THE NATURALIST.

ANIMALS OF BURMAH.

As very little is popularly known with any approximation to accuracy of the zoology of the Indo-Chinese countries, an enumeration of the more prominent animals of British Burmah, more especially of the class Mammalia, may not be unacceptable; and I mean to notice them in some detail in several instances.

To begin with the great proboscidean: "Wild elephants," remarks Dr Mason, "are numerous in the interior, and their haunts are readily traced by the mutilations of the bamboos and young trees, but they usually avoid settlements." Eastward their range of distribution extends as far as Cambodia and Cochin China. Since the disarmament of the British provinces they are believed to have increased in number; but such increase would scarcely be very perceptible as yet in so slow-breeding a creature, and the real state of the case is most probably that, as in Ceylon, most of them are now destroyed or captured, they have gradually become bolder, and are more frequently observed. I saw but few tame elephants during my peregrinations in the long-extended territory of British Burmah from north to south (*i.e.* at various points from Akyáb to Mergui inclusive), and those chiefly in the steam-sawing establishments at Moulmein. The intelligence there evinced by these wondrously sagacious creatures has often been the theme of admiration, and assuredly not without sufficient reason. It is decidedly a case of "seeing is believing," and it is hardly worth while here to bring to notice their invaluable labours at the saw-pits. Perhaps another time I may have something to say on this subject. In the Commissioner's Report on the Administration of the Province of Pegu for 1858-9 it is stated that

> Not fewer than one thousand and thirty-four (1034) elephants have been shipped from Rangoon and Moulmein for the Madras coast and Bengal during the period extending from December, 1857, to April, 1859. It may be assumed that some of these powerful animals were never caught before, whether in ancient or modern times, conveyed across sea or otherwise from one country to another in the short period of seventeen months, whether for military or other objects.

This was during the epoch of the mutiny of the Bengal army (not, as people here generally style it, "the Indian mutiny"). They were principally brought down from the Shán states, not one of them having been captured in Pegu, where the wild animal abounds; and moreover the whole of them had been taken singly, by pitfalls and other means, and not in herds by means of corrals. The Burmese mode of capturing elephants is by hunting them with tame elephants, which quite understand their duty; but by this means only small and young animals are obtained, too young and immaterial purposes. One fine elephant was born on board ship in transit to Madras, which place it reached all right and well, and, as I was told some time afterwards, was then still prospering.

Most of the foregoing information I derived from conversation (some seven years ago at Rangoon) with my distinguished friend the then Commissioner of British Burmah; but in his report I find he remarks that

> Experiments have been made in capturing wild elephants, which abound in all parts of Pegu. The plan adopted in securing the animals was that practised by the Burmese, namely, by hunting them with powerful tusked elephants. But few or none exceeding six feet in height can be caught by that method; and, as no elephant under seven feet is of use for army commissariat purposes, the result of the operations has not been satisfactory. The system of capturing elephants by driving a herd of them into a stockade was deemed too expensive and too uncertain for trial.

I had a sort of adventure once with a superb wild tusker on the banks of the Yun-za-lin river, near a place called Pahpoon, where I stayed a month, not far from the Shán frontier of Upper Martaban; but this is not exactly the place to introduce an episode descriptive of that affair, which will serve for another and a more suitable occasion.

The Malayan tapir (Tapirus malayanus) inhabits the Tenasserim provinces at least as high as Ye, and its range of distribution extends into Siam, if not further eastward. It likewise inhabits the conterminous Malayan peninsula, and the great islands of Sumatra and Borneo, but not Java. "Though seen so rarely," remarks Dr Mason, "the tapir is by no means uncommon in the interior of Tavoy" "the Tavoy" and Mergui provinces "are frequently come upon its recent footmarks, but it avoids the inhabited parts of the country." It occasionally falls a prey to the tiger; as does also its congener of Guiána to the jáguar (Felis onca) of the minor continent.

Dr Helfer, writing in 1838 in the "Journal of the Asiatic Society of Bengal" (vol. vii. p. 859), remarked:

> The rhinoceros is a common animal throughout the (Tenasserim) provinces, and perhaps more numerous than the elephant; though its less gregarious manners, and its wilder character, do not admit of an easy reckoning to it. The Tenasserim provinces seem to be a congenial place of abode for this genus; for I feel no pronounce almost positive that the three known Asiatic species occur within their range—the Rhinoceros indicus being found on the northern parts of the provinces, in that high range bordering on the Siamese and Burmese mountains; the R. sondaicus of Baron Cuvier, on the contrary, occupies the southernmost parts; while the R. sumatranus, or the double-horned species, is to be found throughout the whole of the territories from the 17th to the 10th degree of latitude. In character the R. sondaicus is the mildest, and can be easily domesticated (*i.e.* tamed); the powerful Indian rhinoceros is the shyest, and the double-horned is the wildest.

This is explicit enough; but the late Dr Helfer is far from being a trustworthy authority in such matters. Thus, he asserts that "the Sus babyrussa is not very rare" in the provinces, whereas this most remarkable animal happens to be peculiar to Celebes, Bouru, and the Sula Islands.† Again, he mentions "the little Bradypus" (a South American animal), meaning the Nycticebus tardigradus, or "slow loris," a well-known quadrumanous creature, which is currently termed "sloth" by Anglo-Indians. Further, he writes, "I pass quickly over the Marsupialia," being obvious to unawares that the discovery of a marsupial animal in those regions would be altogether extraordinary;—and this leads me to remark that the so-called "opossum" of Captain (since General) Low, inhabiting the Malayan peninsula, refers in all probability to the Gymnura Raffleii, which appertains to the Cuvierian order Insectivora, although having good deal of the external appearance of an American or true opossum.

The three existent Asiatic species of rhinoceros which are generally recognised as such have long been discriminated; but, until the publication of Helfer's statement, two of them were erroneously supposed to be confined respectively to the islands of Java and Sumatra. The great one-horned rhinoceros of the north-eastern confines of India, represented by the fine pair now living in the Zoological Gardens, Regent's Park, appears to have been the only kind that has been brought to Europe in modern times, until the arrival of an example of the smallest of the three two-horned African species, which is now in the same collection; but African rhinoceroses were exhibited in the Roman circus, as is well known. The geographical range of that large one-horned species does appear to be at present restricted, or very nearly so, to the *tarai*, or deleterious marshy tract at the foot of the Himalaya, skirting the territories of Nipál, Sikhim, and Bhotan. As remarked by Dr Jerdon, in his recently published volume entitled "The Mammals of India:"

> It is more common in the eastern portions of the *tarai* than the west, and is most abundant in Assam and the Bhotan Dooars. I have heard from sportsmen of its occurrence as far west as Rohilkund; but it is certainly rare there now, and indeed along the greatest part of the Nipál *tarai*; and, although a few have been killed in the Sikhim *tarai*, they are more numerous east of the Teesta river.

Dr. Jerdon suspects that this animal has crossed the Bráhmaputra, and may be found in some of the hill ranges to the east and south of that river. From the dimensions given of a pair killed in the Garrow Hills, in the territory indicated,‡ I conclude that such must be the case, and that both of the one-horned species are there met with; but, from recent investigations, it would appear that from thence southward it is completely replaced by the R. sondaicus, a smaller animal, which was formerly supposed to be peculiar to Java.

The difference between these two species of one-horned rhinoceros is not sufficiently striking to be noticeable by an ordinary observer, unless perhaps he might chance to have the rare opportunity of comparing the two together; and thus there are sportsmen (to my personal knowledge) who have killed both species in their respective haunts, but have failed to discriminate them apart, considering the smaller animal to be merely not full-grown. The R. sondaicus is about or almost a third less in size than the R. indicus (*seu* unicornis, L.), and its "coat of mail" is much the same, except that the tubercles on the hide are considerably smaller and more uniform, and (at least in the young animal) the polygonal facets of the skin have a few small bristly hairs growing from a depression in the centre of each of them. One marked distinction at all ages consists in this—that the strong fold or plait which passes from the neck, which is continued across the shoulders in the smaller species or R. sondaicus, is not continued across in the larger or R. indicus, but curves backward and terminates over the blade-bone in the latter. The neck-folds are less heavy and pendulous in R. sondaicus, and the posterior plait which crosses the buttock from the base of the tail is less marked in this, the depth of the ascending portion of the lower jaw—from the condyle to base—averages 12in. in adults of R. indicus, and never exceeds 9in. in R. sondaicus, constituting a facile means of distinction. The length of skull, from occiput to tip of united nasals (measured by callipers), is—in R. indicus 2ft. (half an inch more or less); in R. sondaicus 1ft. 8in. at most. Broach of tusks—measured across the tusks of the lower jaw—in indicus 1½in to 1¾in.; in sondaicus ¾in. to 1in. These measurements were taken from exceedingly fine specimens in the museum of the Asiatic Society, Calcutta. The skulls of R. sondaicus examined were from the Bengal Sundarbáns, the Tenasserim provinces, and Java. It was from a Javanese skull that the illustrious anatomist Cuvier first satisfied himself with what is a distinct species from the other; and the same individual skull is figured in the "Ossemens Fossiles" of Baron Cuvier, who in that work rightly indicates the animal as being a little smaller than the other, and as otherwise much resembling it*; while in his subsequently published second edition of the "Règne Animal," while mentioning the particular distinction of the great Dutch neck-fold, he refers to his brother's figure in the "Planches des Mammifères" as illustrative of his R. javanus. Professor Schinz, in his "Synopsis Mammalium," gives the species as R. javanicus of Frederic Cuvier.

The late Dr. Horsfield, however, had previously well figured the animal, in his "Zoological Researches in Java," as R. sondaicus of Cuvier; and by the same name it has been since figured and described in the great Dutch work of Dr Salomon Müller and Professor Temminck. But having had occasion to refer to Mons. F. Cuvier's figure of his supposed Javanese rhinoceros, I was surprised to observe and discover that that figure represents, most decidedly, a young animal of the Asiatic two-horned rhinoceros, R. sumatranus(!)—a fact which I brought to the notice of Dr Gray, of the British Museum; and it is a better figure of this latter than the one which he gives as representing the two-horned species. Both are copies of drawings by native artists, sent by MM. Diard and Duvaucel; and in the former instance the posterior horn had been overlooked, though a rudiment of it would certainly have been apparent at the age represented. That figure has misled naturalists, who have designated the animal as *le petit rhinoceros de Java*; whereas Horsfield was informed that the individual figured by him grew afterwards to a height of "five feet seven inches," which must surely be a mistake—four feet seven inches was the probable measurement, even if taken round the curve of the body. A sporting writer, describing one killed in the Garrow Hills, gives the height of it as four feet five inches. "It proved to be a male, with a pretty large horn, and he was a very powerful animal." Other rhinoceroses (doubtless R. indicus) killed in the same tract of territory are described as exceeding six feet in height, which is probably an exaggeration, or at least they must have been measured round the curvature of the body as they lay dead, which is so bulky a carcase would add some inches to the alleged stature. As the smaller species (doubtless R. sondaicus) is the more large-horned, we may be certain that he was fully grown, and may accordingly infer with some confidence that both species inhabit the hill territory known as the Garrows, and probably also the Khásya and the Jhyntea hills, if not still further eastward.

Dr Jerdon remarks (in his excellent work already cited) that the R. sondaicus "is found at present in the Bengal Sundarbáns, and a few individuals are reported to have been killed lately along the Máhánuddi river, and extending northwards towards Midnapore; and also on the northern edge of the Rájmáhál hills near the Ganges. Several have been killed quite recently," he adds, "within a few miles of Calcutta." They are or were "found in great numbers at the bottom of the Rájmáhál and Sikri Gulli hills, but are seldom found in the district of Purnea, where they live chiefly in paddy" (growing rice) "and vegetable roots, the horn enabling them to procure vegetable matter imbedded in the earth."‡ Having a horn suitable for the purpose, they may thus use it; but the nasal horn in this genus varies so much in shape and direction, that it is not always adapted for such employment, and it may well be asked, of what use is the second horn in some of the species, which in occasional examples of the R. kheitloa of Africa is as long as the anterior one; and in the aged R. simus (or so-called R. Oswellii) of the same continent the former projects almost straight forward, while in some individuals of the R. sumatranus it curves round so very much backward that it is difficult to imagine how it could be put to any service. An experienced sporting writer remarks, of one of the single-horned species, that

> It is a mistake to suppose that their horn is their most formidable weapon; I thought so myself at one time, but have long been satisfied that it is merely used in defence, and not as an instrument of offence. It is with their cutting teeth that they wound so desperately. I killed a large male, which was cut and slashed all over its body with fighting; the wounds were all fresh, and as cleanly cut as if they had been done with a razor. Another rhinoceros that we had wounded stood, and, out of pure rage, cut at the jungle right and left, exactly as if he was using a sickle. A medical friend had a man, who was sauntering through the forest, actually embowelled by a rhinoceros. He examined the wound immediately, and I heard him say afterwards that he had seen many such dreadful wounds; but never before had he been cleaner cut. That could not have been done with the horn.§

To quote another experienced hunter—of certainly the great one-horned species in this instance, as he mentions its frequently attaining the height of 6ft. at the withers: "The beast does not generally use its horn for aggressive purposes, but makes play with his mighty jaws, with a single snap of which he can cut a man in two." In Java the R. sondaicus is reputed to be rather a mild animal; but an instance is related of one attacking a sailors' watering party in that island‖; and the full-grown Garrow rhinoceros (before mentioned as standing 4ft. 5in. in height) had killed a man and a boy, some days before he was shot. This lesser one-horned species appears to be diffused more or less over the whole Indo-Chinese region and throughout the Malayan peninsula. Upon showing a friend, who had killed as many as nine single-horned rhinoceroses in the southernmost part of that peninsula, a series of skulls of R. indicus and R. sondaicus in the museum of the Asiatic Society, Calcutta, he at once selected the smaller species as that with which he was familiar; and, from numerous researches when engaged in collecting objects of natural history in different parts of British Burmah, I became convinced of the truth of the native statement, that only two kinds of rhinoceros were there known to inhabit, the R. sondaicus and the R. sumatranus, spoils of both of which I had the good fortune to procure.

According to Professor Reinhardt, the lesser one-horned rhinoceros is, in Java, found "everywhere in the most elevated regions, ascending with an astonishing swiftness even to the highest tops of the mountains."¶ Dr Horsfield also notices that "it prefers high situations, but is not limited to a particular region or climate, its range extending from the limit of the ocean to the summits of mountains of considerable height. Its haunts are discovered by deeply excavated passages, which it forms along the declivities of mountains and hills. I found them occasionally of great depth and extent." Writing of one of the single-horned species, an observer remarks**:

> It is surprising to see how rapidly, and without the least exertion as it seem, these huge, heavily built, unwieldy-looking animals get over the ground, such ground consisting of the densest jungle of hill reeds, bushes and brushwood, and thick tall saplings interspersed with large trees. Awkward as is their gait, they trot very fast; I say *trot*, for their movement more nearly resembles a trot than anything else, though actually it is rather a gait between a trot and a canter. Elephants with howdahs have no chance with them in the chase, and unless dropped with the first shot, or they suddenly stop to turn to stand at gaze, thus exposing the flank at a tolerable range and at short distance, they generally manage to escape. It is useless firing at the body.

This was written before the present more efficient style of weapons came into use, or the terrible explosive shell was invented, which is now so destructive not only to the largest quadrupeds on land, but equally so to the far more gigantic cetals of the ocean.

Writing concerning the great one-horned rhinoceros in Assam (which province belongs essentially to the Indo-Chinese sub-region), an experienced rhinoceros hunter before quoted remarks:

> For so ponderous an animal, the rhinoceros is wonderfully agile in its movements, and when charging an enemy dashes through the densest covert with astonishing speed and rapidity. It is as much as an elephant can do to keep ahead of an infuriated one; and it often turns round, when being pursued, after firing and wounding them, that if the rhinoceros had continued the chase a little further, instead of abandoning it, as they usually do after fifty yards or so, we should infallibly have been overtaken. These animals are peculiar in their habits, and constantly visit a particular spot for the purpose of performing a certain act of nature. [This was long ago noticed by Williamson in "Oriental Field Sports"] They are gregarious, and are found in small herds of four and six together, although more often in pairs. The period of gestation is nearly eighteen months, and only one young one is produced at a birth. The little one, when it first sees light, is nearly two feet in length and two feet in height. It continues to suck for about two years. The haunts of the rhinoceros are characterised by numerous broad tracks trodden in his peregrinations to his favourite feeding places. These he invariably follows, and he is occasionally killed by the natives, who lie in wait for him, concealed in a tree that may happen to be near the path. Habitually sluggish in his movements, he wanders along with a slow measured tread, sometimes stopping to plough up the ground in mere wantonness, or to amuse himself with mud and dirt. At times he takes it into his huge head to pay a visit to any neighbouring paddy or rice fields that may perchance be in the vicinity of his retreats. On these occasions, woe to the unfortunate owner of the soil! for the amount of devastation and ruin that he commits almost surpasses belief. A pair of rhinoceros in a single night will completely destroy a large rice field of four or five acres in extent. It is not so much what they eat—although their appetites are by no means delicate—but the amount of damage which they do in trampling the grain with their great clumsy feet into the soft, yielding soil. Drinking large quantities of water, and being fond of bathing and wallowing in the ground, they are consequently obliged to keep to those localities which afford these essentials to their existence and comfort, and which also supply the luxuriant and profuse vegetation necessary for their support. Hence the interminable swamps and jungles of Assam are the favourite resorts of the species, and there reside in herds of them.

Would that every sportsman would use his opportunities in like manner to the officer whom I have just cited! Referring to Williamson's "Oriental Field Sports" (published in 1807), I find that he failed to discriminate the two species of one-horned rhinoceros apart. His only figure (not a good one) is that of a young R. indicus; but he states: "It is very rarely that the rhinoceros has attained equal to 6ft. in height" (*i.e.*, R. indicus); "he is ordinarily not more than 4½ft. or 5ft." (*i.e.*, R. sondaicus). I judge that the latter is the only one that he knew of as a wild animal, while his figure was probably taken from a young example of the large species that had been brought from beyond the area of his personal observations, as they are not unfrequently brought down the Brahmaputra from Assam at the present day. More than sixty years ago, Captain Williamson remarked that "the rhinoceros is seldom to be found on the western side of the Ganges, though the jungles there are fully competent to afford abundant shelter; nor, indeed, has an elephant ever been seen in its wild state but to the eastward and far distant from the banks of that noble river."

He also remarks:

> One very strange peculiarity attends this animal, viz., that it invariably goes to the same spot to dung, until the heap becomes so high as to render further increase inconvenient, when a fresh spot is chosen—usually on a small opening in the midst of a heavy jungle. How he keeps afloat to the adjacent spot, instead of making certain of his object. Much caution is necessary in approaching the houses of these extraordinary piles. The rhinoceros is endowed with a remarkably quick sense of smelling, and is said to be extremely crafty in stealing through the cover, to surprise whatever may unfortunately come near his haunt.

This is probably a fancy. More than a quarter of a century has elapsed since I last consulted Williamson's work, and much of that time has been passed in the part of India with which he was most conversant (Bengal); and I am therefore able to criticise his plates with confidence, having paid considerable attention to the zoology of that part of the world. One result is, that I do not hesitate to assert and to pronounce that his numerous figures of the "wild dog, or *dhole*," are fancy portraits; that in several of his figures of humped cattle he has placed the horns characteristic of the humpless or European type; that his wild buffalos' horns are made to curve the wrong way; that his hog deer have horns such as no hog deer ever grew; and that the two pink wading birds represented in his plate entitled "Peacock Shooting" are totally unlike any bird inhabiting India. His fancy figures of the *dhole*, with brushless tail and dark brown colouring, have led the late Col. C. Hamilton Smith and other naturalists astray. The real "wild dog" (so called) of India never has been in the Regent's Park collection—a particularly fine specimen.

As the existence of two well-distinguished species of single-horned rhinoceros upon the mainland of Asia is hardly known as yet to the generality of Anglo-Indian sportsmen, let us hope that the present notice of them will help to stimulate further research, and more especially lead to a more careful and precise determination of their respective limits of geographical distribution.

ZOOPHILUS.

* "Burmah." By the Rev. F. Mason, D.D. 1860.
† Wallace's "Malay Archipelago," vol. i, p. 435.
‡ "Bengal Sporting Magazine," 1842, p. 287.

* "Oriental Sporting Magazine," 1837, p. 276.
† "Bengal Sporting Magazine," 1842, p. 301.
‡ "Bengal Sporting Magazine," 1836, part 2, p. 158.
§ "Zoologist," p. 7328.
‖ "Edinburgh New Philosophical Journal," vol. xiii, p. 34.
¶ "Journal of the Asiatic Society," 1835, p. 79.
** "Bengal Sporting Magazine," 1835, p. 79.

* "Dune taille un peu moindre que le rhinoceros de l'Inde, celui de Java en a toute la physiognomie; son cuir est également partagé par de grands plis, en compartimens semblables à des pièces de cuirasse," &c.—"Ossemens Fossiles," ii., p. 26.

ZOOLOGICAL SOCIETY OF LONDON.

ADDITIONS TO THE MENAGERIE, REGENT'S-PARK, FROM SEPT. 19 TO OCT. 2.

Sept.	Name.	Country.	How obtained.	Where placed in Gardens.
19	1 Zebu (Bos indicus) ♀	...	Born in the Menagerie	Cattle Sheds
20	2 Vulpine Phalangers (Phalangista vulpina) ♂ ♀	...	Born in the Menagerie	Ant-eaters' House
22	1 Nicobar Pigeon (Calænas nicobarica)	...	Hatched in the Gardens.	Western Aviary
	1 Crested Pigeon (Ocyphaps lophotes)	...	Hatched in the Gardens.	Ditto
	1 Blue-winged Parakeet (Brotogerys tiriacula)	South America	Presented, by Mrs M'Mullen	Parrot House
	2 Rock Python (Python regius)	West Africa	Deposited	Python House
23	1 Sloth Bear (Melursus labiatus)	India	Presented by Capt. A. Carnell, R.N.	Carnivora Dens
23	13 Barnacles	Africa	Presented by F. Buckland, Esq.	Fish House
24	1 Sun-bird (Euryppyga Trinidad)	Trinidad	Deposited by Miss Lynch	Western Aviary
25	1 Black-crested Eagle (Spizaëtus cristatus)	West Africa	Received on Approval	Winter Aviary
25	1 Common Peafowl (Pavo cristatus)	India	Presented by Lady Cranstoun	Peafowl Inclosure
26	1 Common Camel (Camelus dromedarius) ♀	Egypt	On Approval	Camel House
	1 Korin Gazella (Gazella rufifrons) ♀	Senegal	Ditto	Upper Yard
27	1 Serval (Felis serval) ♂ & ♀	Africa	Presented by J. J. Monteiro, Esq., C.M.Z.S.	Small Mammal House
	2 Persian Gazelles (Gazella subgutturosa) ♀	Persia	Presented by T. Kerr Lynch, Esq., F.Z.S.	Upper Yard
	1 Lion (Felis leo)	Babylonia	Deposited by Mrs Ditto	Carnivora Dens
	1 Mexican Crested Eagle (Polyborus cheriway)	Panama	Presented by Capt. Ditto	Winter Aviary
28	1 Patas Monkey (Cercopithecus erythrotis)	Abyssinia	Presented by Clement Ditto	Monkey House
29	1 Two-toed Sloth (Cholopus didactylus)	Brazil	J. Penny, Esq. On Approval	Sloths and Ant-eaters' House
	1 Bengalese Leopard Cat (Felis bengalensis)	India	Presented by Chas. J. Sturt, Esq.	Small Mammal House
	1 Pheasant-tailed Pheasants (Euplocamus Swinhoii)	Formosa	Deposited by J. J. Stone, Esq., F.Z.S.	Pheasantry
	2 Pallas's Squirrels (Sciurus Ditto (Crossoptilon auritum)	Northern China	Ditto	Ditto
	2 Black-legged Buzzards (Archibuteo lagopus)	Europe	Presented by Capt. Sturt	Small Carnivora House

* Never previously exhibited. ♂ Male. ♀ Female.

PARTRIDGES ON THE SEA COAST.—On the coast of Cantyre some days ago, I first found golden plover sitting on a piece of rock and surrounded by shallow water, and about 70 yards from the shore. I picked up one golden plover and two partridges, and about eight or nine more partridges flew inland. There were about twelve plover. Perhaps some of your readers will inform me if it is usual for partridges to be found in such a place, and in such company?—CANIS (Sept. 22.) [We have known of many instances of partridges being found on the sea coast, and sometimes actually floating dead on the sea, or washed up by the tide; we have one account of partridges being seen to settle on the sea, as though exhausted; some suppose that this is evidence of their migrating. We express no opinion on that subject.—ED.]