

II.—On the Mammalia of Nepal.—By B. H. Hodgson, Esq. C. S.

[Read in the Physical Class, 8th February.]

The geographical distribution of animals is, I observe, daily attracting, more and more, the attention of the ablest Zoologists; and reasonably, for this view of the subject has many relations of great interest and importance. On this account I am induced to offer to the Society, a summary enumeration of the Mammalia of Nepal. But as the territories comprehended within the dominions of the Gorkhali dynasty, and now universally denominated Nepal, possess an extraordinary variety of temperature and physiognomy, it will be necessary to preface my account of the animals found within its limits, by a brief description of the climate and physical aspect of the materially different parts of these territories. These parts are three, the juxta-Indian, the Central, and the juxta-Himalayan. The first embraces the Tarai or marshes, the Bháwar or forest, and the little hills with their subject valleys up to the base of the mountains, properly so called.

The marshes and forest are on the level of the plains of Hindústan, and possess their climate, with some increase of heat from deficient ventilation, especially in the forest; and with an excess of moisture, derived from numberless petty streams oozing out of the hills, and dissipating their waters in the soil of the forest and Tarai, for want of force to cut channels for themselves into the rivers.

About  $\frac{1}{5}$  of the Tarai is cultivated: the rest is overrun with topes gone to jungle, brush-wood, and giant-grass. Large tracts of the grass land of the Tarai are annually subdued by fire, and afterwards depastured by thousands of cows and buffaloes, but only for about two months; after which the grass growing out of all compass, restores to these temporary pastures, the features of the surrounding wilderness.

The forest is entirely void of cultivation, and is a prodigious assemblage of noble trees woven together by immense creepers; and incumbered, above, with air plants; below, with underwood and grass from 6 to 10 feet high.

The *third* portion of this tract, comprising the small hills with their subjacent valleys, up to the base of the great or true mountains, has the same character with the forest, (save where, here and there, one of the valleys has been cleared and worked,) and the elevation of this tract is too inconsiderable to make any difference in its temperature.

The malaria prevails equally and terribly throughout all three parts of this region, from the middle of March to the middle of October; and whoever has traversed it must, I think, *feel* that the pestilence is

generated by the undue and almost exclusive prevalence of vegetable exhalations in the atmosphere. There is no free ventilation; and the forest and the lesser hills (where the malaria is worst) are absolute wildernesses of rank vegetation, of so extravagantly rife an increase that in Oriental phrase, you may almost *see and hear it grow!*

Yet, it is worthy of remark, that in this pest-house, from which all mankind flee, during 8 months of every 12, constantly reside and are bred\* some of the mightiest quadrupeds in the world. The royal tiger, the panther, the leopard, the elephant, the *arna* or wild buffalo, the rhinoceros, and stags of the noblest growth, abound: and, what to our fancies is less singular, the same malarious region cherishes *Boa constrictors* of the largest size, and other huge creatures of their kind.

The like is notoriously the case elsewhere: yet still we may reasonably insist on the fact, and ask what is it in the constitution of these large quadrupeds, (I omit the serpents in the argument,) carnivorous and herbivorous, which enables them to breathe healthfully the air that is death to man. Take *tame* animals of their very kinds suddenly into this region between April and October, and, like man, almost, they will catch the malaria and die. On the other hand, there are particular tribes of men bred in these or similar places, (such as the Tharú of the spot and the Dhângar of South Behâr,) who can *live* there, at least, if not flourish. They die not; neither do they pine visibly;

\* A friend, who is looking over my shoulder as I write, suggests to me, that Bishop Heber has observed in his Journal, that the malarious tract is entirely abandoned by wild animals, as well as by man and his flocks and herds, in the unhealthy season.

The Bishop probably was unaware that the malaria is not confined to the Taráí, properly so called, but rages throughout the saul forest and the lesser hills, up to an elevation of some 3000 feet on the mountains: and that the wild animals, which are driven, by fire, out of the more open parts of the Taráí at the close of the cold weather, and cannot return till the rains have restored to them the shelter of a rank vegetation, retire during this interval to the covert of the forest and lesser hills.

If the elephants, rhinoceroses, wild buffaloes, and tigers, were to quit the malarious tract *altogether*, they must either ascend the huge mountains of the central region of Nepal, or, issue out into the plains of Hindústan: either of which suppositions is extravagant enough, one would think, to refute itself, were they not both of them, as they are unquestionably, refuted by notorious facts—such as the extraordinary deprivations committed upon the crops of the Taráí by wild elephants and buffaloes issuing out of the forest at the height of the malarious season—the circumstance of European gentlemen seeking the tiger in his lair, on the confines of the forest, in March and April, at the hazard of their lives, because he is to be found *no where else*, &c. &c.

but they are poor specimens of humanity ; whereas the great quadrupeds alluded to are the largest and most vigorous of their respective kinds.

These facts would seem to indicate, that the principle sought is that of inherited habits of body, or acclimatization, carried to such perfection by course of time, in respect to the great quadrupeds, as to have superseded their original and natural habits of body—carried to a much less perfect state in regard to the particular tribes of human beings in question. The elephant, tiger, &c. may well be supposed to have tenanted these recesses for countless ages—man has but recently attempted to divide the dominion with them. Yet, it must be confessed, that the notions broached carry the idea of physical adaptability to an extreme extent ; besides contradicting the accepted opinion as to the superior capacity of man over the brutes in that respect. Let it be observed, that in these observations I wish merely to insist upon the singular fact, which I do not remember to have seen noted elsewhere, viz. that in the most noxious tracts of country, tracts in which man cannot live, some of the noblest quadrupeds abound and flourish—quadrupeds whose superior organization precludes the idea that the principle of life is differently modified in them and in man, and which consequently ought to be similarly affected with man by atmospherical causes. Why then, are they not so ? Craving pardon for this digression, I now proceed briefly to characterise the region which I have denominated the central one.

This consists of a clusterous succession of mountains, varying in height from 3 to 10,000 feet, covered every where with a deep bed of mould, which feeds and sustains the most superb trees, and shrub vegetation, and grasses, in general, too rankly luxuriant to afford wholesome pasture.

The mountains are very precipitous, with extremely narrow intervals. There are no extensive high flats, such as we call table lands or plateaux, and only two low flats or valleys of any extent, which are those of Nepal proper and of Yúmila. The succession of the seasons is the same as in the first region, and in the plains of India ; from which the central tract differs only in the material respect of temperature. Varying with the diversities of elevation, this region possesses a temperature from 10 to 20 degrees lower than that of Hindústán, and, with some allowance, its climate may be characterised as similar to that of the Mediterranean shores. It is as moist as the plains of North Behár, and, upon the whole, as salubrious as most countries in the world. Not a  $\frac{1}{10}$ th part of its surface, probably, is under the plough. For some unexplained reason (I myself suppose the rankness of the pas-

ture) neither the small nor large horned cattle flourish in it, in the domestic state: and the paucity of its wild mammalia would seem to indicate that animals of this class find its climate inimical to them even in the state of nature.

The third region of Nepal is the juxta-Himalayan, called by Buchanan the Alpine, and by the natives denominated the Kachár. From the crest or spine of the Hemáchal it extends, in breadth, about 10 horizontal miles. The mountains are of a like structure, and as splendidly wooded almost as those of the central region, but much higher, being, I should suppose, generally from 10 to 16,000 feet above the sea, up to the limit of habitability; where, of course, I stop. For half the year the summits of these mountains are buried under snow; and, near to the Æmadus, their sides and basal intervals also. The suite of the seasons is tropical, as before; and, occasionally, the heat is extreme. But the season of heat is short; and, upon the whole, the climate of this region more nearly resembles that of high than that of low latitudes. It has nothing tropical about it but the course of the seasons. Its grasses are short and wholesome: its underwood free from rankness; and hence probably its cows, sheep, and goats, are numerous, large, and fine; whereas, as already observed, they are few and poor in the proximate region, the succulent vegetation of which retains much of the tropical extravagance of growth. When the heats set in, in the central region, all the woollen-wearing inhabitants of the Kachár hie away to their own province; nor ever return till the approach of the cold weather. *Ex uno disce omnes*. It is the same with the birds as with the mammalia. There are peculiar ones to each of the three regions—a point which I insist on, because, those very persons who are so careful in mentioning the habitat of animals have described many procured from the kingdom of Nepal, without advertence to the particular part of that kingdom whence they were obtained.

I now proceed to my enumeration of the mammalia of Nepal, distinguishing such as belong to the lesser hills, forest, and Taráï, such as are found in the central region, and such as are peculiar to the Kachár. Let me begin by acknowledging that I am but an amateur zoologist, and have but recently turned my attention to the mammalia: but as I may be soon removed from Nepal, or may have my attention drawn off from Natural History to graver labours, I shall not let an idle conceit of accuracy prevent me from mentioning what has fallen under my observation, so far. My personal knowledge of these hills is chiefly confined to the central and northern

regions above defined; and of the mammalia of the lower or juxta-Indian region, I have probably less knowledge than was possessed by Abel, Duvaucel, and others, now alas! no more; but whose investigations have, no doubt, survived them. Without professing therefore to give a full or exact enumeration of the mammalia of Nepal, I proceed to notice the result of limited observation. Should I remain here, and have leisure, I can and will follow up the subject.

#### CLASS MAMMALIA.

##### SUB-CLASS UNGUICULATA. *Family Bimana. Genus Homo.*

The great indigenal mass of the population of Nepal belongs to the Kalmak division of the vast mongolian variety of the human race. But the dominant tribe of Khas are mongrels; derived, on the male side, from the Brahmans and Kshetriyas of India, on the female, from the Aborigines, and chiefly from the Magar and Járiaiah clans of these.

These observations apply to the northern and central divisions of the country. The southern or juxta-Indian division is peopled, so far as it is peopled at all, either by the Hindús and Músulmans of the plains, or, by a peculiar race demominated Thârú, of probably similar origin with the Bháils, Coles, and other rude mountaineers of the great Indian continent. The Thârú, however, though their language and physiognomy prove them to be a distinct race from the Hindús, have probably been much mixed with the latter; and, at all events, are fairer, less ugly, and less barbarous, than the Indian mountaineers in question.

##### *Family QUADRUMANA.*

There are no monkeys in the northern and central\* regions; and those of the southern region are identical, so far as I know, with the ordinary species of the plains, viz. the *langúr* and the *bándar*. There are no others that I am aware of.

I am not acquainted with any animal of the genus *Lemur* in Nepal; but the, for the most part, nocturnal habits of these animals tend to withdraw them from observation. It is probable, that the slow-paced *Loris*, at least, inhabits the lower hills; and possible, that species of other sub-genera are tenants of that immense solitude.

\* Religion has introduced the Bándar into the central region, where it seems to flourish, half domesticated, in the neighbourhood of temples, in the populous valley of Nepal proper. My shooters were once alarmed in the Kachár by the apparition of a "wild man," possibly an ourang, but I doubt their accuracy. They mistook the creature for a cácodeemon or rakshas, and fled from it instead of shooting it. It moved, they said, erectly: was covered with long dark hair, and had no tail.

Family CHEIROPTERA.

The genera *Galeopithecus* and *Phyllostoma* are, I believe, wanting. Of the four remaining genera of this family, viz. *Noctilio*, *Vespertilio*, *Pteropus*, *Rhinolophus*, there are abundance in the Tarāi: but few in the central region, and fewer still in the northern. One species of *Rhinolophus* harbours in out-houses in the central regions, and occasionally enters dwelling houses at night when attracted by the lights. And one species of *Pteropus* appears in the autumn, and then only, to plunder the ripe pears in gardens. It is similar in characters with the great "fox bat" of the plains; but much smaller, and of a duller colour, or uniform dusky brown.

Family PLANTIGRADA.

There are no hedgehogs in Nepal. Moles are found only in the Kachār. Musk shrews abound in the lower and central regions, wherever there are human habitations. The shrew of Nepal is a smaller variety of the familiar stinking creature called ordinarily the musk-rat in the plains. It is the *Sorex Indicus*. No such animal is known to the Kachār. Bears (*Ursidæ*) of different kinds abound in all parts of Nepal, and are very dangerous and troublesome:—in the Tarāi, *Prochilus Labiatus* and *Helarctos Malayanus*;—in the central and northern regions, *Ursus Isabellinus* and *Ursus Tibetanus*. And here we may notice those interesting animals of newly proposed subgenera, which serve to connect the bears with the civets and weasels. *Ailurus Fulgens* and *Ictides Albifrons* belong to the Kachār, though they are occasionally found in the central region also. This latter division is the exclusive habitat of a new species of *Paradoxurus*, coloured, especially in youth, like the *Mustela Hardwickii*. It is not fœtid, and prefers, in confinement, vegetable to animal food. When very young its tail is not convolute.

Family DIGITIGRADA.

Of the genus *Viverra*, or Civet, the *Sibet*, or Indian Civet, is common in the central region: but not known to the northern. It is probably found likewise in the lesser hills; but I am not aware of the fact. We have also, in the central region, a very small variety of the Indian ichneumon or *V. Mungos* of Gmelin.

The Tarāi, Bhāwar and lesser hills teem with all the known, large Indian species of *Felis*, such as the royal tiger, the panther, the leopard, the *cheeta* or hunting leopard, besides some described and undescribed species of smaller cats. To the central region the tiger is almost unknown, and so is the panther. But leopards abound in it; they however confine themselves almost entirely to the woods, sel-

dom approaching inhabited places, or doing greater mischief than the occasional destruction of a village dog. They are much less dreaded than the bears.

Some of the small cats of the central region are numerous and beautiful; such as the *Felis Nipalensis*. The Múirmi cat (mihi) is peculiar to this tract, in which and in the northern region also is found a species of wild cat belonging to the section of the lynxes, or medial cats, with shortish tails and pencilled ears. It answers precisely to *Felis Chaus* of Ruphel, but not to the booted lynx, which has usually been held to be the same animal. The domestic cat is as common in Nepal as elsewhere, and has no peculiarity worthy of note. Judging by its marks, I should conjecture that it is derived from the *Felis Nipalensis*; if so, it has lost by domestication the fine ground colour of that beautiful species. Strange as it may appear, it is unquestionably true that the royal tiger is found in the Kachár, close to the snows. But it must be remembered, that in that extraordinary region there are valleys of extreme depth and heat, as well as mountains of extreme height and coldness. Why this monster should avoid the central region, and yet seek the western one, may be probably explained by the paucity of ruminants in the former region, and by their comparative abundance in the latter: and it must be remembered, that there is free access from the Tarái and Bháwar (the nursery of tigers) to the Kachár, by the means of the banks of the large rivers. The leopard is also found in the Kachár, and a variety of undescribed small cats. All the three regions of Nepal abound in weasels (*Mustelidæ*), many of which are unknown altogether to Natural History.

We have, in the central region, besides *Mustela Hardwickii*, another species nearly allied to it, but of a fuller habit, and larger: and yet another similarly allied, but very small and beautifully coloured. The two last are undescribed. In the lower hills is found a new species, with shorter tail than the above, and more closely resembling the vulgar weasel of England: having a white stripe down the vertex and a white band across the forehead; and one species in the Kachár, also new. The polecat likewise is an inhabitant of the central and northern regions,—rare in the former, and common in the latter.

Of the genus *Lutra*, we have seven species, all differing from either of the two species found ordinarily in the plains, as well as with one exception, from those described by authors. The exception alluded to is the common otter, (*L. vulgaris*), of which the largest Nepalese species cannot be considered more than a variety. This animal

in Nepal reaches the length of five feet, inclusive of the tail ; and is upon the whole, the largest, though not the longest, species we have. It is peculiar to the lower region, where, also, three other species have their habitat. Two more belong to the central region : and one only to the Kachár. One species is yellowish white all over : the rest are brown, more or less dark ; some having the chin and throat, or whole inferior surface, paled nearly to white. They differ in extent from 5 feet to  $1\frac{1}{2}$  foot ; and not much less considerably in bulk, for some of them exhibit an almost vermiform habit of body ; and others are as stoutly made as the badger.

#### *Genus Canis.*

The only domesticated species of dog found in any part of Nepal south of the Kachár is the common village dog, or *chien de rue* of the plains, usually known there by the name of the pariar, a prick-eared cur belonging to every body and nobody. The Parbattiahs however prize the creature, and render it useful in hunting deer and antelopes. It belongs to Cuvier's 2nd section.

The noble beast usually denominated the Nepal dog is found only in the Kachár, where alone in Nepal he can live. It was introduced into the Kachár from Tibet, in which region it is indigenous, and in various parts of which there are several varieties. That of Lassa is the finest, and is almost always black, with tan legs, and a false or 5th digit before and behind.

Landseer has excellently figured a male and female of this dog, which were taken from the residency and presented to the king of England. The *mustang* variety is rather smaller, of a bright red colour, with wall eyes ; and he wants the 5th digit behind. Even in the Kachár, this dog degenerates rapidly ; and he can no more bear the heats of the central region of Nepal than his country-fellows of the human race. This would seem to be the dog whose extraordinary powers, ages ago, surprised Alexander and his Grecians. It is found throughout Tibet. This dog is justly placed in Cuvier's 3rd section of the *caninæ* ; but he ought surely to be classed under the variety mastiff, not bull dog. His superior size, moderately truncated muzzle, long fur, sunken eye, perfectly pendant ears, and 5th claw on the hind foot (in the Lhassan animal at least) seem decisive of this point. The chief character of the skull consists in the great development of the longitudinal and transverse *cristæ*. There is a species of wild dog\* peculiar to each of the three regions of Nepal. That of the lower region is the smallest and darkest ; that of the central tract is of a

\* *Canis primæus*, mihi. The *Búdnú* of the Nepalese.



deep ferruginous red ; and that of the Kachár of a wolf-like reddish sandy yellow, as much larger than the wild dog of the central region, as that is larger than the species or variety belonging to the lesser hills and forest.

These dogs are very numerous, but so exceedingly shy of human habitations, that it is only by rustication in the depths of the woods of Nepal that you have a chance of seeing or even hearing them. Through the kindness of the first minister of this state, I have obtained, alive, several individuals of them, especially of the variety peculiar to the central region, and have kept them in confinement for many months.

They are all alike distinguished by a double, thick coat ; large, erect, wide, coarse, obtusely-pointed, ears ; feet with hairy soles ; a straight, very bushy tail, of medial length ; and jackal-like odour, form, proportions, and aspect. And, if I may trust 5 skulls, of mature or old individuals, now in my possession, their dental system contradistinguishes them from all their congeners : for they have only six molars on either side of either jaw. The swell of the parietal portion of the skull is very great ; and, as these primitive dogs have only a moderately elongated head, they must be arranged under Cuvier's second section of the *Caninæ*.

The jackal of the plains\* is very abundant in the lower and central regions of Nepal, rare in the Kachár. In the Taráï, the small Indian insectivorous fox\* is found ; but not in the forest of lower hills ; nor in the central mountains, nor in those of the northern region. Six years ago, I introduced it from below into the valley of Nepal ; and it seems to thrive well. The Kachár has a large peculiar species of fox, which I have not been so fortunate as to see. The wolf of the plains is unknown beyond the limits of the level country, nor is there any other species or variety peculiar to Nepal ; unless it be found in the Kachár : which I am not aware of. The like is true of the hyæna.

#### *Family PEDIMANA.*

This family presents, as far as I know, a perfect blank.

#### *Family RODENTIA.*

The common species of the genus *Hystrix* is frequent in the central and lower regions ; unknown to the Kachár, I believe. In the Taráï,

\* We want descriptions of both of these, which differ as varieties, from all those described.

the ordinary small species of hare\* of the plains abounds: and thence extends into the central division, where, however, it is very scarce.

There is a larger species very nearly resembling the English, in the central and northern regions; but rare in both. The genera *Kangarus*, *Castor*, and *Cavia*, are unknown to us. In the southern region the common, little, striped, squirrel of the plains abounds. In the central region we have an animal of the same size and characters, but of an unstriped earthy-brown colour, tipped with golden yellow: and in both these tracts the beautiful flying squirrel is found—a large species, rich deep red-brown above, and golden yellow below; belonging to the sub-genus or subdivision *Sciuropterus* of the younger Cuvier. It is not known to the Kachár, but is most common in the central region.

Of the genus *Mus* we have none of the numerous sub-genera except *Mus* proper and *Arctomys*; the latter, confined to the Kachár. The rat of Nepal is a small variety of the common type (Norway rat), and is very numerous and troublesome. The *Mus giganteus*, or bandicoot of the plains, is unknown to it. House mice are rare, and no way peculiar: field mice, common. I have already noticed, in its proper place, the musk-rat, or, more properly, musk-shrew.

*Family EDENTATA.*

Genus *Manis*. The short-tailed species of *manis* is of frequent occurrence in the hills of the lower region, and in the mountains of the central tract. It is unknown, I believe, to the Kachár. The received opinion, that it has no external ears, is a mistake. I am not aware that any of the other genera of this family are found in any part of Nepal.

*Family TARDIGRADA.*

The solitary genus of this family† (*Bradypus*) is not, so far as I know, known to Nepal.

SUB-CLASS UNGULATA. *Family PACHYDERMATA.*

The elephant and rhinoceros abound in the forest and hills of the lower region of Nepal, where they breed, and have their fixed abode; and whence, in the season of the rains, they constantly issue

\* Like the Indian fox and jackal, it still remains to be accurately described and distinguished.

† N. B. Arrangement is no part of my object; and, in want of books, I follow the tabular synopsis of the Mammalia given in the GLEANINGS IN SCIENCE, No. 29. It is sufficiently near to the most accredited and notorious system to be generally intelligible, in the way in which it is used by me.

into the cultivated parts of the Tarāī to feed upon the rice crops. Both these genera are entirely unknown to the central and northern regions. The elephant is that so well known as the Indian variety, and as such is contra-distinguished from the African variety. But it may be questioned, if there be not two distinct varieties or species in India alone, viz. the Ceylonese, and that of the saul forest. The former differs materially from the latter by having a smaller lighter head, which is carried more elevated, and by higher forequarters. It is also said to be larger, and of a more generous and bold temper. The difference of size, however, is certainly a mistake. I cannot speak to the point of temper. The rhinoceros is of the unicorn species. The two-horned is unknown.

The rhinoceros (as I had the good fortune, eight years ago, to have an opportunity of ascertaining in the menagerie of the Rajah of Nepal) goes with young from 17 to 18 months, and produces only one at a birth. When born, and for a month afterwards, the young has a pink suffusion over the dark colour proper to the mature hide. At birth, it walks pretty firmly, and measures three feet four inches long (exclusive of tail), and two feet high at the shoulder. At a month old, it is very active and vigorous, and measures 3 ft. 10 in. by 2 ft. 5 in. I have just seen and carefully examined this young animal. He is now eight years and a month old, but is certainly very far from being adult. His length (without the tail) is 9 ft. 3 in.—his height, at the shoulder, 4 ft. 10 in. utmost girth of the body 10 ft. 5 in. length of the head 2 ft. 4 in. and of the horn 5 inches.

The rhinoceros continues to suck its mother for nearly two years, and is believed to live at least 100 years; having been in one instance, taken mature and kept at Kathmandu 35 years, without exhibiting any symptoms of approaching decline. If reared in confinement, or taken young, the rhinoceros is perfectly tractable, and may be driven out to graze, through the streets of a crowded city, by a single man without even a halter to restrain it.

Of the remaining genera of the *Pachydermata*, we have only the wild hog, which is common to all the three regions of Nepal, and is plentiful in all. It resembles that variety found in the plains of India, which is or ought to be distinguished by small tusks and a nearly horizontal back; the other Indian variety being conspicuous for the elevation and weight of its forequarters, and the superior development of its canine teeth or tusks.

*Family RUMINANTIA.*

The great forest of Nepal is the nursing mother of numberless animals of the genus *Cervus*, which, in the rainy and cold months, when cover abounds, thence issue into the Tarāi; and in the hot months, when fire is effectually employed to clear the Tarāi, and forest too in a less degree, of grass and underwood, retreat into the recesses of the lower hills.

Besides the Chittra, the Lagna or Páda, and the Súgoriah of the plains of Hindústan, (the spotted *Axis*, the spotted and the brown Porcine *Axis*, respectively,) to the lower region of Nepal belong, the Bárah Sinha, a splendid variety of the common stag or *Cervus Elephus*; three species of the *Rusa* group of Major Smith, denominated collectively Jarāi by the Nepalese, and contradistinguished by the epithets Phútro, Râto, and Kâlo, or hoary, red, and black; of which the first is the *Cervus Hippelaphus* of Cuvier; the second, possibly, Major Smith's *C. Equinus*; and the last, undescribed, the Bahraiya, a new oculant species, serving with *C. Wallichii*, to connect the Elaphine and Russan groups of Smith; and, lastly, a new species of Muntjac described by me under the local name of Ratwa.

There is no deer proper to the central region but the Ratwa, which, though it occur in the hills of the southern division, and in the lowest valleys of the Kachár, is the more peculiar inhabitant of the middle tract. I can make nothing of Sir W. Ouseley's musk deer of Nepal, referred by Smith to the Muntjacs, and named *C. Moschatus*.

The Râto Jarāi is sometimes found in the mountains; but it, and the other two species of Jarāi, belong decidedly to the lower region.

In the Kachár there is no species of *Cervus*; the Nepal deer or *C. Wallichii* being, I am pretty sure, trans-Himalayan; and the Rátwa being, as already hinted, a vagrant there.

Of Antelopes, the Ghoral (*A. Ghoral*, Hardwicke) belongs exclusively to the northern and central divisions; the Thár (*A. Thár*, mihi) properly to the central, though he occurs also in the northern and southern regions; and the four-horned and black antelopes, (*A. Chikara* and *A. Cervicapra*), exclusively to the lower region. The former keeps to the open plains of the Tarāi; the latter, to the cover of the sau<sup>l</sup> forest. And there are no more antelopes in Nepal; for the Chírú (*A. Hodgsonii*, Abel,) never passes the Himalaya, nor even approaches that stupendous chain of mountains; it being confined to the open plains of north-eastern Tibet. The Thár, much more

properly than the Ghoral\*, belongs to Major Smith's *Nemorhadins* group, and bears an extreme resemblance to the Cambing Ootan of Sumatra. The females of the Thár species, however, have four teats, and carry horns. Wherefore, those indicative characters of the group, set down with a note of interrogation by its author (viz. females hornless and with two mammæ), would seem to be incorrect. In the Thár the bony core of the horns is cellular, and connected with the frontal sinuses; and the horns arise very decidedly behind the orbits; material deviations from *Antilope*, and approximations to *Capra*, agreeing with the generally Caprine character of the external attributes of this species, which is indeed linked to the antelope genus only by its horns and suborbital sinuses. In respect to that beautiful little animal of the *Tetracerine* group, called Chouka in Nepal, Chikara in the plains, I am enabled, by means of a beautiful specimen, to say that the distinction of species attempted to be established upon the Duvacellian and Hardwickian specimens and drawings cannot be maintained.

To the northern division are exclusively confined the wild goats and wild sheep of Nepal; of the former of which genera there is one species only, viz. the Jhárál (*Capra Jharál*, mihi), and of the latter, two species, viz. the Bharal and the Nayaur, or, *Ovis Argali*, Pallas, and *Ovis Nayaur*, mihi. The latter, however, is probably only a variety of the former. The common domestic goat of the Kachár, called by the Parbattiahs, Sinál, is a tall largish species, with ordinary horns; long, flowing, straight hair, drooping, longish ears, and semi-erect, short tail. A small variety of the Chángra, or shawl goat, is not uncommon in the same quarter. Neither of these can endure the heat of the central, and far less of the southern region, except in the cold season.

These latter regions have no domestic breed of goats in any respect peculiar to them. The species found in them is the common little goat of the lower provinces of the Bengal presidency. It is rare and thrives not; though it does better than the goat of the upper provinces; which can scarcely be bred as a luxury or curiosity by the rich.

The domesticated sheep of the Kachár or Baruál, is a stout, middle-sized, short and narrow-tailed species, with chaffron extremely arched, massive horns, retaining the primitive character of the wild

\* M. F. Cuvier is mistaken in supposing the Ghoral to have suborbital sinuses. It has none. The ears are striated.

race, and very short, semi-truncated ears, depressed by the incumbency of the horns.

The rams are celebrated for their courage and pugnacity. The wool is good, but far inferior to that of the Hûnih or Bhoteah sheep, which, though naturalized in the Kachár, is of trans-Himálayan origin, and still scarce as compared with the Baruál, immense flocks of which native species are reared in the Kachár.

The Hûnih is a large, tall breed, with slender, compressed, spirally-twisted, horns, and short narrow tail. The colour is almost invariably white. Individuals of this species are apt to have 3, 4, and even 5 horns. The Hûnih cannot bear the heats of Nepal, south of the northern division, and will doubtless flourish in England, where the experiment is making of naturalizing it. Its wool is superb\*. The tame sheep of the central region, or Kágo, as it is named by the Parbattiahs, is a small breed, bearing all the characters of the Barual; from which variety it evidently sprung at no very remote period: horns and tail, as in the Baruál: ears longer, pointed, directed forwards and downwards: chaffron less arched: fleece finer, shorter, spirally curled, almost always white.

The lower hills have no peculiar breed of sheep. Goats and sheep, rare in the central, are almost unknown in the southern hills: but both, and especially the latter, are very numerous in the northern division.

The domesticated cows of the Kachár are large and variously colored like those of England: the cows of the central region small, and black or red, like those of the Highlands of Scotland. But in the second, the hump is conspicuous; and not absent in the first. The *Bos grunniens* or Yak of Tibet likewise flourishes in the Kachár: but not south of it. It is a mere foolish error to suppose the milk of the Yak not good.

There are no wild animals of the Bovine kind in any part of Nepal, save the southern, where, as far as I know, the wild buffalo alone represents the genus—the Gayál or wild Bull of the Indian mountains being unknown to us.

#### Family SOLIPEDA.

Wild animals of this family are utterly unknown to Nepal; and in the domesticated state we have only some small varieties of the Tibetan pony, called here Tánghan: and though coarser and heavier, somewhat

\* N. B. Should this paper meet the eye of any wealthy and spirited individual in England, who may be disposed to forward the experiment in question, I beg to say, I shall be happy to assist him. Let him refer to Messrs. Mackintosh and Co. Calcutta.

resembling in size and character the Shetland pony. This breed is found from the confines of China to the Bilú Tag : on the western side of which range of mountains it increases in size, and becomes the Chougosha horse of the Turks. The Tánghan is bred exclusively in the Kachár division of Nepal : and but very rarely.

We have no tame asses or mules ; man being, in Nepal, the sole " beast of burthen ;" by reason of the steepness of the mountains, and the want of made roads.

### III.—Memoir of Giuseppe d'Amato.

[Extract of a private letter from Major H. Burney, Resident at the Burmese Court, dated Ava, 9th April, 1832.]

I grieve to tell you, that the good Italian priest died last week at Moun-lha, one of the small Catholic villages up the Moo river, near Dibayen, and about 30 miles to the north-west of this city. It is a pity that some account of the life of this humble missionary cannot be communicated to the civilized world. He was a native of Naples, and his name was Giuseppe d'Amato, although he was better known to his Catholic flock, who understand only Burmese and the native dialect of Portuguese, by the style and title of Padre Don José. He and another priest, Luizi de Grondona, or as he was styled Don Louis, were deputed from Rome by the Society *De Propagandá Fide*, at the peace of Versailles in 1783. They went to England for a passage to this country, where they arrived sometime in 1784. Soon after, the wars of the French revolution put a stop to all communication between them and Europe, and for upwards of 30 years they received no assistance whatever from their Parent Society, and were obliged to trust to their own exertions and to the charity of their followers, who are most of them in a state of poverty themselves, for the means of subsistence. They were both skilled in medicine and surgery, but particularly Don Louis, of whom very honorable mention is made by Colonel Symes in his second mission in 1803, and by Captain Canning, on several occasions. Don Louis died in this city about nine years ago.

Don José usually resided in the midst of his flock, which occupy five small villages, distant from each other from four to 10 miles, and situate in the district of Dibayen to the north-west of this city. The names of these villages and number of houses in each are stated to be as follows :