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ART. XIX.—*On a new Species of Rhinoceros found in the Interior of Africa, the Skull of which bears a close resemblance to that found in a fossil state in Siberia, and other Countries.* By SIR EVERARD HOME, Bart. V. P. R. S. [Phil. Trans.]

THE discovery of a new species of any of the larger animals, now that our globe has been so extensively explored, is an object of interest to the naturalist, and might afford sufficient reason for laying this new fact before the society; but this interest will be much increased, when there is a striking resemblance between the form and appearance of the skull of this animal, now in being, and the skull of one of the same tribe, only met with in a fossil state.

It has been hitherto asserted, as one of the most curious circumstances in the history of the earth, that all the bones that are found in a fossil state, differ from those belonging to animals now in existence; and I believe that this is generally admitted, and that there is no fact upon record, by which it has been absolutely contradicted; but the observations I am about to state respecting this rhinoceros, will go a great way to stagger our belief upon this subject.

The skull of the animal belonging to this new species of rhinoceros, now living in Africa, was brought to this country by Mr Campbell, one of the missionaries sent there from the London Missionary Society, and is deposited in their museum in the Old Jewry. The following account is taken from the memoranda with which Mr Campbell very obligingly furnished me.

“The animal was shot about 250 or 300 miles, up from the westward of De la Goa Bay, six miles west of the city Mashow, and above a thousand miles in nearly a straight direction from the Cape of Good Hope.

“The country from whence the rhinoceros comes, contains no thick woods, or forests, but is covered with separate clumps of trees, like a nobleman’s park in England. In travelling, you always appear to be approaching a wood; but as you advance, the trees are discovered to stand at a distance from one another, or rather in little clumps.

“This animal feeds upon grass, and bushes; is not carnivorous; and not gregarious; seldom more than a pair are seen together, or in the vicinity of one another.” Mr Campbell’s people wounded another of the same description. “When

enraged it runs in a direct line, ploughing the ground with its horn. The hide is not welshed, is of a dark brown colour, smooth, and without hair."

The skull which Mr Campbell has brought to England, fortunately has the horns in their natural situation. The skull is thirty-six inches long. The long horn, thirty-six inches; the circumference at the base, is twenty-four inches. There are horns of different lengths in the British museum, and one forty-two inches.

In this skull it will be seen, that the horns differ in many particulars, from those belonging to the other recent species of the rhinoceros. The long one is placed upon the extremity of the nasal bones, with a direction nearly straight forward, and the smaller one so close behind it, as to appear intended for a support to its base. These striking differences would be of little importance, were it not that they make it bear so close a resemblance to the fossil skull from Siberia, as to leave no prominent characteristic mark between them; and were it not that the one is in a fossil state, and the other recent, they would be decided to belong to the same species; for although there is no horn attached to the fossil skull, the surface fitted for it is obviously marked, and no error can be committed respecting its situation, or direction. The fossil skull was sent over by the emperor of Russia to Sir Joseph Banks, and deposited in the British museum, and compared with another, which came to this country, but was afterwards sent to France. The skull is thirty-three inches long. The largest of the recent rhinoceros in the collection of the Royal College of Surgeons, is two feet.

All the fossil skulls that have been examined, are alike, and three feet long; so that we have now acquired a nearer approach to the form of the skull of the rhinoceros of former ages, in that which is here described, than has before been obtained. From this fact so completely within my own observation, I am led to believe, that although many animals belonging to former ages may be extinct, they are not necessarily so; no change having taken place in our globe, which had destroyed all existing animals, and therefore many of them may be actually in being, although we have not been able to discover them.

When we consider that the course of one of the greatest rivers in Africa, the Niger, has not been traced to its source by any European traveller, we must allow, that great tracts of country in that immense continent remain unexplored; in

which those animals, that are not disposed by their nature to submit to the will of man, but, on the contrary, to fly from him, may conceal themselves by retiring into the wild fastnesses of forests, which for ages to come may never be visited by rational beings. Under these circumstances, we have no right to assume that large animals, although not met with, do not exist.

The following account of the migration of the animals in Africa, is in itself a curious document, and explains in what way particular animals may elude our inquiry at one time, and at another be brought within our reach.

Mr Campbell says, he found that the wild ass, or quagga, migrates in winter from the tropics, to the vicinity of the Malaleveen river, which, though farther to the south, is reported to be warmer than within the tropic of Capricorn, when the sun has retired to the northern hemisphere. He saw bands of two or three hundred, all travelling south, when on his return from the vicinity of the tropics; and various Bushmen, as he proceeded south, inquired if the quaggas were coming. Their stay lasts from two to three months, which in that part of Africa is called the Bushmen's harvest. The lions who follow them are the chief butchers. During that season, the first thing a Bushman does on awaking, is to look to the heavens to discover vultures hovering at an immense height; under any of them he is sure to find a quagga that had been slain by a lion in the night.

This disposition for migration on large continents, will explain their dispersion into different countries.

It is deserving of remark that the elephant, one of the most powerful and most sagacious of the animal race, has been for ages domesticated, (if the expression is admissible,) and has learned to have a pride in the ornaments and trappings, with which man, for the purpose of pomp and parade, has clothed him. It would appear that the sagacity of this noble animal had taught him, that to live in the bondage and society of men, is better than savage liberty; for when he has returned to a wild state, and remained in it for years, upon meeting with his former guide, immediately on hearing his voice he has returned to his duty. On the other hand, the rhinoceros, although an inhabitant of nearly the same countries, varying equally in species, and met with by men of different nations, in the same degree of frequency, has never been brought to a civilized state; but is at this day so savage and stupid in its nature, that it cannot be tamed.

The elephant, we know from observation, as well as from the size of its brain, particularly the cerebrum, has intellect and memory; but in the rhinoceros, so small is the cavity of the cranium, that in all these respects it must be much inferior to the elephant. The capacity of the cavity of the skull of the male rhinoceros from Sumatra, two feet long, is to that of the elephant, as thirty-five ounces to one hundred and eighty-two. The length of the skull of the recent rhinoceros, brought over by Mr Campbell, is three feet; and the cavity, although mutilated, shows it not to be larger than the other. In Mr Brook's skeleton of the rhinoceros, five feet six inches high, the skull is only one foot eleven inches. His skeleton of the elephant is six feet six inches; so that Mr Campbell's rhinoceros must have been of the full size.

The skull of the horse has a capacity which, when compared with that of the rhinoceros, is to the small female of that species, nearly equal.

Skulls of the different species of rhinoceros known to exist, are preserved in the anatomical collections in this country, as well as in France. One species from Sumatra with two horns, one from Africa with two horns, and one with a single horn.

Of all these different species none have been found to possess a common share of intellect; the size of the cavity of the skull in all of them, is nearly the same; and there is no account upon record, of a rhinoceros ever having been tamed, although curiosity alone, would have been a sufficient inducement to have made the attempt, had there been any probability of success.

The following account of the manners and habits of the Asiatic rhinoceros, clothed in armour, and having the welted hide, I have taken from the young man who was its keeper for three years in the Menagerie at Exeter Change, at the end of which period it died.

It was so savage, that about a month after it came to Exeter Change, it endeavoured to kill the keeper, and nearly succeeded. It ran at him with the greatest impetuosity; but fortunately the horn passed between his thighs, and threw the keeper on its head: the horn came against a wooden partition, into which the animal had forced it to such a depth, as to be unable for a minute to withdraw it, and during this interval the man escaped.

Its skin, although apparently so hard, is only covered with small scales of the thickness of paper, with the appearance of

tortoise shell; at the edges of these, the skin itself is exceedingly sensible, either to the bite of a fly, or the lash of a whip; and the only mode of managing it at all was by means of a short whip. By this discipline the keeper got the management of it, and the animal was brought to know him; but frequently, more especially in the middle of the night, fits of phrenzy came on, and while these lasted, nothing could control its rage, the rhinoceros running with great swiftness round the den, playing all kinds of antics, making hideous noises, knocking every thing to pieces, disturbing the whole neighbourhood, then all at once becoming quiet. While the fit was on, even the keeper durst not make his approach. The animal fell upon its knees to enable the horn to bear upon any object. It was quick in all its motions: ate ravenously all kinds of vegetables: appearing to have no selection. They fed it on branches of the willow. It possessed little or no memory; dunged in one place, and if not prevented ate the dung, or spread it over the sides of the wall. Three years confinement made no alteration in its habits.

The account in the Bible of an unicorn not to be tamed, mentioned by Job, bears so great an affinity to this animal, that there is much reason to believe that it is the same, more especially, as no other animal has ever been described so devoid of intellect. In that age, the short horn might readily be overlooked, as it cannot be considered as an offensive weapon; and the smoothness of the animal's skin would give it a greater resemblance to the horse than to any other animal.

ART. XX.—*Some Experiments and Researches on the Saline Contents of Sea-Water, undertaken with a view to correct and improve its Chemical Analysis.* By ALEXANDER MARCET, M. D., F. R. S., Honorary Professor of Chemistry at Geneva. [*Phil. Trans.*]

IN a paper on the temperature and saltness of various seas, which the Royal Society did me the honour to publish in their Transactions for the year 1819, I threw out a conjecture, that the sea might contain minute quantities of every substance in nature, which is soluble in water. For the ocean having communication with every part of the earth through the rivers,