter upon the controversy concerning the pithecoïd origin of man. It is simply alluded to as pointing out the great interest which is ever taken in this class of animals on account of their remarkable approximation in many points to the genus *Homo*.

To render clearer, however, the final object of this paper, it will be necessary, before proceeding further, to take a brief glance at the classification of the *Quadrumana*.

Before the discovery of the great continent of America, the zoologist might be said to be yet acquainted with a considerable variety of monkeys, and among them, with many that are *still* the most remarkable of the order. There were the extraordinary Anthropoid Simians, the Chimpanzee, and Orangs, inhabiting the Guinea coast of Africa, and the great islands of the Javan sea; and the Gibbons (*Hylobates*) or long-armed apes, confined to Eastern India. All these, in addition to their near approach to the human form (in which particular the Chimpanzee, called Troglodytes, after a fabulous Æthiopian race, referred to by Herodotus,* and said to inhabit holes and caves, is pre-eminent), are remarkable for the absence of the tail. This want in the greater part of the group is literally *counterbalanced* by the greater length of the arms, for in all those monkeys which are arboreal in their habits, constituting the major part, the *tail* appears to be a balancing organ, and plays a great part in those feats of agility which call forth the wondering admiration of human beholders. Next to these Primates, as they were called, comes the unique Kahau, or Proboscis monkey (*Nasalis*), of Borneo, to which the term *Simia* is so inapplicable. There is but one species of this anomalous genus; what was supposed to be another species is most likely the young individual. The remarkable genus, *Semnopithecus*, of F. Cuv., with their slender and agile forms, is exclusively

* Herodotus, iv., 183.

Indian; and this group is completed by the genus *Colobus*, from Africa, which has only four, instead of five fingers, on the anterior extremities. These are all distinguishable from the *first* group by their long tails, and from the *succeeding*, by the absence of cheek pouches. After these come the minute and beautiful Talapoin, the smallest monkey of the old world, inhabiting the west of Africa; and the comprehensive genus *Cercopithecus* (including the genus *Cercocebus*, of Geoffroy), whose strong canines and small facial angle connect them with the *Macaques*, containing no less than twenty-seven species. All these are remarkable for their grace and elegance of form, frequently for their beautiful fur, and for their mild and affectionate disposition. They inhabit Africa and India, and are distinguished from the last group by their ample *cheek-pouches*.

Following these, is the powerful genus *Macacus*, very widely distributed, and occupying a geographical range of three divisions of the globe; the Barbary Ape, or Tailless Magot (*Macacus Inuus*) being found upon the rock of Gibraltar, a solitary European species. This monkey has no tail; neither has it, like the Gibbons, a counterbalancing length of arm. But it must be remembered that this species, in common with most of the group, is *not* arboreal, but lives chiefly among the cliffs and rocky places, where still a considerable, but not an equal amount of agility is required. The Barbary Ape makes the transition easy to the last group of Cynocephalous Baboons, all natives of Africa, including the fierce Chacma and the grotesque Drills, whose prolonged dog-like muzzle, enormous strength, and ferocious disposition, readily distinguish them from all the other Quadrumana.

Such are the monkeys of the Old world; and throughout the whole of these groups, there runs such a general resemblance, that it is evident they belong to the same type, and were formed, so to speak, on the same general plan. But still

it must be remarked, that between this last group and the *Lemuridæ* (which are *Quadrumanæ*, but not true monkeys) there is a wide gap. These latter, in addition to their fox-like snout, and general resemblance to the *Insectivora*, have sharp hooked claws, in the place of flat nails, and are all, more or less, of nocturnal habits. The transition, also, from the almost typical *Guenons*, or *Cercopithecæ*, to the almost quadruped *Cynocephali*, is very rapid; and the want of some connecting links would, in the present advanced state of zoological science, have been keenly felt, and perhaps sought for in the geological records of the *Pleiocæne* era.

But the discovery of the continent of America supplied many links in this chain of beings, by disclosing a race of monkeys so distinct in form, structure, and habits, from those I have briefly referred to, that Geoffroy St. Hilaire speaks thus strongly concerning them.* It may be remarked, that most of the naturalists who have by their labours and writings elucidated this class of animals are French. "It is another nature of doubtful beings, between man and the carnivora, another *monkey type*. * * * * It is truly another type; just as though the monkeys of America belonged to another epoch of the creation, and as though the species of the two types had, in their propagation, each retained, in all their modifications, the fundamental peculiarities of each primitive system."

Nor is this distinguished philosopher alone in his estimate of the broad distinctions which characterise the two races; and I could quote an equally pointed remark of Professor Owen's,† but further evidence is not called for.

* C'est une autre nature d'êtres ambigus entre l'homme et les carnassiers; un autre type singe. * * * * C'est vraiment un autre type, comme si les singes d'Amérique provenaient d'une autre époque de création; et comme si les espèces des deux types se fussent multipliées en retenant dans leurs modifications les traits fondamentaux de chaque système primitif.—*G. St. Hilaire, Cours d'Histoire Nat. des Mammifères. Lect. 9, p. 4.*

† Owen, "Odontography," vol. i, p. 439.



Fig 1

Catarrhine



Simia bicolor.

Platyrrhine

Fig 2



Cebus hypoleucos.

Types.

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I will, therefore, just point out some of the most well-marked characters by which this new type is distinguished from their prototypes of the old world.

First, the size of the facial angle should perhaps be mentioned, although on account of the great variety of this angle in different monkeys, it can scarcely be compared in the two races. This angle, according to Camper, contains 80° in Europeans, and in some negroes which he measured, it only contained 70° . Now, in measuring the skulls of Orangs, Lesson (*Hist. Nat. Mammifères*, vol. iii, p. 230) estimated it at from 60° , even as high as 64° , but Professor Owen has shewn (*Zool. Trans.*, vol. i, p. 372) that Lesson measured only young animals; and states that the facial angle of the adult Chimpanzee is only 35° , while that of the Orang is but 30° . This difference is owing to the immense development of the jaws in the adult Orangs, which is accompanied by a corresponding amount of brutal ferocity, and savage animal propensities. In the Baboons, again, the facial angle is considerably less, and every gradation between these may occur. Among the American monkeys, on the other hand, there are none which so nearly approach man, nor any which are so distant from him in organization, as are found in the old world family. Their heads are generally round, and their muzzles short, so that the facial angle is large, and varies between small limits, being from 55° to 60° ; this angle, therefore, cannot be made use of in these monkeys as a character of any importance.

M. Isidore St. Hilaire, the younger, has given, in the *Comptes rendus*, the following general statement of measurements in certain groups:—

	ANGLE FACIAL.
Gibbons et saïous	60 deg.
Cercopitèques	50 "
Magot	40 "
Cynocephales et Hurleurs	30 "

In the second place, the general size of the American type is much smaller than that of the old world monkeys. Thus, a fine specimen of the *Satyrus rufus*, in the British Museum, stands exactly four feet high, and the anterior extremities measure rather more than three feet in length. The height to which the adult Orang attains is scarcely known, but that of the adult Gorilla is not a matter of doubt. Many other of the higher forms are also of considerable size, and the quadruped Baboons are of no mean proportions; but among the monkeys of the new world, the Howlers (*Mycetes*), which are allied to the Baboons, are perhaps the most robust, and seldom reach three feet in height. The genus *Ateles* contains the individuals which stand *tallest*, and some in the British Museum reach the height of three feet; but their very slender forms and elongated extremities which contribute to this height, offer a singular contrast to the thickset and robust forms of most of the old world monkeys. An extinct species has been discovered which must have been four feet high, but this is the largest known; and the lowest genera, *Midas* and *Jacchus* (usually called Marmozets), are not bigger than squirrels.

Third. In the *Quadrumana* of the Old world many generic and specific differences depend upon the presence, absence or amount of development of those *tubercular callosities* on the buttocks, which are more or less defined in all the Gibbons, and in most of the Baboons; and on the *cheek-pouches*, which are so ample in all the family of Cercopithecians. Now, these two characters are *unknown* in America; and not a single species of New world monkey is possessed of either.

Fourth. *The tail*, which is not unfrequently altogether absent in the Old world species, is in all the American monkeys (with the exception of two species of a genus which is thence called *Brachyurus*) highly developed; and this not only in its length, which is sometimes extraordinary, but also in its

capabilities as a prehensile organ. For this purpose, the under part of its extremity is bare of hair, and callous; and is capable of being applied as a fifth hand with the utmost precision; which, as those which are possessed of this organ are exclusively arboreal, must be of the greatest service. The strength of the vertebral column, and of the muscles attached to it, reaches, in these monkeys, the highest degree of development, and the excess of power in this one organ results in the greater general strength of those so furnished. The extent of the *callous* part of the tail is in tolerably exact proportion to its powers as a prehensile organ, and is very constant in each species, occupying near one third in the Howlers, and two-fifths in the genus *Brachyteles*, &c. This very remarkable feature is peculiar to American monkeys, and is possessed by more than half of the whole number of species.

Fifth. They differ as to their *dental formula*. The *Quadrumana* of the old world possess an array of teeth which is expressed thus—

Inc. $\frac{4}{1}$ Can. $\frac{1-1}{1-1}$ Bicus. $\frac{2-2}{2-2}$ True Mol. $\frac{3-3}{3-3}$

thus agreeing with man in the number of their teeth, but differing widely from him, and from each other, in the development of individual teeth, and dental tubercles. But the monkeys of the new world possess an additional molar tooth on each side of each jaw, which thus gives them thirty-six, instead of thirty-two teeth. In the *Marmozets*, however, these additional molars are wanting. The significance of such changes as these will be best understood by a reference to Prof. Owen's valuable work on *Odontography*.

Sixth. Another remarkable point of difference between the *Quadrumana* of the *old* and *new* continent is, that all the former (including even the family of the *Lemurs*, which in many respects aberrate widely from the monkey type) possess both on the anterior and posterior extremities an *opposable thumb*; whereas the opposable character of the thumb is,

in the latter, confined to the posterior extremities. This is undoubtedly a character of importance, but by no means such as to justify an attempt at classification upon that character alone. Such an attempt was made about thirty years ago, by Mr. Ogilby, but, as might have been expected, it has never been adopted; and his plan, which may be found in the *Proceedings of the Zoological Society*, 1836, was to arrange all the mammalia which were possessed of opposable thumbs on either extremity, in one order, which he proposed to call *Cheiropoda*, and these again into three sections. The first, having the opposable thumb on the hands only, included *man*, and was called *Bimana*. The second had the characteristic mark on both *hands and feet*, and was called *Quadrumana*, including all the old world monkeys and the Lemuridæ. The third had it on the *feet alone*, and was named *Pedimana*, and included the monkeys of the new world, and another family which indeed possess this character, but which few would be hardy enough to class with Simiæ; I mean the Didelphidæ or Opossums. Thus, in this fantastic arrangement, old and new world monkeys are separated by aberrant Lemurs; and placental and non-placental animals are mixed up in inextricable confusion. Moreover, there is an old world genus (*Colobus*) which possesses no thumb at all on the anterior extremity; and as such an animal can hardly be said to have the anterior thumb opposable, it must take its place among the *Pedimana* of the new world, far away from its companions of the old.

In the fifth edition of Lyell's *Geology*, it is stated that no fossil remains of *Quadrumana* had been discovered, even in the most superficial deposits; but since that time (1837), such remains have been found, both in Asia and in America. Messrs. Cautley and Falconer discovered in the Sewalik Hills of the Himalayan range, fragments of a gigantic Simian, among the bones of other animals; and in the basin of the

Rio des Velhas, in South America, Dr. Lund found the fossil remains of an extinct monkey of larger proportions than any *now* inhabiting that region; but it is not a little worthy of remark, although a fact which might have been anticipated, that both these relics of a former world are found to assimilate respectively with the old and new world types, the Asiatic species being an *Entellus*, and the American species having probably been a *Sapajou*.

But beside all these distinctions which I have shewn to exist between the *Quadrumana* of the New and Old world, there was a seventh, which was remarked by Geoffroy St. Hilaire, and founded upon the form and position of the nostrils in the two races. No *one* of those remarkable characters which I have before referred to, is diagnostic of *all* the Old from *all* the New world *Quadrumana*; although all of them taken together offer very strong and characteristic points of difference; but the distinction I now allude to was considered to admit of such universal application, that the above eminent naturalist made the basis of his classification the terms *Catarrhini* and *Platyrrhini*; the former including all the monkeys of the old continent, and the latter, all those of the new. The signification of these terms I shall presently explain; and, meantime, I may express my object in the remainder of this communication to be—

1st. To inquire how far the terms *Catarrhini* and *Platyrrhini* are applicable to the distinctions they are intended to convey.

2nd. To shew where they appear to me (according to the definitions of them ordinarily accepted) to fail in their application.

3rd. To point out a mode in which I have, by careful comparison, been led to think they may be corrected.

We must let St. Hilaire, himself, explain the terms we have

just used. His exposition will be found in the work before quoted, and is as follows :*

“*Simiæ Catarrhini*. Characters. The nasal septum very narrow, and the nostrils opened below the nose.

“*Simiæ Platyrrhini*. Characters. The nasal septum broad, and the nostrils opened upon the sides of the nose.”

As far as the position or aspect of the nostrils is concerned, this is sufficiently exact ; but Latreille gives us more definite information concerning the nasal septum. He says †—

“*Simiæ Catarrhini*. The septum which divides the nostrils, very narrow (très mince) ; so that their openings are almost in contact, and below.

“*Simiæ Platyrrhini*. It is easy to distinguish these from those of the old world, by the thickness of the septum which divides their nostrils ; a septum as broad, or broader, than the nostrils, measured in their greatest diameter.”

In studying the members of this interesting order, one cannot fail to be struck with the fact that these definitions are defective—that they are too general, and admit of so many exceptions, that it becomes almost necessary to force the rule to meet the exigencies of the examples—a proceeding which every one will admit to be of an extremely illogical and unphilosophical nature. It will be found, for example, that while the majority of the old world *Quadrumana* possess nasal septa about one-eighth of an inch in thickness, some of them exceed half an inch ; and that while, in the new world monkeys, this septum is sometimes nearly three-quarters of

* *Singes Catarrhinins*. Caractères. La cloison des narines étroite, et les narines ouvertes au-dessous du nez.

Singes Platyrrhinins. Caractères. La cloison des narines large, et les narines ouvertes sur les côtés du nez.—*Cours de l'Histoire Nat. des Mammifères*.

† *Singes Catarrhinins*. La cloison qui sépare les narines très mince, de sorte que leurs ouvertures sont presque contigues et inférieures.


Singes Platyrrhinins. Il est facile de les distinguer de ceux de l'ancien continent, à l'épaisseur de la cloison qui sépare leurs narines—cloison aussi large ou plus, que les narines mesurées dans leur plus grand diamètre.—*Latreille, Hist. Nat. des Singes*. Paris, an ix.

an inch in thickness, it in some instances barely exceeds one-eighth of an inch. It is true that, in a very short time, it becomes evident that the two races are very distinct from one another in general appearance; and that the ensemble of a new world monkey, as distinguished from those of the old world, is so peculiar and characteristic that the student is soon enabled to throw aside Geoffroy's law, in a great measure — *not*, however, as *unimportant*, for the more the order is studied, the more valuable is the *principle* perceived to be, although it appears desirable to make an alteration in the expression of it.

The shape of the nasal apertures varies considerably in various genera of monkeys, as may be easily seen on an inspection of any well prepared collection. Such an one, especially, is that beautiful series of these animals at the Museum of the Jardin des Plantes at Paris; a collection, however, as I am informed by Dr. Gray, considerably inferior in richness to our own collection in the British Museum, which, ten years since, contained thirty more species.

The openings of the nostrils of the anthropoid Simians are often narrow, and present an appearance during life as though they had been flattened or beaten in by violence. The anomalous genus *Nasalis* I have before mentioned. In it, the nose is exceedingly prominent; but the septum is certainly "très mince." Thus, in a fine specimen of this animal in the British Museum the nose projects $2\frac{3}{8}$ inches beyond the lips; and a straight line drawn from between the eyes to the tip of the nose measures 4 inches. The breadth of this organ is $1\frac{1}{8}$ inch; "but a stuffed specimen cannot give one an adequate "idea of the natural appearance." (Broderip.)

The *Colobi* I shall refer to more particularly presently. In the *Semnopithec*i and *Cercopithec*i the form and position of the nose is something intermediate between the *Orangs* and the *Proboscis* monkey, and indeed if a young specimen of the

latter animal be examined, it will be found that its nose is like the same organ in an adult *Cercopitheo*, only a little exaggerated. In most of the *Cynocephali*, the nostrils are truly terminal; they project beyond the muzzle and are generally nearly triangular in form, and have a very narrow septum.  In the Mandrill they are nearly round, whereas in the allied genus, *Theropithecus* (or *Gelada*) they are flat and simian, and situated far back, instead of being terminal; the muzzle terminating an inch beyond them in a clavate form. Among the new world monkeys there is not so much variety, and where it *does* occur, since that variation is favourable to the ideas I am endeavouring to set forth, I shall refer to them specially in their proper places.

A few words concerning the Osteology of this part of the *Quadrumanous* skull may not be uninteresting. The opening left by the superior maxillary bones is, in some instances, just the reverse of the same opening in the human skull; and the anterior nasal spine is wanting, there being a groove in its place. The nasal bone is generally in the same plane as the interorbital plate, and is there usually only one. The ascending or nasal portion of the superior maxillary bone, which is of greater proportional size than in the human subject, does not ascend vertically to the orbits, as in man and some of the lower *Quadrumana*, but slopes backwards as in the *Cynocephali*, and in the carnivorous mammalia, though in a less degree. A character by which the Chimpanzee approximates more closely than the Orang to the human subject, is presented (according to Vrolik) by the nasal bone, which projects in a slightly arched form beyond the interorbital plane, while a trace of its original separation into two lateral elements remains at the lower margin of the consolidated and single bone. In the American monkeys the division is often evident, and indeed there is considerable general resemblance



Fig. 3.



Fig. 5.



Eriodes hemidactylus.

Colobus Guereza.

Fig. 4.



Fig. 6.



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in the skull of Cebus to the human skull, a resemblance which is still more striking in the Marmozets.

In the enunciation of Geoffroy's law as above given by himself, there are two elements, which must be examined separately. We will first take that one which I conceive to be the less important of the two, because it is not involved in the terms I have before mentioned; which may be thus stated:—that the apertures of the nostrils of monkeys belonging to the old world are *below* the nose, (“ au dessous du nez,”—St. Hil.; “ inférieures,”—Latreille); while those of the monkeys of the new world are lateral (“ ouvertes sur les côtés du nez.” St. Hil.) Now I think that if, on a fair profile view of any monkey, the whole opening of the nostril can be seen in its full circumference, without foreshortening, that opening cannot be said to be otherwise than *lateral*; for if it might be otherwise considered, that character would become valueless as a differential sign. It being granted then, that such a nostril has a right to be considered *lateral*, let us next see whether this lateral nostril is confined to the monkeys of the new world, and whether indeed it be constant among *them*.

I do not hesitate to say that the description of a lateral nostril above given applies, not to the new world *Quadrumana* alone, but also to many of those of the old world. I might instance several of the *Semmopithec*i, in which the whole nostril is seen on a side view, especially *S. Siamensis*. Of the genus *Colobus* are some well-marked examples, especially the *Guereza* (*C. Guereza*), in which we may absolutely distinguish a larger aperture in the nostrils on a side view than on any other aspect (fig. 6); and in some of the *Cercopithec*i the character is only less marked. The *Magot* (*Macacus Inuus*) discloses the full size of his nostrils on a profile view; and I think, the terminal nostrils of the *Cynocephalous* baboons might be considered as negative evidence against the applicability of the “ narines

"inférieures," of Latreille and St. Hilaire to the Old world monkeys. Indeed, when taken strictly, the only monkey which I can understand as having nostrils opening "au dessous du nez," is the Proboscis monkey (*Nasalis larvatus*); and some, as the Chimpanzee, for example, I should be more inclined to call "au dessus," or "supérieures," for they open *upwards* rather than in any other direction.

But not only do some of the Old world monkeys possess lateral nostrils, but certain New world monkeys have them opening to the front. I admit that in those Platyrrhini in which the nostrils *do* open to the side (as *Cebus hypoleucos*) and which constitute the majority, the lateral opening is more decided than in any old-world monkey whatever, but there are exceptions. These are certain species of the genus *Ateles*, for instance, *A. Beelzebuth*, and all the genus *Eriodes* (fig. 4). In none of these can anything like a full view of the opening of the nostrils be obtained on a profile aspect. Indeed, of the genus *Eriodes*, containing three species, a late work on the *Quadrumanas* says:* "They have the nostrils opening inferiorly," thus allowing at least one exceptional genus.

We will now examine the other, and more important element of distinction; and the one which has given rise to the names Catarrhini and Platyrrhini; viz., the *size* of the nasal septum, which is said to be *narrow* in the old world, and *wide* in the new world monkeys.

The nasal septum of some of the genus *Colobus* is as wide as many, and wider than some of the Platyrrhine group, and this is especially apparent in the *Guereza* (*C. Guereza*) (fig. 5) which I have before mentioned as having the nostrils opening laterally. The septum here measures half an inch in width; and it is scarcely less apparent in the *Colobus ursinus*. In many of the *Cercopithecii*, it is far above the average width, as for

* Ils ont les narines ouvertes inférieurement.—*Chenu, Hist. des Quadrumanes*, p. 197.

example, in *C. cynosurus* and *C. samango*. Among the new world monkeys, where we are taught to look for very wide septa, I may again instance the genera *Ateles* and *Eriodes* (fig. 3) as exceptional; and, indeed, I believe that in the first and most typical group of American monkeys (the Sapajous) the nostrils are, as a rule, situated more close together than in the second and third, or more aberrant, groups, the insectivorous *Geopithecus*, and the rodent *Marmosets*. In *Ateles* *Beelzebuth*, it is not so wide as in many *Catarrhini*, and the genus *Eriodes* (*Brachyteles*) is confessedly exceptional in this, as well as in other particulars. Thus in the work last quoted, we read—“*Eriodes*. Nostrils rounded, very close together (*très rapprochées*), and rather inferior than lateral; nasal septum very “slightly thickened;” * and in explanation of this misfortune we read further †—“The genus *Eriodes* is very remarkable, and “seems to establish the transition from the monkeys of the old “to those of the new world; they have the nostrils opening “inferiorly, but all the other characters class them among “American monkeys;” and indeed this septum of *Brachyteles hypoxanthus* is only one-eighth of an inch in thickness. Of the genus *Nyctipithecus* also it is said ‡—Nostrils separated by a very narrow septum, and opened sometimes on the side, and at the same time below the nose.

Here, then, we have a genus which in every other respect resembles the *Platyrrhini*, but in this important one, on which the distinctive name is founded, they are exceptional.

So much for instances; and having such before us, it cannot be matter of surprise that Sir Wm. Jardine, § when speaking of the new world monkeys, in a popular work, has

* *Narines arrondies, très rapprochées l'une de l'autre, et plutôt inférieures que latérales, cloison nasale très peu épaissie.*—*Chenu*, p. 197.

† *Les Eriodes sont très remarquables, et semblent établir le passage des singes de l'ancien continent à ceux du nouveau monde; ils ont les narines ouvertes inférieurement, mais tous les autres caractères les classent parmi les singes Américains.*—*Op. cit.* p. 197.

‡ *Op. cit.* p. 224.

§ *Naturalist's Library* vol. i, *Mammalia*, p. 162.

omitted to include the nasal characters among the "most striking outward differences."

And here let me not be thought presumptuous or captious in finding fault with what has now so long been current and unquestioned. I do not by these observations intend to infer that a character franked with the name of St. Hilaire, and subscribed to by so many eminent naturalists, is, after what I have said, *valueless*. On the contrary, I believe that the terms Catarrhini and Platyrrhini are of great significance to one well acquainted with the Quadrumanous types, and who does not require to make these distinctions a stepping-stone to such an acquaintance. I even grant that the Guereza, a Catarrhine monkey, which, nevertheless, has lateral nostrils and a wide septum—both characters belonging to the other group—is nevertheless very distinct from that other group, even in those very characters which it has in common with it; and this paradoxical remark can only be fully understood by one who is acquainted with the typical characters of the two groups; although I hope before I conclude to render it less obscure.


It appears to me that correctness of description demands that the far too general expositions of the terms applied to the two great families of monkeys by the eminent French naturalist should be revised and qualified to meet the numerous exceptions to which I have referred.

Having, then, pointed out the defects of the *definitions* of the terms Catarrhini and Platyrrhini, and shown that, important as those terms are, the characters ranked under them are not constant,—it may be asked: If there is so much significance in these terms, is it not possible to discover some character which *is* constant and peculiar to both—some invariable mark by which the mere tyro could at once pronounce the native soil of any one of these animals, whether in the new or the old world? My answer is that, believing from the very nature of things

that such a character might be found, I sought for it with care and diligence, and I think I may say I *have* found a character, equally simple and invariable, which, accurately enunciated, amounts to this:—*If the lower angle of each nostril be bisected, the imaginary lines bisecting these angles will, in the Catarrhini, rapidly converge below, until they meet in the mesial plane of the lip; whereas, in the Platyrrhini, the same lines will diverge from the mesial plain;—or, to state the same facts in a general way:—The lower angle of the nostril of an Old world monkey points inward, while that of a New world Monkey points outward.* Thus—

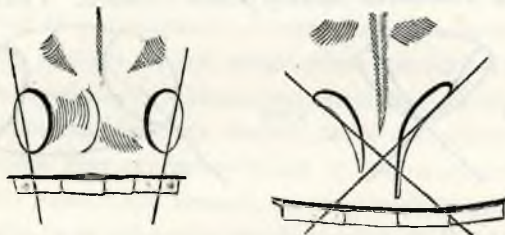


This, it will be seen, depends, not upon the thickness of the septum, which, as we have remarked, is a variable character, but upon its form, which is pyramidal in the Catarrhini, and of a contracted or hour-glass shape in the Platyrrhine group.

Thus, in the typical Catarrhine monkeys (fig. 1) the nostrils are linear, and almost meet in their inferior angles  It will not be necessary, however, to carry the illustration all through the two families, but only that I should show that in those monkeys of both families which most obviously aberrate from the descriptions given by St. Hilaire, the character here given obtains to perfection. Thus, in the genus *Colobus*, (figs. 5 & 6) in which, though a Catarrhine monkey, the septum is so wide, the inferior angles will be seen to converge rapidly; while in the genus *Brachyteles* (*Eriodes*), (fig. 3) although the septum only measures $\frac{1}{8}$ of an inch in width, its peculiar Platyrrhine form causes these lower angles

to diverge from each other. These characters, in fact, I have no doubt, from my observation of the specimens in the British Museum and Jardin des Plantes, are universal, and independent of the size of the septum and of the aspect of the nostrils.

In conclusion, I may remark that, thinking it possible that some writer should have seized upon this character, from whom I might be suspected to have copied it, I searched a great number of works on the *Quadrumana*, but failed in discovering anything more than this, which is a vignette, or tail-piece, copied from Audibert's beautiful work :—



What this means, whether any perception of the character I have endeavoured to set forth, I know not. Audibert gives the diagram with no explanation of it whatever that I was ever able to discover; and I shall therefore leave it, as he has done, without further remark.