Some account of an animal belonging to the genus Cervus, lately exhibited in Boston. Read before the Linnean Society of New-England, January 11th, 1817. By George Hayward, M. D.

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AN animal called by its owner, an Elk, was brought to town about a fortnight since for the purpose of exhibition. It was a male between 5 and 6 years of age, and was originally found in the Indiana Territory. As it differed in some respects from every species under the genus *cervus*, as described by systematic writers, it was an object of curiosity to ascertain, whether it was only a variety or really a distinct species. It was repeatedly visited while living by several members of this society, and the following observations and measurements made by Mr. Gray and myself, may be relied on for their accuracy. It had eight incisor teeth in the lower jaw, two short solitary tusks in the upper, eight grinders on each side in the lower, and eight on each side of the upper jaw. The head was one foot seven and a half inches long. Breadth across the forehead seven inches. The horns were round, branching and recurvate. There were three branches on the left horn, four on the right, no brow antlers. Greatest length of the horns three feet one and a quarter inch—greatest distance between them two feet one and a half inch, distance between the tips ten inches. Height of the body four feet four five-eighth inches. Length from nose to rump six feet eleven and a half inches. Tail, white, nearly three inches long. Hair long, thick, coarse and elastic; longer about the neck; throat not carunculated. White spot of one foot diameter on the buttocks round the anus, with a distinct black border. Colour of the rest of the body, reddish gray; ends of the long hairs about the neck, almost black, which was the colour of the hair below the knees. Length of the neck from the shoulders to between the ears, two feet four inches; to between the horns, two feet seven inches. Length of the ears, nine and a half inches. There was a remarkable slit under each eye, of nearly an inch and a half in length, with a groove in the integuments leading from it to the nasal angle of the eye, of about a quarter of an inch.

In the history of quadrupeds, by Bewick, there is a description of an animal, under the name of the American Elk, which corresponds extremely well with the characters of the one

exhibited here. It differs only in the circumstance of its having brow antlers. The same thing is mentioned by Dr. E. H. Smith, in an account that he published in the Medical Repository some years since, of four animals that were shewn in New-York, and supposed to be Elks. The slit under the eye, is noticed by Bewick and Dr. Smith. The latter observes, that it was supposed to communicate with the nostrils, and to be analogous to the puncta lachrymalia in the human head. It is said by some to be a provision of nature to facilitate respiration; and others have observed, that these animals have a power of constricting the nostrils, and driving the air forcibly through this slit, which produces a loud and shrill whistle. The person who exhibited the animal in this town, stated that he had often known him to whistle through this aperture, so that he could be heard at a great distance. Notwithstanding these statements, considerable uncertainty existed as to the precise use and extent of this cavity, and I know of no author, except Cuvier, who has made any particular remarks upon the subject. In his "*Anatomie Comparée*," vol. 2d, p. 439th, Paris edition of 1805, he observes, that "ruminating animals have puncta lachrymalia and lachrymal tubes like man. Some genera of this order are still more remarkable for their lachrymal cavities; (*larmiers ou fosses lacrymales*, in the original.) There are small excavations in the cheek, one under each eye, near the nasal angle, and communicating with this angle by a small furrow. These are found in the deer and antelope." In the 5th volume, page 251st of the same work, however, under the head of odorous excretions, he speaks of the impropriety of calling these depressions, *larmiers* or lachrymal cavities; and observes, that there are many follicles in the lining membrane, that pour out a blackish, thick, unctuous fluid. He describes the size and situation of these cavities, though he assigns no use to the excretion.

A few days since, in consequence of the death of the animal, I was enabled to make a thorough examination of this slit in the integuments, as well as the excavation in the bone. Upon examining the slit under each eye, it was found, that it communicated with a cavity in the integuments, of the size of a horse-chesnut, which had no other than the external opening, and was lined with a delicate polished membrane like that covering the lips, of a white colour, except a small livid spot in the centre. Corresponding with this cavity, there was, in the bone, an excavation of rather larger dimensions, owing to a considerable quantity of cellular substance that lay between the bone and integuments. This excavation was in no way connected

with the nostrils, and had no foramen in any part of its bony parietes. There was but one lachrymal gland on each side, two puncta lachrymalia, one in the upper and one in the lower eyelid, which were connected with tubes that passed through bony canals, under the excavation described above, and entered the nostrils separately. There was no lachrymal sac, but the os unguis was easily found. On each side there was a parotid gland, and two glandular substances were noticed nearly in the place of the submaxillary. By opening the abdomen, it was observed, that there was four stomachs as in other ruminating animals, but no gall-bladder; the bile being carried immediately through the hepatic duct into the intestines. After a careful examination, an oil sac or vesicle was found in each of the hind legs.

Some of these particulars were noticed, on account of the diversity that is found to exist in these respects in different animals. Some, for example, have two lachrymal glands, while the elephant has neither os unguis nor lachrymal sac. Most of the animals in the class mammalia have a gall-bladder, but it is wanting in the goat, the horse, the deer, and the cetaceous tribe. The salivary glands are remarkably large in all ruminating animals, but I have not met with any account of there being two submaxillary glands on each side in any one of them. After what has been stated, it will, perhaps, be difficult to explain the use of the cavities or depressions under the eyes. They may possibly be intended as reservoirs for the tears, which can pass directly out of the eye, in the furrow in the integuments, into them, in cases of increased secretion, arising from any unusual excitement of the organ of vision; though I confess it ill accords with the economy of nature, to furnish a part, which can only be useful in a disordered state of some of the functions. The different accounts, that we have had, of the connexion of this slit with the nostril, and the power that animals have of forcing air through it, must of course be fabulous.

By comparing the description of the animal given above, with that of the *Cervus Alces*, Elk, or Moose Deer, it will be perceived at once, that they belong to distinct species. The horns of the Moose are palmate, with short beams or none; they shed them in December, while the others do not before February or March. They have a caruncle under the throat, with a tuft of hair generally growing from it. When in motion, they make a clattering noise; there is reason to believe, from an examination of the hoofs, that this is not the case with this animal. The Moose is much larger, his form is

more clumsy, and his head shorter in proportion to the size of his body. The resemblance between the *Cervus Elaphus*, or stag, and this animal, is very considerable. They agree as to the form of their horns, their growth, the annual addition of a branch after the second year, and the time of shedding them. There is also a similarity in their habits and propensities, in the shape of the head and the general form of the body. They differ, however, in the length and colour of the hair, and very considerably in size; the stag being nearly red, with a short coat, and usually about three and a half feet high; while this animal has long hair, particularly about the under part of the neck, with black ends, and is between four and five feet in height. The female of the stag is eight months gravid, and rarely produces more than one young at a time, while this animal is said, by Dr. Smith, to be nine months gravid, and generally produces two young. It may be doubted, whether differences so important as these, can fairly be attributed to variety of climate alone. There is reason also to believe, that the animal exhibited in town, had not attained its full growth; it was considerably smaller than either of those described by Bewick and Dr. Smith, both of which were young, and would continue to grow, it was thought, for some years. With such a difference in the colour and length of the hair, in the size of the body, the period of gestation, and the number of young, it may not, perhaps, be improper to consider it another species, or, at least, a variety deserving a distinct name. As it seems to be unknown in Europe, and never to have been found, except on this continent, may it not, with propriety, be called *Cervus Americanus*, with the English name of American Stag?

P. S. Since writing the above, I have seen in the London Literary Panorama for January, 1817, a description of four of these animals that were then exhibited in England, and were carried from this country some months since. The English writer, considering them as non-descriptors, calls them by the Indian name of Wapite. He notices the slit under the inner angle of the eye, and supposes that it is "auxiliary to the nostril," and that the animal has the power of whistling through it. He speaks of a gland situated on each side of the hind legs, under a tuft of yellowish hair, which secretes an oily fluid, with which the animal covers his coat by means of his horns, and thus renders it impervious to the rain. His account of the opening under the eye was probably obtained from the keeper, and is unquestionably erroneous.