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**EDITED BY THE CURATOR,
E. C. CHUBB.**

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XX.—The White Rhinoceros,
with special reference to its habits in Zululand,

by

F. Vaughan-Kirby, F.Z.S., Game Conservator for Zululand.

WITH PLATE XXVII.

ALTHOUGH this article deals mainly with the white rhinoceros of Zululand, here and there reference to the species generally and to its habits, etc., in other parts of the Continent are unavoidable, and indeed are necessary if it is to be at all complete.

Where my conclusions differ from those put forward by others, they must not necessarily be taken as contradictory, seeing that all wild creatures are likely to modify or even entirely change certain of their habits in accordance with their immediate surroundings.

My remarks at least claim the virtue of accuracy, and the conclusions arrived at in respect of the animal specially dealt with, i.e., the white rhinoceros of Zululand, are based upon most careful personal observation.

I regret extremely that owing to an unfortunate accident which occurred during a recent expedition for securing specimens for the Durban and Maritzburg Museums, my preparations for illustrating this article with photographs were non-productive of results. I had an excellent equipment, including a complete tele-photographic outfit, but in a weak moment early in the trip it was left in the bush one evening near a dead rhinoceros, in order that assistance might be given to the natives who had to carry the hide. During the night everything was dragged out of the bush by hyænas, and although there were three or four tons of meat wherewith these wretched creatures could have satisfied their appetites, they evinced a preference for ash-wood, hickory, brass plates and screws, with the result that the whole outfit was chewed into fragments, and completely destroyed.

I shall have occasion frequently to refer to a valuable article by Mr. Edmund Heller entitled "The White Rhinoceros," published in the Smithsonian Miscellaneous Collections, Vol. 61, 1913, which I have had an opportunity of consulting.

Geographical Distribution.

At the present time Zululand is the only portion of the Sub-continent in which the white rhinoceros, is known to exist, as I understand it is now entirely extinct in Rhodesia, its one time favourite haunt.

Prior to 1900 it was not known with certainty to occur anywhere north of the Zambezi River, but in that year Major A. H. Gibbons found a skull in the Lado Enclave, on the west bank of the Nile, where he consequently procured a complete specimen. Other sportsmen have shot it there since, although there is insufficient evidence that its range in that portion of the Continent is other than very restricted. It appears to be confined to a comparatively narrow tract along the left bank of the Upper Nile, in the Bahr-el-Ghazal province. In this area and in Zululand are to be found the only living specimens in the world of this gigantic quadruped.

It may be pointed out that, on account of a slight difference in the dorsal outline of the skull and somewhat smaller teeth, the Nile representatives have been separated as a sub-species from the typical southern form, under the name *Rhinoceros simus cottoni*, Lydekker.

At one time the species ranged over a vast tract of country in South Africa, from the Vaal River to the Zambesi, and there is not wanting evidence that it once ranged far south of even the Vaal River, while to the west it extended into Damaraland. On the east coast it occurred from Zululand up to the Zambesi, above where the Shire River enters the latter from the north, and in 1904 the writer found two incomplete skulls near that spot, in the Mwanza Bush.

In the north the species appears to be very local in distribution, and there is little doubt that this was also the case in South Africa, even in the days when it was plentiful.

More remarkable, however, is the discontinuity in its distribution, as shown by the fact that no trace of the animal has ever been found between the Zambesi River and its present range in the Nile region, a distance of well over one thousand miles. Heller has pointed out that the separation between the two forms has doubtless taken place "fairly recently," because sufficient time has not elapsed "for the development of specific differences in the individuals inhabiting such widely separated localities." But how or when such separation happened, and the vast tract of country lying between the Zambesi and the Blue Nile lost its white rhinoceroses, there is no evidence to show. It seems probable that one may be misled by the absence of specific differences into supposing that the separation took place

much more recently than has actually been the case, because there is no doubt that long periods of time are necessary to bring about important changes in old and fixed types, such as rhinoceroses are.

In Zululand, at the present day, the white rhinoceros is to be found only in the Mfolozi Game Reserve, which is situated between the two Mfolozi Rivers, the White on the south, and the Black on the north, and in a narrow strip of country along the south bank of the former river. The area included within the Reserve is about 75,000 acres, and that to the south of the White Mfolozi about another 15,000 acres.

From time to time evidence has been adduced which indicates that there may be a few of these animals, probably not exceeding five or six in number, in the dense bush at the north end of False Bay, but I have never yet been able to confirm this. Owing to the indiscriminate manner in which the natives apply the term "'mkombo" (actually the White Rhinoceros) alike to the white species and to *any large full-grown bull* of the black, a great deal of misunderstanding at one time existed as to the actual localities in which the former was to be found. When I first came to Zululand I was informed not only by the Provincial Administration officials but by the Magistrate of the Division concerned, and by the native Game-guards, that the "'mkombo" was plentiful in the Hluhluwe Game Reserve, situated to the north of the Mfolozi Reserve. Personal observation during an extended patrol in the former convincingly proved that the white rhinoceros did not exist there at all, and the error was explained when, upon one occasion a large black rhinoceros bull was encountered at very close quarters, and my Game-guards at once said "there you are, there's an 'mkombo." The fact is that none of those particular men who were with me at the time had ever seen a white rhinoceros, but had fallen into the habit of applying the word, which really signifies the white species, to large bulls of the black. When subsequently they were shown, first the different nature of the dung, and afterwards the animals themselves, they realised the extent to which their previous reports had been misleading.

Mr. Edmund Heller when describing the geographical range of this species falls into an error. He writes: "In the south there are a few (some ten individuals) strictly preserved on an estate in Zuzuland (sic) where they live under fairly normal conditions." He may rest assured that he has not *over-estimated* the number of white rhinoceroses on this little "estate," and that the animals are living under conditions which are practically as normal as those which obtain on the Nile.

Preservation.

It has already been shown that at one time the white rhinoceros ranged over an enormous tract of country in South and South Central Africa, wherever extensive grass-lands were to be found to supply its natural food in sufficient abundance. But writing as far back as 1894, before its existence was ascertained in the Nile region, Mr. R. T. Coryndon, when recording that the subject of the extinction of this species had a "melancholy interest" for him, gave it as his opinion that "long before the close of this (the 19th century) the white rhinoceros will have vanished from the face of the earth."* There can be no question that but for the discovery of its existence in the north, and the wise forethought of successive Natal Governments in prohibiting its slaughter in the south, these fears would have been confirmed. No praise therefore can be too great to accord to former Natal Governments, and since Union, the Provincial Administrations, for their action in saving this interesting creature from destruction; and all true lovers of Nature owe them a vast debt of gratitude for the fact that so far as this little corner of South Africa is concerned, Mr. Coryndon's melancholy prophecy failed of fulfilment.

General Description and External Characteristics.

Rhinoceros simus, the species under consideration, has had no less than five different names applied to it, viz.: Burchell's, the Square-lipped, the Square-mouthed, the Square-nosed, and the White Rhinoceros. The first of these is for many reasons unsatisfactory, and though either one of the next three is the most accurately descriptive, yet the terms are clumsy to a degree, and the writer has therefore adopted the inaccurate, but far better known appellation of White Rhinoceros.

It is the largest of the group, and is well differentiated from the other African species—the Black Rhinoceros, *Rhinoceros bicornis*—in the structure of the mouth, the upper lip of the former being square and bluntly truncated, whereas in *bicornis* the upper lip is more or less pointed, elongated, and highly prehensile.

The head of the white rhinoceros is immense; its great length being due to the remarkable occipital projection of the skull.

The eye is placed behind the posterior horn, while in the black species it is immediately below it.

* Proceedings of the Zoological Society, London, 1894, p. 329.

Again the shape of the ear-conches is markedly different in the two species, being much rounded in the black, and having their outer edges very hairy, whereas in the white the very large ear-conches are much elongated and pointed, with a few bristly, stiff, and somewhat curly hairs at the extreme tips. In the latter species also the lower edges of the conches meet to form a sort of tube.

Other external characters which at once attract the attention of the observer, in addition to the length of the head and the shape of the muzzle, are the huge muscular hump on the nape of the neck, and the comparative paucity of hide folds on the body, which are far less conspicuous than in the black species. There is a fold behind the elbow, less conspicuous in some positions of the body than in others, and one at the back of the thigh, below the buttock. A heavy fold passes transversely over the elbow joint, and completely encircles the outside of the fore-limb; it is well-marked in any position assumed by the animal, and as much so in calves as in adults. A short but heavy transverse fold passes over the nape of the neck, and a longer, but less heavy one encircles the throat. The conspicuousness or otherwise of these two folds depends upon the position in which the animal carries its head. When this is raised in alert watchfulness the neck fold is well-marked, while that under the throat is less so, but when the head is lowered in the manner so characteristic of the animal, the former becomes much flattened out, and the latter correspondingly increased in size.

Yet another character which the white rhinoceros shares in common with all other living species is the flattened, compressed ridge of hide which stands out along the front edge of the thigh, and is of considerable thickness.

The circumference of the spoor of three white rhinoceros bulls taken in damp hard sand were 31, 33 and 35 inches respectively, that of the black species under similar conditions is about 26 or 27 inches. In both species the spoor of the hind-foot, is smaller and more oval in shape than that of the fore-foot, but there is considerably less difference between the relative sizes of fore- and hind-foot spoor in the case of the white than in that of the black.

Upon the question of size, both actual and relative, it may be said that great differences of opinion exist, but at the same time it is quite clear that this ought to be a matter of *fact* and not opinion. If careful measurements were always taken, in a uniform manner, and absolute accuracy aimed at, there would be no room left for mere expressions of opinion, but, unfortunately, there has always been a remarkable lack of uniformity in the methods employed for measuring

animals, and it is to be feared that the necessity for absolute accuracy has not always been borne in mind. Although I have met with innumerable instances of this, I would perhaps have hesitated to call into question the accuracy of measurements recorded by other fine sportsmen, but for the fact that since this article was roughly drafted I have had an opportunity of perusing Mr. Edmund Heller's work upon the white rhinoceros of the Nile region. And I find that the conclusions arrived at by that obviously careful naturalist so exactly correspond with my own upon the subject of the size of the white rhinoceros, that I have no longer any hesitation in putting forward ascertained facts, in order that some of the present misunderstanding may be swept aside.

Much stress has been laid upon the alleged statement that the white rhinoceros is, after the elephant, the largest of living terrestrial mammals, having been said to attain a height at the shoulder of 6 ft. 9 in., i.e., only 2 ft. 9 in., less than a fair average-sized elephant. Now the writer is fully prepared to admit that with its huge bulk, its greatly elongated head, and enormous muscular development of the fore-arm, it appears when seen in the veld, incomparably larger than the black rhinoceros. But it will surprise many to learn that after all the average height of a white rhinoceros bull exceeds an average specimen of the black species by less than a foot.

Mr. Heller writes of the former, "In size this species (*R. sinus*) exceeds but slightly, if at all, the great Indian single-horned species (*R. unicornis*) and but little the black African species." And again "The superiority in size of the white rhinoceros over the other living species, however, is not at all well established."

Now to proceed to data. We find that in the Proceedings of the Zoological Society of London, 1881, page 726, the late Mr. F. C. Selous gives the standing height of the white rhinoceros as 6 ft. 6 in.; Cornwallis Harris gives from 6 ft. 6 in. to 6 ft. 8 in., and R. T. Coryndon states that the two bulls which he shot in Mashonaland, one for the British Museum and the other for the Tring Museum, measured 6 ft. 6 in. and 6 ft. 9 in. respectively.

It will be admitted that a mounted specimen will show at least a height equal to that of the animal in the flesh, and usually something over, and yet the last two specimens above-mentioned measured by Mr. Heller when they were mounted, give heights of 5 ft. 10 in. and 6 ft. 2 in., a difference of 8 in. less in the one case, and 7 in. less in the other between the flesh measurements as given and those of the mounted specimens. In addition to these two, Mr. Heller measured

seven other mounted specimens, the largest of which gave a standing height of 5 ft. 8 in., while the largest *skeleton* measured by him gave a height of 5 ft. 9 in.

The two animals secured by me recently for the Natal Museum, Pietermaritzburg, and the Durban Museum measured, in the case of the bull, 5 ft. 10 $\frac{1}{2}$ in., and of the cow, 5 ft. 9 $\frac{3}{4}$ in., the girth of the former being 115 $\frac{1}{4}$ inches, and of the latter 112 $\frac{3}{4}$ inches. The bull, mounted, gives a standing height of 6 ft. and the cow, 5 ft. 10 inches. Now these were picked specimens, and as far as I was able to judge, were two or three inches over the average, this certainly was so in respect of the cow, while as to the bull, eleven large ones were examined at quite close quarters, before one was met with which was considered larger than those previously seen. I am therefore in complete accord with Mr. Heller, who sums up his conclusions in the following words:—"It is extremely doubtful if the square-nosed rhinoceroses ever exceed a standing height at the withers of 6 feet."

Referring to the comparison which has been made between *R. simus* and *R. unicornis*, the Indian species, there can be little doubt as to the superiority in size of the latter.

Rowland Ward, in his third edition of *Records of Big Game*, 1899, gives the measurements (presumably averages) of the Indian species as 5 ft. 8 in. to at least 6 ft. at the shoulder and girth 105 inches.

But he also gives measurements of three mounted specimens shot by H. H. the Maharajah of Kuch Behar, which are as follows:—

Shoulder height.....	6ft. 4 $\frac{1}{4}$ in.....	6ft. 1in.....	6ft. 0 $\frac{1}{2}$ in.
Girth.....	119in.....	112in.....	—

The colour of a normal individual of the "white" species is really very little lighter than that of the so-called "black rhinoceros," and it is fairly well-known at this time that neither is black and neither white. The shade designated "light mouse grey" in Ridgway's "Colour standards and Nomenclature" appears to me to best describe the normal colour of the white rhinoceros, darker individuals amongst them corresponding in shade with the "mouse grey" of the same authority. But, on the other hand, individuals may be met with in Zululand which by the same colour standards might be described as ranging from "drab" to "cinnamon drab."

When standing on a ridge exposed to the slanting rays of the morning sun they look absolutely white, and as these animals would have been first encountered by the early Dutch hunters on the open grass downs of the Vaal and Orange Rivers, and would thus be frequently seen under such conditions, it is possible that its present familiar, though inappropriate, name thus arose.

Character and Habits.

All species of rhinoceroses have certain characteristics which they share in common, these being sluggishness, a low order of intelligence and, generally, timidly of disposition, though the black African species often becomes extremely savage when attacked.

The white species is a very stolid, phlegmatic creature, nervous to a degree, without the truculent aggressiveness of the black, and but a fraction of the latter's curiosity.

I consider the white rhinoceros a far less intelligent creature than the black species: curiosity surely denotes a certain amount of intelligence, but it has always appeared to me that the former never displays the slightest curiosity, he takes things as they come, and does not seem to worry about anything, being too lazy to permit himself to be worried.

The question whether certain animals will attack, and under what circumstances they will do so, is one which has aroused considerable interest and not a little difference of opinion. It will probably be conceded that only the testimony of those who have had a wide experience of the animals they write of is of any real value in deciding the question. For instance, a man who has shot perhaps two or three lions in his time, neither of which showed fight, is apt to look upon *Felis leo* as being a pusillanimous creature, while he who has only bagged one, and was charged by it, would probably give it a very different character. Moreover, it is difficult to judge by the behaviour of an animal under one set of circumstances what another of the species might do under similar or other circumstances.

Although I have had wide experience in various parts of Africa with elephant, lion, buffalo, and black rhinoceros, I do not consider that the fact of having shot half-a-dozen white rhinoceroses qualifies me to speak with any authority upon the proneness or otherwise of the latter to attack.

I have stated that I do not consider my experience of the white rhinoceros *when wounded* to have been sufficient to warrant an expression of opinion as to their aggressiveness or otherwise under such conditions, but I have seen a great deal of them in their wild state, when not attacked, and at close quarters, and I assert without fear of contradiction, that with but very few exceptions, they are amongst the most inoffensive of beasts. Of the six which I have shot, only one ever made the slightest attempt to charge, and that was the

bull secured in the Reserve last winter for the Natal Museum. He was certainly a most savage dispositioned creature, for he made a very vicious attack when unwounded.

In a more or less sweeping manner, the statement has been made, and thoroughly believed, that the black rhinoceros is an exceedingly savage beast, a perfect "devil incarnate" in fact, that charges upon little or no provocation, while the white species is harmless and inoffensive. I do not at all agree with this sweeping denunciation of the black rhinoceros, and, while admitting that it frequently acts in an uncontrollably savage manner when wounded, and even when unwounded will charge most viciously if surprised at close quarters, I am certain that a large percentage of cases recorded of the animal charging, when itself unwounded, and not interfered with, are either much exaggerated or have been misunderstood. The exaggeration is not intentional perhaps, but is indulged in by those who believe they have related the circumstances accurately, and have only erred from want of wider experience of the creature's habits. Nervousness, lack of intelligence, and extreme curiosity (in both sexes) have a great deal more to do with the apparent truculence of the animal than natural aggressiveness.

It is well-known that a black rhinoceros will invariably advance towards a person or object that he is not able to make out properly, sometimes coming to very close quarters. This, in the writer's experience, the white rhinoceros never does.

The white rhinoceros is apparently of a far more sociable disposition than the black species, as it is frequently to be met with in parties of five or six in number, but if these are disturbed, it will be noticed that they usually separate and go off in different directions, two or three together, indicating that their being together was a more or less fortuitous circumstance, perhaps due to the discovery of some mutually satisfactory bit of grazing. It is, however, more usual to meet with a pair, or a family party of three or four. The latter would include an adult bull and a cow, a large calf, probably three parts grown, and a young animal six or eight months old. The writer has never met with two adult animals of one sex together, as he has frequently seen in the case of the black species, but a cow and calf without the bull are often seen together, and there are two or three bulls, solitary creatures, in the Reserve.

White rhinoceroses in Zululand (the following remarks will be understood to refer to this animal *in Zululand*, unless otherwise indicated) prefer a mud bath to bathing in clear water, though whether that is

due to the "brak" nature of all the water in the Reserve is not clear. But no mud-hole in the vicinity of their haunts will ever be found in which signs of recent wallowing by these huge creatures will not be obvious. On the other hand, their drinking places at clear streams very seldom bear any trace of their having bathed there. They may, however, be frequently seen without any mud at all on any part of their bodies, so it is quite certain that the wallowing in mud is not a regular part of their toilet. When mud covered they are weird-looking objects, as the colour of the mud differs in various localities, and as it only adheres in places, broad dark cracks are visible over the surface, and large irregular-shaped patches from which the mud has fallen off when dry, or been scraped off by the bushes.

On my recent collecting trip a young animal of perhaps six years old was found wallowing in a particularly glutinous and odoriferous mud-hole. Our attention was drawn to the spot by occasional low grunting sounds proceeding therefrom, sounds best described by saying that they exactly resembled the low grunts emitted by an old male baboon, and at first we believed they were so made. Stalking in cautiously up wind we came upon this young "'mkombo" in the act of rising from the mud, his hind quarters at the moment being submerged, while he rested upon his fore-quarters, and a more ludicrous object it would be difficult to imagine. As we were able to approach to a distance of not more than 10 yards the chance of getting a photograph was unique, but unfortunately the writer's photographic outfit was out of action. Upon emerging from his wallow, the animal ascended a low bank where it stood for some three or four minutes, occasionally turning its head to one side or the other, then it disappeared behind a thick screen of bush. It had been absolutely unconscious of my presence and that of my five native attendants, notwithstanding that I was several times on the point of exploding with laughter at the comical figure, and it seemed that the efforts to suppress it must have been audible to the animal, and doubtless would have been but for the mud in its ears. We afterwards crept round the lower side of the mud-hole and through the bush screen and found that the animal had not gone more than 20 yards, and was standing under a large fig-tree. Once or twice it looked directly at us, but evidently without making us out, and after about quarter-of-an-hour it lay down and we left it in peace.

The white rhinoceros usually drinks between midnight and 6 a.m., though I have seen them drinking at various times between 8 and 10 a.m., and it never appeared that the weather conditions had anything

to do with it. In the late afternoon they feed their way down to their drinking places, which, except in very dry seasons, when only one or two water-holes are available, are very seldom visited by the same animal on two successive occasions. If the water-holes are in narrow stream-beds the animals will wander up and down such places in the damp sand for an hour or more, for no object that the writer could ever fathom, but if they drink at one of the large rivers, such as the Black or White Mfolozi, they go straight to the water's edge, drink, and move direct back again to the bush. The reason for this is obvious, the smaller streams such as the Ugcoye, Nobiya, Mpafa, and others run between narrow, steep banks, and the animals can wander there at will, completely hidden by the high banks from the sight of possible enemies. But in the case of the larger rivers the bush seldom comes down to the water's edge, there being a broad strip of open sandy ground between it and the river, upon which, if the animal were to loiter, it would be in full view from either side of the river if there were any light whatever.

On one occasion I watched at one of the Ugcoye water-holes upon a night when there was a young moon, but the latter had set before a rhinoceros came down to drink, and it was then quite dark, and although an examination of the spoor in the morning proved that the animal had been but twelve yards from me, it was impossible to make out any shape whatever, it merely loomed as a dark formless object. Seen in good moonlight, it may be mentioned, the white rhinoceros appears really white, more so than in strong sunlight. The above-mentioned animal drank quietly but very deliberately for, it was judged, eight or ten minutes; and before leaving, the water was heard to be violently agitated, though whether by the act of pawing or a movement of the head could not be determined.

After drinking they make off in the direction of their feeding grounds which are usually at a great distance, they sometimes indulge in a few mouthfuls of food if there is any by the drinking-holes, but they then travel straight away, seldom grazing on the way till they have covered at least three or four miles.

White rhinoceroses feed up against the wind, moving slowly, and swinging their great heads from side to side as they mow down the grass, and where the latter is short the marks where the chin has rubbed along are plainly discernible, and occasionally those of the horn.

As the hours pass on towards daylight, they draw nearer to the spot where they intend to lie up for the day, but if the weather is warm they seldom feed much after about 9 a.m., when they move to a

shady tree or patch of bush, and there they will stand for an hour or two, with their heads lowered and scarcely any sign of movement, save the constant flicking of the long ears, round which the biting flies, which worry them incessantly, congregate. They may then move off again for a short distance, seldom more than a few yards, or lie down on the spot where they have been standing. Sometimes they lie down on their sides, at others they sit up with their legs doubled under them. They will also rest and sleep when standing, and in either position are absurdly easy animals to approach, though particularly so when lying down; in fact, with the exception of the elephant no other species of wild game can be so easily approached.

As to choice of place and surroundings, they appear to have none, and I have seen them lying during the scorching midday heat on open shadeless flats, in low scrubby bush scarcely 2ft. high, with the blazing sun pouring down upon them: and I have found them far in the darkest recesses of the thorn jungles, into which it is difficult to make one's way. They are never found at rest on rocky kopjes however, nor can an instance be recalled of finding them sleeping on high open ridges; the former can be understood, as they are not partial to rough ground as are their back congeners, but the high ridges, open to the wind and dotted with fine shade trees would seem to be ideal spots in which to seek refuge from the ever annoying flies.

A single animal almost invariably lies down with its head to the wind, and if two or three are together, one of them assumes such position: during last winter we found four of them one day lying in the sun, in long grass, on the sheltered side of a long valley, and right on the edge of a thorn jungle. The positions adopted by them were most singular, as they lay in the form of a cross, all with tails in and heads outwards, and when we put them up they literally tumbled over one another in their efforts to get away from danger, the direction of which was not at all clear to them.

In rolling country, such as forms the greater portion of the Game Reserve, they seem to always choose the side sheltered from the wind, and in the majority of cases in which such a spot is selected for their noonday rest, there will be found an extent of dense bush close at hand.

It has always appeared to me that the white rhinoceros of Zululand is a more decidedly bush loving animal than it is elsewhere; some of the streams are fringed with stretches of very dense bush, inside of which the ground is always moist and the air cool, and while it seems quite the correct thing to find buffalo congregating there, and any number of bushbuck, it appears altogether incongruous to meet with

white rhinoceroses in such places. Nevertheless these animals pass a very great deal of their time in these localities, and very often lie up for the day in them.

There are large tracts in the Mfolozi Game Reserve covered with a particularly wicked form of vegetation known to the natives as "ihlehle" thorn: it is a species of cactus, armed with cruel spikes, and as the growth is of a very brittle nature, large pieces are constantly knocked off by passing game, and by those which actually feed upon it, such as kudu, bushbuck, baboons, etc. Thus the narrow game-paths through these jungles become strewn with the spikes, and bare-footed natives suffer severely in consequence. Wherever these jungle tracts are found, it is certain that the majority of the white rhinoceroses in the vicinity will be met with during the day sleeping far inside them, in the darkest and most inaccessible parts, to which silent approach is almost an impossibility even when the creatures' guardian angels, the "Rhinoceros birds" (*Buphagus erythrorhynchus*: Red-billed Oxpecker) are not in evidence.

It is well-known that there is considerable difference between the dung of the black and that of the white rhinoceros, and also in the manner in which it is deposited. That of the former species is always placed in large heaps, and after depositing it the animals scrape and scatter it about either with their horns or hind-feet. As they feed upon twigs, bark, and the green shoots of thorn-trees the dung is reddish-brown in colour, and is thus easily distinguishable from that of the larger species, consisting as this does entirely of grass, and being of a greenish colour when fresh, similar to that of zebras. Although the white rhinoceros does not systematically deposit its dung in heaps, and never afterwards disturbs or scatters it, I have remarked that as often as not this animal *does* visit one spot over and over again for the purpose, and though in some cases I have obtained proof that these heaps have been made by one animal, I am not prepared to state that one such place is not visited by a number of different animals.

An unusual fact, or one that does not appear to have been recorded from elsewhere, has been noticed in connection with such deposits in the Game Reserve. At one spot, not 50 yards from one of my camps, in the middle of an opening in the bush, there was a very large "dumping ground" consisting of a hollow scooped out in the sandy soil, roughly oval in shape, and about 11 feet in length by 7 feet in width. Whether the hole had been made by the animal itself or by some other creature it was impossible to determine, but at all events the hole was there, and was about 2 feet deep, and in it had been deposited

the droppings of one or more animals during a period of probably two or three months, in fact a white rhinoceros had visited the spot the morning of the day upon which we pitched camp there. In another place on a hog-backed ridge running off from the Imbulungu Hills, four similar, though shallower, basins had been scooped out, roughly about 8 yards equidistant from each other, but in distinctly harder soil, and these had been visited many times by white rhinoceroses. During the week we spent at a camp near by, only one of these holes was used, and on each occasion by but one animal, the only one in the immediate vicinity, a solitary bull.

On the other hand, their droppings may be found in all manner of different places, on ridges, in valleys, in dense bush, where no hole has been made or previously made hole used, and where the places have not been re-visited. On a high open ridge running south from the Amantiyane Hills an area of ground some 20 or 30 yards square was covered at quite close intervals with heaps of white rhinoceros dung.

Although never able to detect anything but grass in their droppings, I have wondered whether perhaps these animals sometimes eat the "ihlehle" cactus leaves, because they undoubtedly do assimilate a certain quantity of leaves of low-growing ground plants which they take in their mouths along with the grass.

The black species eats the ihlehle greedily, as also do buffalo, kudu, bushbuck, and bushpigs.

White rhinoceroses, like all other game animals are very partial to the young grass which springs up after the old grass has been burnt off.

Although their spoor was frequently met with on freshly burnt ground, yet I never saw any indication of their having rolled in the ash, as the black species delights to do.

Their powers of sight are extremely limited, so much so that at 100 yards it is very questionable whether a slowly moving object can be seen by them, and this feebleness of sight is quite apart from a certain amount of obstruction of vision due to the position of the anterior horn. At 50 yards even they are unable definitely to make out a slow moving object, such as, for instance, a person stalking towards them, stooping when in the open and occasionally hidden behind bushes.

Stationary objects must be between 25 and 30 yards distant before the animal can plainly distinguish them, but with ordinary care, and provided that the animal has not recently been disturbed, it is really a very simple matter to approach them to even less than 20 yards.

To compensate them for this defective power of sight they possess a wonderfully acute sense of smell, and under favourable conditions can wind a person at a distance of fully half-a-mile. And it is entirely to this acute sense that the animal trusts to warn it of enemies, and when annoyed and irritated by the suspected presence of danger from below wind, as for instance when its feeble vision detects objects close at hand, but its sense of smell fails, owing to the direction of the wind, to confirm its suspicions, the animal becomes utterly bemused and nervous. Presumably it fears to bolt off, lest there may be danger elsewhere than at the spot at which its weak eyesight has led it to suspect it, yet one would imagine that it would rely entirely under such circumstances upon its sense of smell, and move off at once up wind.

A black rhinoceros thus situated would at once advance towards the object of its suspicion, but not so the white, which shuffles its feet about, alternately raises and lowers its head, twists and untwists its tail, gazes from one side to the other, while all the time its ears are energetically worked about, and generally displays the upmost nervousness. At last these nervous actions cease, the head is raised, and for a few seconds the animal stares hard in the direction of the suspected danger, then wheeling round it trots off at a sharp pace.

The sense of hearing, while considerably less acute than that of scent, is greater than their powers of vision. On my recent collecting trip I was approaching a single rhinoceros, and was accompanied by four natives. My object was to secure a photograph, but as I only had a Vest-Pocket Camera, with an excellent, but short focus and very wide-angle lens, it was necessary to approach the animal to at least a distance of 20 yards. When still fully 60 yards from the animal, I withdrew the camera from its case, handing the latter together with my rifle to one of the natives, who in receiving them, stupidly dropped the leather case, which fell with a hollow sound on to an emerged tree-root. Glancing at the rhinoceros, I saw it raise its head instantly, turn half round, and face the party, the sound having been clearly heard by it, in fact its suspicions had been so aroused, that before we had covered another ten yards, the animal made off, followed by three others which had previously been hidden by a thick grove of trees. At a distance of about 25 yards a white rhinoceros bull most obviously detected the sound of the opening and closing of a camera shutter, because the animal, which had previously been standing broadside on, at once, at the click of the shutter, swung round and stared hard in my direction.

When one is following them through thick bush there is no doubt that they distinctly hear the sounds of breaking sticks, and the scraping of bushes on one's clothes, and yet with only ordinary caution they can be closely approached under these conditions. This is probably because such movements and sounds are of common occurrence in these places, where other creatures than themselves are on the move.

It has always appeared to me that they, in common with other wild game, are able to differentiate between natural, or usual, sounds and those which are unusual. For instance, if one is following them up as above described and sticks are unavoidably broken under-foot, or bushes noisily displaced, the animal when met with will be more or less alert, its ears cocking at different angles and seldom still for five seconds together, but if no unusual sound reaches him he will not decamp. You may tread on sticks or scrape past bushes in quite noisy fashion without causing the animal to become other than mildly alert, but if you are so careless as to carry a knife slung at belt and to let it come in contact with your rifle, or to allow a twig to jerk back and rattle against your camera-case well, *R. simus* will await no further developments, but move off, and you can then sit down and smoke, the while you reflect upon the paradoxical intelligence of the unintelligent rhinoceros.

Supposing such unusual sounds are above indicated occur when you have already approached so closely in the thick bush that the animal has become dimly aware of your presence, he will not bolt at once, but, if facing away from you, he swings round actively enough, staring hard in your direction, in which position, unless you are armed with some very differently constructed camera to that which I use, with its complexity of movements, there is very little hope of making an exposure.

It is supposed that you are perhaps 20 feet distant from the animal (at any further distance he would not be visible in the surrounding bush) that is, close enough for your every movement to be clearly discernible, thus precluding all possibility of manipulating the camera, in addition to which the chances are that although the great beast is almost at arm's length from you, all you will see will be two or three patches of grey, a flicking ear and a dark mass which looks like a tree stem, but which you know is the anterior horn, the whole harmonising so completely with the surrounding grey shade, that even these are most difficult to make out.

The white rhinoceros shares with the elephant a perfectly marvellous adaptability for getting away, even in the densest cover, with almost uncanny silence. The writer recollects upon one occasion getting up to about 20 yards from the nearest of a little troop of a dozen or 15 elephants in thick cover. They stood with uplifted trunks "feeling for the wind," three or four of them offering quite easy shots if only it had been possible to see their tusks. Having already secured three from the main herd to which this little troop had belonged it was desired to kill only the best animal of these, but all the creeping and dodging about failed to discover the one which was wanted. Chancing to take my eyes off them for an instant, upon looking up again they had vanished, gone like morning mists, and as silently, all those huge creatures had passed out of sight without the slightest sound. And the white rhinoceros is equally adept at performing this vanishing trick.

When approached from below wind in more open country, it will probably be found standing with lowered head, its nose almost resting on the ground, but occasionally it will be raised, and turned uncertainly from side to side, not with the nervous jerky action peculiar to the black species, but in a ponderously deliberate manner. When satisfied that danger threatens, the animal wheels round and makes off at a swinging trot, its tail screwed tightly above its back. It usually goes a couple of hundred yards or so up wind, twisting and turning in and out amongst the bushes very smartly, and then generally pulls up, standing with its head in the direction previously taken, and, if followed up, will repeat the performance, till finally when his dull senses assure him that he is being persistently followed, he will break away at a sharp gallop for a hundred yards, then slowing down to its normal trot, will not halt again until it has put many a mile between itself and the object of its alarm.

The white rhinoceros is very much less active than the black, and more deliberate and heavy in every movement, the only action which it appears to perform smartly is that of getting on its feet from a lying down position, and it is really wonderful how quickly that is done.

The writer has never met with these animals high up on rocky hills, such as the black loves to clamber about upon, nevertheless, when put to it, they can negotiate uncommonly steep and rocky places with agility. They travel about amongst the foot-hills, however, here and there ploughing up long furrows with their horn as they walk along.

The habitats of the two species do not overlap, or at least not to any extent. In one spot only have I met with the dung of the black species within the range of the white's habitat, and upon another

occasion when passing through the latter about midnight, I and the party of natives accompanying me were held up by an aggressive black rhinoceros.

The two species, however, seemed to have mingled together in former days in their old haunts in Rhodesia, but it is noted that Heller remarks that in the Nile regions neither encroaches upon the habitat of the other.

They are frequently accompanied by the "Tick-birds" (*Buphagus erythrorhynchus*) and sometimes by the Buff-backed and the Little Egrets (*Bubulcus ibis* and *Herodias garzetta*). The former scramble about all over the huge animals, exactly as they do upon cattle, and as they are particularly wide-awake birds it is very difficult to approach their host when they are present, as they invariably set up a loud screeching, and in that way and by running rapidly about over its head, sound a warning of which even this dull-witted pachyderm never fails to avail itself. The egrets sedately follow up the rhinoceroses as they move, and may frequently be seen taking ticks from under the animal's belly. In reward for these services they get many a joy-ride on his back.

Burning stretches of grass within the range of their habitat in the Game Reserve appears to cause them some annoyance, and they usually repair to some other locality for a couple of days, after which they return and wander about over the burnt ground without any sign of alarm. Usually they are not alarmed at grass-fires, but it is possible that in Zululand, the knowledge that their range is comparatively restricted, may account for the fact that these fires cause them considerable temporary annoyance.

The late Mr. Selous states in one or other of his most interesting works that he has never met with a case of an adult rhinoceros perspiring, although the young calves do so most freely. I have, however, met with cases of the adults perspiring quite as freely, the black more so than the white, and mainly about the neck and flanks.

After the statement made by the above authority I would hesitate to record otherwise, but for the fact that I am so certain about this. The black rhinoceros cow, for instance, which was shot in the Hluhluwe Game Reserve last winter for the purpose of securing the calf, was covered with perspiration about the neck and flanks, and this was noted by the writer and his friends who accompanied him.

The only sounds which I have ever actually seen a white rhinoceros in the act of making are a loud snort or sniff, made when the animal comes upon some object the nature of which is foreign to him, and

loud grunting squeals made by a dying animal. The former has been heard upon several occasions when white rhinoceroses have come close to my camps, from below wind, in the night, and the latter I have heard made by wounded animals.

Reference has already been made to grunting sounds proceeding from a spot where an immature rhinoceros was wallowing, and that although upon our approaching closely and watching it, it was not seen to make any sound, yet both I and the natives who were with me believed that those we had heard so distinctly proceeded from that particular animal. At the same time, it must be admitted that there are large numbers of baboons in that part of the country, and it is just possible that a solitary male of that species might have been down at the mud-hole, and uttered the grunts as it moved off, and it will be noted that at the time, and before sighting the rhinoceros, we believed it *was* a baboon.

The white rhinoceros is an easily killed beast, as indeed is the black, and succumbs quickly to a shot through the upper portion of the heart or through both lungs. In the latter case it is essential that the bullet shall penetrate the two lungs, otherwise if only one is touched the wounded animal will travel for ever, and it is very little use trying to follow one so hit.

We have very little reliable information concerning the breeding habits of the white rhinoceros, and such as we do possess has caused considerable divergence of conclusions.

The generally expressed opinion is that it breeds very slowly, but Heller, basing his conclusions upon the evidence gathered on the Smithsonian Nile Expedition, opines that the reverse is the case, and it would seem that he had strong reasons for so thinking. In Zululand there is no doubt that this animal breeds very slowly, and this opinion was held by the late Mr. Selous in respect of the animals in Rhodesia.

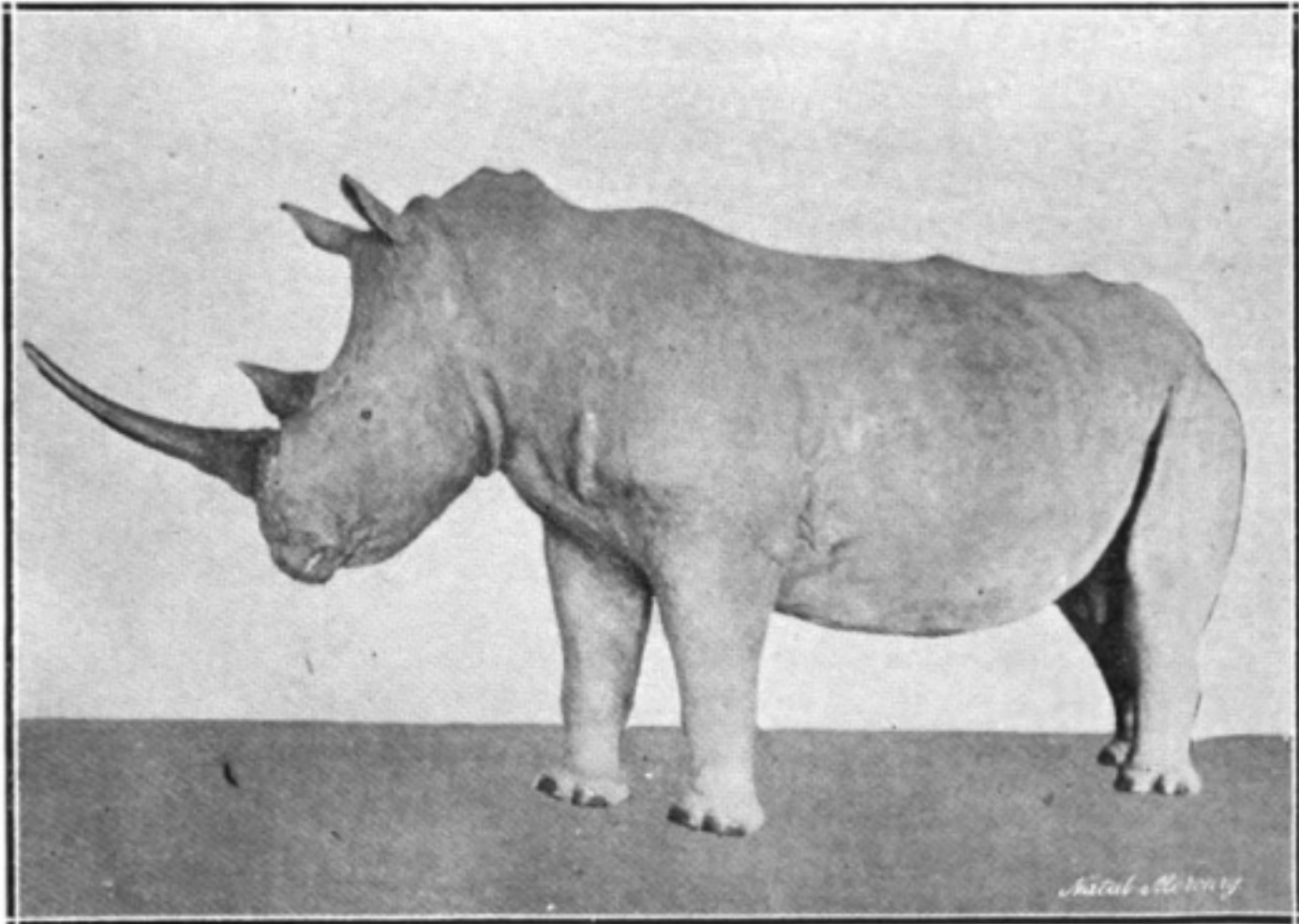
Heller points out that in the Nile region "the adult female is seldom found without a calf." This condition also obtains in Zululand. But as in the latter case these calves are invariably animals of fully four years old, and there is no younger animal running with the parent, it may be assumed that a period of at least four years elapses between the birth of one calf and that of the next. And this appears to be borne out by the conditions under which I have occasionally seen two calves with the mother, the elder of the two being an animal, as I should judge, of between four and six years old, and the younger less than a year.

I am disposed to think that the native report to the effect that the female rhinoceros of this species hides its young in dense cover for some time after birth may be true. Certainly I have never seen a very young calf, that is to say less than two to three months old.

Careful observations lead to the conclusion that the young may be born at any time of the year, and that there is no particular calving season.

It has always appeared to me that the female white rhinoceros evinces very little concern for its young after the latter is three months old or so, the concern seems mainly to be exercised by the young animal itself, and when danger has been located and the adult animals make a bolt for it, the ungainly youngster very promptly places itself in front of its mother, a position it retains, guided by the latter's horn against its flank, no matter how intricate the twists and turns through the bush or how variously the pace may be accelerated or reduced.

A brief reference to the native nomenclature of this rhinoceros may not be out of place. I have elsewhere shown that the word in general use in S.E. Africa for this creature is "Umkombo" (or as pronounced, "'mkombo") but that large adult males of the black species are frequently referred to by the same name. I have, however, been recently informed by Mr. Oswald Fynney, Resident Magistrate for the Ndwandwe Division of Zululand, a very clever native linguist, that when natives who *know* the white rhinoceros wish to refer to it in a manner which shall leave no doubt in the listener's mind as to which species is indicated, they use the word "Umkava," usually abbreviated to "'mkava." Personally, I have never heard this word used, even by the game-guards who have been in charge of the Mfolozi Reserve for years, but it is interesting to know that, if my memory serves me, the Matabili people call the animal "'mkofo," which bears distinct resemblance to "'mkava," if it be taken into consideration that the relative pronunciations of the "f" and "v" in the Bantu language are often difficult to determine.



Block lent by "Natal Mercury."

White Rhinoceros (female) from Zululand,
presented to the Durban Museum by William A. Campbell, Esq.
The horn measures $28\frac{3}{4}$ inches along the curve.