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The  
Concise Knowledge  
Natural History

BY

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being coated with enamel. The cheek teeth, which include four pairs of premolars and four of molars in each jaw, are singularly like those of the rhinoceroses, and thus quite different from those of the Rodents. With the exception of the second toe of the hind-foot, the toes are protected by short, broad nails; and the tail is remarkable for its extreme shortness. In general appearance, hyraxes (which are the conies of Scripture) are very like large cavies. While the majority live in colonies among the cracks and crannies of rocks, some of the African species are arboreal in their habits, climbing the stems and larger branches of trees, and sleeping in their holes; in this respect they are unique among the Ungulate order.



Fig. 67.—A HYRAX (*Procavia*).

The primitive and ancient group of animals commonly known as tapirs are the first representatives of the third sub-ordinal section of the Ungulates, technically termed the Perissodactyle section. The essential

**The Tapirs.**— feature of the members of this section is to be found in the structure of the feet, in which the toe corresponding to the third or middle digit of the human hand or foot is always larger than the one on each side of it, and symmetrical in itself; the total number of toes on the hind-foot never exceeding three, and on the front-foot four. It is in consequence of this special development of the third toe that the group is spoken of as the Odd-toed or Perissodactyle Ungulates. In addition to this essential feature, the Perissodactyla differ from the two preceding sub-orders in the structure of the wrist-joint of the fore-foot, in which the two horizontal rows of small bones not only interlock with one another, but are likewise not disposed in vertical lines immediately above the supporting metacarpals. Hence in these animals it would be impossible to cleave the foot between any two of the toes without cutting through solid bone. A further difference from the elephants is to be found in the

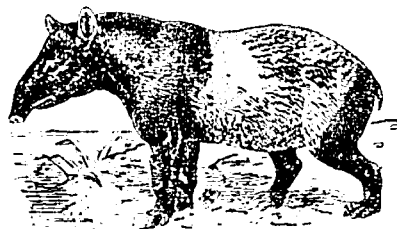


Fig. 68.—MALAYAN TAPIR (*Tapirus indicus*).

circumstance that the huckle-bone, or astragalus, of the ankle-joint of the Perissodactyles is a vertically elongated bone terminating above in a deeply grooved, pulley-like surface for articulation with the larger bone of the leg, instead of being shallow, with a flat upper surface. All these animals walk in the digitigrade fashion on the summits of their toes, which are more elongated than in the elephants. At the present day the Perissodactyla are represented by

only three families, each containing a comparatively small number of species; but in former epochs of the earth's history they were much more numerous.

From the other members of the sub-order, tapirs, which are somewhat pig-like and antediluvian-looking animals, are readily distinguished by the production of the muzzle into a short, mobile snout, and the presence of four toes on the

front-feet, the hind pair having three. They have low-crowned cheek-teeth; the upper molars having an outer wall formed by the union of two conical tubercles, from the inner side of which a pair of transverse crests run obliquely across the grinding surface of the crown. In the lower molars there is simply a pair of transverse ridges to each; the total number of teeth being 42. The skin of all the tapirs is sparsely haired; and in size these animals may be compared to a large donkey.

The whole of the five living species of tapirs may be included in the single genus *Tapirus*, to which special interest attaches on account of its remarkable geographical distribution. Thus, whereas one of the five species is found in the Malayan countries, the whole of the other four are restricted to the forest-region of Tropical America, some of the latter ranging high into the Andes. This, however, is by no means all, since the Malayan species is much more nearly related to two of the American species than are the latter to their compatriots. Had we the existing forms alone to deal with, this discontinuous distribution would be very difficult to explain; but we learn from geology that these animals were formerly widely spread over the Northern Hemisphere, whence they have migrated southwards to their present isolated habitats.

The Malayan species (*T. indicus*), which is the largest of the five, differs from all the others in having the middle of the body white; the remainder of the skin being uniformly black, as is the whole of that of the American species. In all the five kinds the skin of the young is, however, striped and spotted with white. As regards their mode of life, tapirs are essentially shy, harmless, and nocturnal forest animals, always frequenting the neighbourhood of water, in which they often swim.

The rhinoceroses, which include by far the largest representatives of the Perissodactyle sub-order, may be best distinguished from the tapirs by the form and number of their teeth. These are always numerically less than 42 in the living species; and the upper molars differ from those of the tapirs in that their outer surface forms a continuous wall, undivided into lobes, while the grinding surface, although consisting primarily of two oblique transverse ridges, presents a much more complicated pattern. In the lower molars, the ridges, instead of being simply transverse, are curved into crescents. Another point of distinction, so far as the existing kinds are concerned, is the presence of only three toes on both the front and hind-feet. Rhinoceroses derive their name from the presence of either one or two horns arising from the middle line of the fore-part and middle of the head; these horns consisting entirely of an agglutinated mass of hair-like substances, having no connection with the bones of the skull.

In appearance, rhinoceroses are huge, ungainly brutes, with an enormous head, much elevated and expanded posteriorly, short, massive limbs, large, tubular, upright ears, often fringed with hairs, a moderately long, tapering tail, and very thick skin, which is generally but sparsely covered with hair, and may be thrown into a number of massive folds. They have always the full number of seven pairs of cheek teeth; but canines are wanting, and the incisors, if present at all, are reduced below the typical number of three pairs.

Rhinoceroses are restricted to the Oriental countries and Africa; but there is some difference of opinion whether they should be divided into several genera, or all included under the single generic term *Rhinoceros*. Adopting

The  
Rhinoceroses.—  
Family  
*Rhinocerotidae*.

the latter alternative, the five existing species may be arranged in two divisions, of which one includes the three Oriental forms, and the other the two African. The Oriental rhinoceroses are characterised by possessing

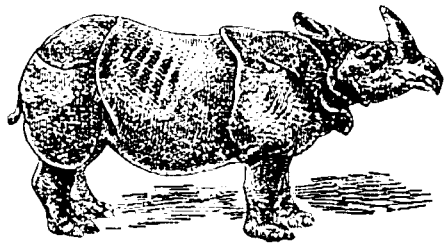


Fig. 69.—INDIAN RHINOCEROS (*Rhinoceros unicornis*).

incisor teeth in both jaws, one (or the only) pair in the lower jaw forming sharp, triangular, projecting tusks, capable of inflicting terrific gashes when their owners charge. By far the largest of these is the great Indian rhinoceros (*R. unicornis*), which is confined to the great grass-jungles of North-Eastern India, and is characterised by its massive but short, single horn, the large bosses on the deeply-folded skin, the numerous pleats round the neck, and the complicated structure of the upper molar teeth. The Javan rhinoceros (*R. sondaicus*), which is a much smaller animal, ranging from Eastern Bengal and the Sandarbans to Burma, the Malay Peninsula, and the islands of Sumatra, Borneo, and Java, differs in the arrangement of the folds of the skin, which lacks the great bosses of the larger species, and likewise by the lower and simpler crowns of the upper molar teeth. The third representative of the Oriental group of the genus is the Sumatran rhinoceros (*R. sumatrensis*), which ranges from Assam, Chittagong, and Burma, to the Malay Peninsula, Siam, Sumatra, and Borneo, and is the smallest of the three. Having upper molar teeth of the same type as those of the Javan species, it differs from both that and the Indian rhinoceros in having two horns on the head, the foremost of which is often much larger than the single one of either of the other Asiatic species.

The two species of African rhinoceroses differ in that the incisors of the adults are rudimental or wanting in both jaws, and likewise in the absence of foldings in the skin, which covers the body uniformly; both having two horns. The largest of these is the square-mouthed, or Burchell's rhinoceros (*R. simus*), frequently inappropriately spoken of as the white rhinoceros. This animal, which was formerly met with in enormous numbers to the north of the Orange River, but is now well-nigh exterminated, if, indeed, it be not actually extinct, takes its name from its square and truncated upper lip. In addition to this, it is characterised by the tall and complex crowns of the upper molar teeth, which present a pattern very similar to that obtaining in the Indian species, as well as by the great length of the front horn, which is frequently found with its tip obliquely abraded, on account of having been pushed along the ground as its owner walked. The general colour of the skin is slaty-grey. On the other hand, the common African, or so-called black rhinoceros (*R. bicornis*), has the prehensile lip characteristic of the other members of the genus, while its front horn does not attain the enormous length reached in *R. simus*, and the upper molars are of simpler structure. This rhinoceros ranges from Abyssinia to the Cape, and differs considerably in habits from the other African species. Possibly a third species may exist in North-Eastern Africa.

The third and last family of the Odd-toed Ungulates is that of the horses,

under which title are included not only horses proper, but also zebras and asses, all of which may be comprised in the single genus *Equus*. From all other living Mammals the members of this genus differ by the reduction of the number of toes to a single one in each foot; but as there are certain extinct horses provided with three perfect toes on each foot, we learn that this essential peculiarity of the existing forms is a feature of comparatively late acquisition. Indeed, evidence of this descent from a three-toed ancestor is afforded by the so-called splint-bones which are found in the horse, lying on each side of the upper half of each cannon-bone, and correspond to the metacarpals and metatarsals of the second and fourth digits of the typical five-toed foot, the cannon-bone representing the third or middle one. In the case of such well-known animals as the horses, it would be quite superfluous in a work of the present nature to describe them in any detail, and it will accordingly suffice to point out a few of the features which indicate that they form a family by themselves. More important than the single digit of the feet is the peculiar structure of the molar and premolar teeth, which form tall quadrangular prisms, in which the enamel is thrown into a number of deep foldings and plications, the intervening depressions and flutings being completely filled with cement. Although the resemblance is at first not very easy to make out, a careful study of the pattern on the crowns of the upper molar teeth of a horse will show that it is really essentially the same as in the rhinoceroses, of which it may be regarded as a specialised modification. The upper premolar teeth, which are generally three in number, although occasionally a small anterior one is present, are as complex as the molars, and are peculiar in being larger than the latter; similar features occurring in the lower jaw. There are thus normally six pairs of cheek teeth in each jaw; the total number of teeth in the adult male being 40, although in the female it may be reduced to 36, as the canines, or tusks, which are always rudimental in that sex, are in some cases altogether wanting. The canines occupy the centre of a long gap between the premolars and the incisors; the three pairs of the latter forming a semi-circle at the extremities of the jaws. The incisors of the horses are peculiar in having the summits of their crowns deeply infolded, like the finger of a glove with the tip pushed in; and it is according as to how much of this infold, or "mark," remains in the teeth of a horse that its age is approximately determined. The skull of a horse, which is of an exceedingly elongated form, differs from that of either a tapir or a rhinoceros in having the socket of the eye completely surrounded by a ring of bone; and in the limbs the bones known as the ulna in the front pair, and the fibula in the hind, are incomplete, and respectively united with the radius and the tibia. A special feature of the horses is the great elongation of the cannon-bone (metacarpal and metatarsal) in each foot, which gives them their characteristic length and slenderness of limb, and enables the upper parts of both the fore and hind-legs to be enclosed in the skin of the body. It is almost superfluous to observe that the so-called knee of a horse represents the human wrist, and the hock the ankle; the whole of the limbs situated below these joints corresponding to the middle finger or toe of the human hand or foot, with the supporting metacarpal or metatarsal bone. The toe of each foot is enveloped in a solid hoof, which is broader in the front than in the hind-limb; and the inner sides of the fore-limb always has a naked wart-like callosity above the wrist-joint, while there may be a similar pair of callosities on the hind-limb.

The Horse Tribe.  
—Family  
*Equidae*.