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THE LIFE-HISTORY OF THE AFRICAN RHINOCEROS AND HIPPOPOTAMUS

BY THEODORE ROOSEVELT

ILLUSTRATIONS FROM PHOTOGRAPHS, AND FROM DRAWINGS BY PHILIP R. GOODWIN

THE HOOK-LIPPED RHINOCEROS



THE black, or common African rhinoceros was fairly plentiful in most parts of East Africa which we visited; there were stretches of territory, however, in which we found none, as for instance on the Uasin Gishu. Why the species was absent from these places I can not say, for elsewhere we came across them in all kinds of country. They were found in the dense, rather cold forests of Mount Kenia; they were found in the forest country near Kijabe; they were common in the thick thorn scrub and dry bush jungle in many places; and in the Sotik and along the Guaso Nyiro of the north, as well as here and there elsewhere, they were to be seen every day as we journeyed and hunted across the bare, open plains. "Plentiful," is, of course, a relative term; there were thousands of zebra, hartebeest, gazelle, and other buck for every one or two rhinos; I doubt whether we saw more than two or three hundred black rhinos all told, and I do not remember seeing more than half a dozen or so on any one day. Probably they were most abundant in the brush and forest on the lower slopes of the northern base of Kenia, where, however, they were hard to see. They prefer dry country, although they need to drink freely every twenty-four hours.

Apparently the cow does not permit her old calf to stay with her after the new calf is born. I never saw a cow with two calves of different ages (or, for the matter of that, of the same age); yet many times I saw a cow followed by a half-grown, or more than half-grown, beast that must have been several years old. Generally

we found the bulls solitary, and the cows either solitary or followed by their calves. Occasionally we found a bull and cow, or a bull, cow, and calf, together. There is no regular breeding-time; the calf may be produced at any season. It follows its mother within a very few days, or even hours, of its birth, and is jealously guarded by the mother. When very young any one of the bigger beasts of prey will pounce on it, and instances have been known of a party of lions killing even a three-parts-grown animal. The adult fears no beast of the land, not even the lion, although it will usually move out of the elephant's way. Yet the crocodile, or perhaps a party of crocodiles, may pull a rhino under water and drown it. Mr. Fleischmann, of Cincinnati, not merely witnessed but photographed such an incident, in the Tana River, where the rhinoceros was seized by the hind leg as it stood in the water, could not reach the bank, and after a prolonged struggle was finally pulled beneath the surface. Such an occurrence must be wholly exceptional; for the rhinoceros shows no hesitation in approaching deep water, not merely drinking but bathing in it.

The animals are fond of wallowing in mud-holes, and also at times in dusty places. In one place I found a cow rhino which had evidently been living for many weeks in the river-bottom of the Athi. There was plenty of food in the brush jungle which filled the spaces between the trees, and which afforded thick cover; there was abundant water in pools near by; and evidently the rhino had kept close to the immediate neighborhood. This rhino spent its time in the immediate vicinity of its drinking-place, and during most of the day lay up in the dense shade

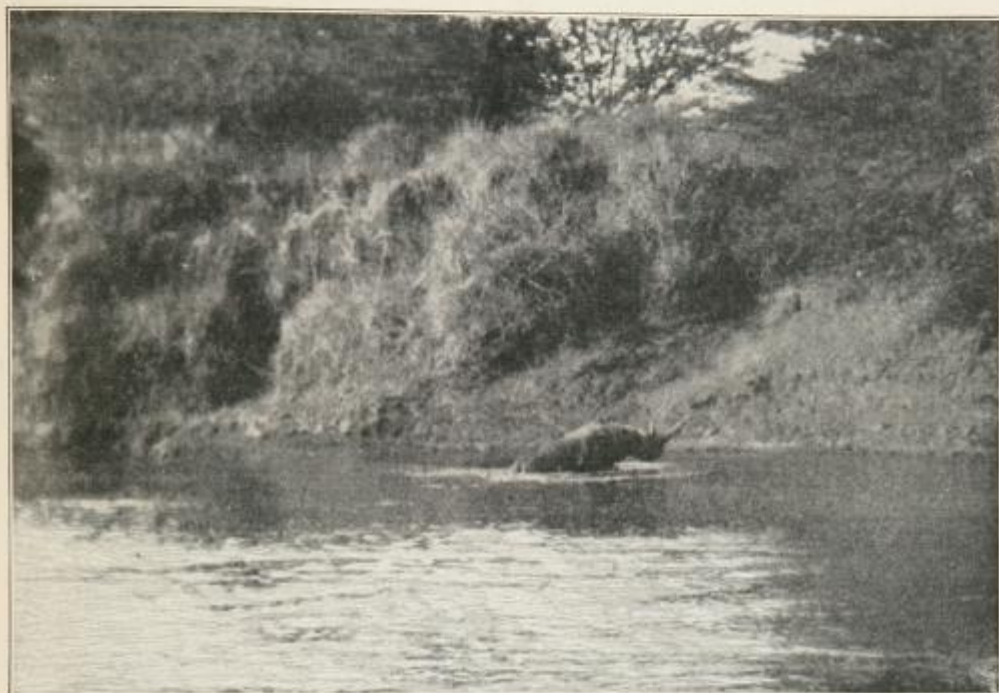


Drawn by Philip R. Goodwin.

The porter who was tossed and gored in the thigh by the charging rhinoceros.

of the green river-bottom jungle, apparently feeding at night and in the early morning and late evening. In other localities the animals differed in their habits. On the Guaso Nyiro I found the rhinos drinking once every twenty-four hours, at night, and then travelling back at a good

high with woody stems; I do not believe that they were really grazing, but together with the shrub stems they cropped and swallowed the tough, jointed grass. They also ate aloes and a kind of prickly euphorbia with a blistering juice; it is hard to understand how even their palates



From a photograph by Col. Max C. Fleischmann.

Rhino being pulled under water by crocodiles in the Tana River.

gait in a fairly direct course for eight or ten miles into the wastes of leafless thorn scrub, upon which they fed and in which they passed their noonday hours of rest. In the Sotik the rhinos spent their whole time in the bare, open plains, drinking at one or another of the widely scattered, rapidly drying little pools. They usually drank at dusk, that is about nightfall, and again about sunrise. Sometimes during the noon hours they lay out in the open, without a particle of cover; sometimes they lay under an acacia, or wild olive, or candabra euphorbia. They sometimes stood while resting, but usually lay down, either on their sides or in a kneeling position. They not only browsed on the thorny, partially leaved twigs—the black rhino is a browser, whereas the white rhino is exclusively a grazer—but also fed greedily in the bare plains on the low-growing shrubby plants but a few inches

could stand the thorns and the acrid sap. I saw them feed at noon; once I stumbled on one feeding by moonlight; but their favorite feeding-times were in the morning and afternoon.

Like other game, rhinos are assailed by various insect pests. Biting flies annoy them much; even when resting, their ears are usually in motion to drive away their winged assailants. The ticks swarm on them, loathsome creatures, swollen with blood, which might be so crowded under the armpits, in the groin, and in the soft parts generally that they looked like mussels on an old dock. I do not quite understand why the tick birds fail to keep down these ticks. These tick birds, rather handsome, noisy creatures, are in most places the well-nigh invariable attendants of rhino when the latter dwell on the plains or in fairly open bush. They clamber all over their huge hosts, like nut-



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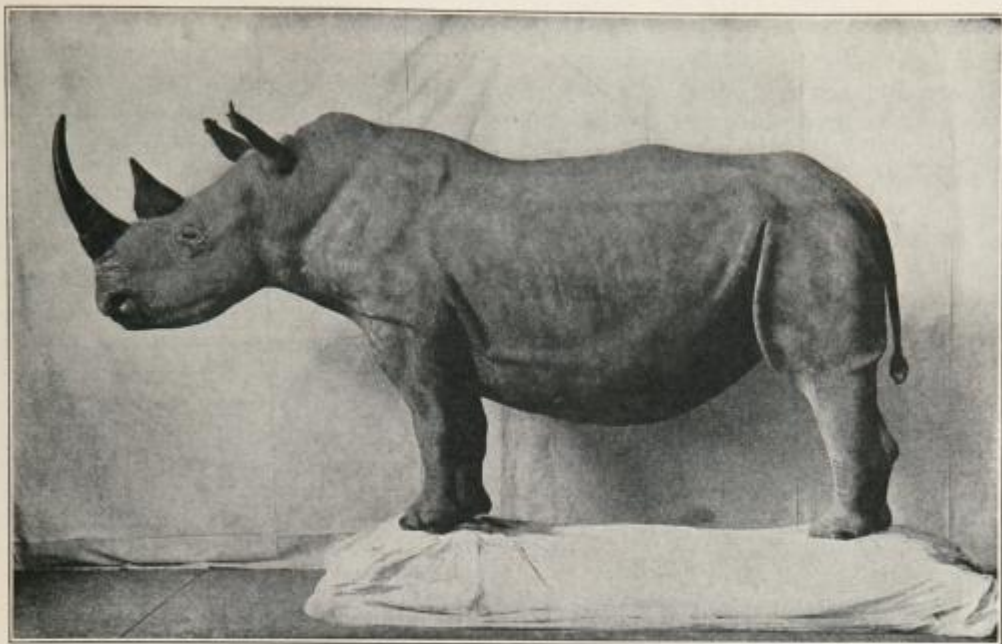
Black rhinoceros.

Captured in Mwanza, German East Africa. In the New York Zoological Garden.

hatches round a tree-trunk, and usually go in flocks. So invariably are they attendants upon the big game that if we heard them chattering as we threaded our way among bushes we were always at once on the alert to see a rhino. Sometimes they are wary, and chatter and fly off on seeing the hunter; at other times they pay but little heed; and the rhino may or may not have its suspicions aroused when they fly away. If a party is seen on the wing, by watching their flight until they light it may be possible to discover the rhino.

The hook-lipped rhino is dull of wit and eyesight. Its sense of smell is good, and so is its hearing. But its vision is astonishingly bad. I doubt if it sees better than a very near-sighted man. Again and again I have walked up to one, on an absolutely bare and level plain, to within a hundred yards without its paying the least heed. I wore dull-colored clothes, of course, and made no abrupt motions; but it was unnecessary to take advantage of cover until I was well within a hundred yards. In thick brush it is often difficult to approach, for all bush-dwellers are harder to approach than plains-dwellers, as they can not be seen until within a distance so short that both their hearing and their smell have in all probability given them warning. But in all places—bush,

forest, and open plain—it is the easiest to approach of all the creatures that dwell in that particular habitat, because of the dulness of its brain-matter and the poorness of its vision. It is the most stupid of the very big creatures. It seems to have a marvellous memory for local geography, as is shown by the way it will traverse many miles of country to some remote water-hole in the middle of a vast and monotonous plain; and it has the patience to stand motionless for many minutes listening for anything suspicious. But these seem to be well-nigh its only lines of mental effort. Its life is passed in feeding, travelling to and from water, sleeping, and when awake and at leisure either fidgeting or much more often standing motionless to rest. There is occasional love-making; and the exhibition of occasional fits of truculence and petulance or of muddled curiosity. When one rhino comes within ken of another the meeting always betrays bewilderment and incipient defiance on the part of both. Apparently the first suggestion that another rhinoceros is in the neighborhood always arouses suspicion and potential resentment in the bosom of the rhinoceros to which the suggestion comes. Usually the rhino which has heard, smelt, or dimly seen another trots toward it quickly and then stands



White rhinoceros.

Shot by Mr. Roosevelt, Rhino Camp, Lado Enclave. In the United States National Museum group. Mounted by J. L. Clark.

motionless for some minutes close to it, in the effort to decide whether to adopt an attitude of indifference or hostility—indifference almost always carrying the day. They are silent beasts, but very rarely utter a kind of squeal or squeak apparently when courting. They utter a shrill and long-drawn steam-whistle scream when dying; and they make a succession of puffs or snorts while charging or even when only startled.

The recognized presence of men rouses in the rhinoceros several emotions, which, in the order of their intensity, I should put as bewilderment, fear, dull curiosity, and truculence. If the men are merely seen, usually the only emotions aroused are bewilderment and curiosity; if smelt, fear is the usual result; but in a certain number of cases even the sight or the smell of men arouses senseless rage. Some rhinos are always cross and evil-tempered; but many others, which are normally good-natured, now and then have fits of berserker fury. Anything conspicuous which arouses their interest may also arouse their hostility. White has an evil attraction for them. My friends the McMillans, while travelling through a rhino country, found that the two white horses of their cavalcade were so frequently charged that they finally painted them khaki-color. I

have never seen them charge other game, and gazelles and hartebeests feed in their immediate neighborhood with indifference; yet I have been informed by trustworthy eye-witnesses of one rhinoceros charging a herd of zebra, and another some buffalo. The rhinoceros usually gets out of the way of the elephant. It will, unquestionably, on occasions charge men and domestic animals entirely unprovoked. Twice I have known of one charging an oxen-wagon; in one case an ox was killed, in the other the rhino got entangled in the yokes and trek-tow, and the driver, an Africander, lashed it lustily with his great whip, until it broke loose and ran off, leaving the ox-span tumbled in wild confusion. The year before I was at Neri one killed a white man, a surveyor, near that station, charging him without any provocation at all. At that time all the rhinos in that immediate neighborhood seemed to suffer from a fit of bad temper; they kept charging any one they met, and killed several natives; at last the district commissioner undertook a crusade against them and killed fifteen, evidently including the various vicious ones, for from that time all attacks on human beings ceased. Rhinos frequently attack the long lines of porters on a safari, if they pass to windward of it. Probably this is not, as a rule,

done from ferocity, but from angry bewilderment, the rhino finding the scent of man in his nostrils whichever way he goes, and finally thinking he is surrounded and charging the line. Usually he merely runs through the line, tossing any porter who happens to be in his way; but he may grow irritated and turn and hunt down a porter. One man was thus killed while we were in Africa. Von Höhnel, the companion of Teleki and Chandler on their explorations, was on one occasion thus hunted down and very badly wounded by a cow rhino which had charged through the safari and had then returned on her footsteps. Mr. Hurlburt, the head of the American mission at Kijabe, had been wantonly charged by a rhino which killed his mule.

A dozen times we came across rhinos while we were on safari, or while we were on the trail of game. In such cases I kept watch over the rhino, rifle cocked, while the safari, or, if we were hunting, the trackers, marched so as to keep to leeward. Once or twice the rhino never noticed us. On the other occasions the beast saw us, but dimly, and evidently could not make out what we were. It would gaze toward us, head and tail up and ears forward, and make little runs to and fro, perhaps even advancing a few yards; but in no case did the beast actually charge. In one instance, however, it did charge and toss a man, a few minutes after I had left it. This was a rhino we had come across while we were trailing a buffalo herd. Cuninghame did not wish to leave the trail, so I went toward the rhino, and by waving my hat and shouting—not too loud, for fear of scaring the buffalo—I finally made it move off a couple of hundred yards; and we went on unmolested. But a quarter of an hour afterward three of the porters returned to look for a knife which one of them had dropped while

I was engaged in frightening away the rhino; and this time the brute came for them, and tossed one, goring him in the thigh, and then galloped on without turning. Whenever they got my wind they always ran, except on one occasion when a cow rhino advanced on me, unprovoked,

from thick brush, tossing and twisting her head. I am not sure that she meant to charge; but when she got within forty yards I grew unpleasantly uncertain as to her intentions and shot her. Stewart Edward White states that on one occasion, near the Tana River, he struck a locality where rhinoceros after rhinoceros charged quite unprovoked, and he had to shoot half a dozen. I have known a rhino charge through a camp at night and cause wild panic; they not infrequently charge hunters or travellers after dark.



Reproduced by permission of New York Zoological Society.

Nile white rhinoceros.

Shot by Mr. Roosevelt at Lado Enclave. Donated to National Collection, Heads and Horns.

Personally, I consider the rhinoceros the least dangerous of all really dangerous game, although many good hunters hold the contrary view. The first one I ever saw, a bull, charged savagely when mortally wounded at a distance of a little over thirty yards, and was killed just thirteen yards from me. But I was never really charged again. I hit and knocked over one animal which we had stalked as it was galloping toward us at a distance of seventy or eighty yards, but I think that this rhino was curious rather than enraged, and would not have charged home. Kermit was charged by one which he had mortally wounded, but it turned upon receiving another and much slighter wound. Two or three of my American friends who have hunted in East Africa have had narrow escapes from rhinos which charged after being wounded, or when the effort was made to photograph them. Unquestionably, compared to his mild and placid square-mouthed kinsman, the hook-lipped rhino is a fidgety,



From a photograph, copyright by Kermit Roosevelt.

White rhino photographed within a distance of twenty yards at Lado Enclave.

restless, irritable, and at times dangerous creature.

Yet the rhino's occasional truculence is more than offset by his stupidity and dull eyesight, so far as the actual contest with the hunter is concerned. As far as I know, but one white man has ever been killed while hunting rhino in East Africa (the English official already mentioned was not hunting the beast which killed him). This was a German, Doctor Kolb, who killed scores of rhino, and was finally mortally hurt by a cow which, upon being wounded, charged him and thrust her horn through his stomach. An English official was also crippled for life by a rhino he had wounded. In dense bush a rhino is undoubtedly a dangerous antagonist at times, as well as being difficult to approach. On the open plains I found them easy to approach and easy to kill, and only occasionally dangerous; they were slow to detect me, and then spent some moments deliberating before concluding either to make off or to charge. But though less dangerous than other dangerous game when hunted, the rhinoceros is more prone than any other beast to act aggressively when entirely unprovoked. The very

stupidity and dulness of sense which tend to render his truculence of little danger to the hunter, immensely add to the menace which that truculence contains for the non-hunter, the wayfarer, who stumbles across him. He fails to make out the man until close by, and then waits, stupid and curious, until he suddenly thinks himself menaced, or is excited to rage by seeing the stranger near at hand, and forthwith charges. There are some rhinos who charge from sheer wickedness; but I am convinced that stupidity and curiosity are chiefly responsible for the conduct of the average rhino which makes people think that it is about to charge them. When it does charge, however, it shows astonishing speed and agility for such an apparently unwieldy animal, whipping round in its tracks like a polo pony, and galloping at a pace that forces a horse to stretch himself. If it loses sight of the man, it will sometimes quarter for him like a pointer dog, swinging its large head near the earth and snuffing for his tracks. The 'Ndorobo told me that they found the rhino more dangerous to assail than the buffalo, because it often had to be attacked where there were no trees.

The rhinoceros, unlike the elephant and buffalo, does not haunt the neighborhood of the negro villages, to make raids on the fields and gardens. It is a beast of the lonely wastes. Even in the dry desert it is at home if there is an occasional pool of water; and it is only at these desert drinking-pools, when driven thither by thirst, that the solitude-loving beasts are found in any number. A score or over may congregate at night round such a pool, to which each has trodden his path through a dozen miles of barren wilderness; and then they may fight for the water. If two or three rhinoceros—a cow and a calf, or a bull and a cow, perhaps with a calf—come to such a pool together they do not loiter in the neighborhood. But I have seen a single rhino remain by such a pool motionless for an hour, until another appeared, when the two beasts approached each other, as if for company. It seemed as if they had each known that the other would come there about that time, and had reckoned on the meeting. I have seen the same thing with other game, where one individual waited with evident expectancy, as if at a rendezvous, until another of the same species appeared. But of course it is possible that in these cases the waiting animal's keen senses made it aware that the other was somewhere in the neighborhood long before the onlooker could discern the faintest hint of its presence.

THE SQUARE-MOUTHED RHINOCEROS

It has been said by first-rate observers that the square-mouthed rhinoceros is of exactly the same color as the hook-lipped rhinoceros. This did not seem to us to be the case when we saw the square-mouthed rhinos living; they seemed to be of a perceptibly lighter gray, which in some lights seemed very light indeed, although in some lights as dark as the ordinary rhino. A comparison of the skins shows that there is a very real difference of color, the hook-lipped rhino being of such a dark gray that it can legitimately be called black, while the square-mouthed species is of a smoky gray, a gray which can readily look whitish in certain lights. The ordinary name is by no means so much of a misnomer as I had supposed. The square-mouthed animal is totally unlike the hook-lipped

one, so much so that it probably ought to go in a different genus; the two are almost as distinct as the moose and the wapiti. According to our observations the square-mouthed rhino averaged considerably larger than the hook-lipped; but there was overlapping between the smaller individuals of the first and the exceptionally big ones of the second; and the same was true of the horns, which averaged longer in the square-mouth.

African big-game animals offer many puzzling examples of discontinuous distribution, and none more so than the square-mouthed rhinoceros. It was first known from the region between the Orange and the Zambezi, where it abounded, but was practically exterminated in the late eighties, so that now only a few individuals are left in a game reserve. North of the Zambezi it is not found until the great Nyanza Lakes are past—and until Major Gibbons discovered it on the left bank of the upper White Nile it was believed to be confined to South Africa. Examination of the series of specimens we brought home shows that there is only the smallest distinction, barely of subspecific value, between these two widely separated groups of white rhinos. According to what Mr. Selous writes, it appears probable that all the rhinos west of the Nile belong to the square-mouthed species, which is never found east of the river, in the domain of the hook-lipped species. It is an added singularity in the distribution of these African rhinos, that in South Africa they should have abounded in the same localities, while in the north their ranges are sharply divided by the upper White Nile.

Our observations of the square-mouthed rhino were made during the three or four weeks we spent at and near our camp in the Lado, about midway between Lake Albert Nyanza and Nimule. All told we must have seen about fifty individuals. Of course, we molested none after obtaining the full series needed for the collection; the extreme rarity of the species in collections rendered it of much importance that the series should be full.

We found them rather more gregarious than the common kind. Once we found four, and once five, together; in the former case they were lying down, so that it was not a mere fortuitous gathering to graze.



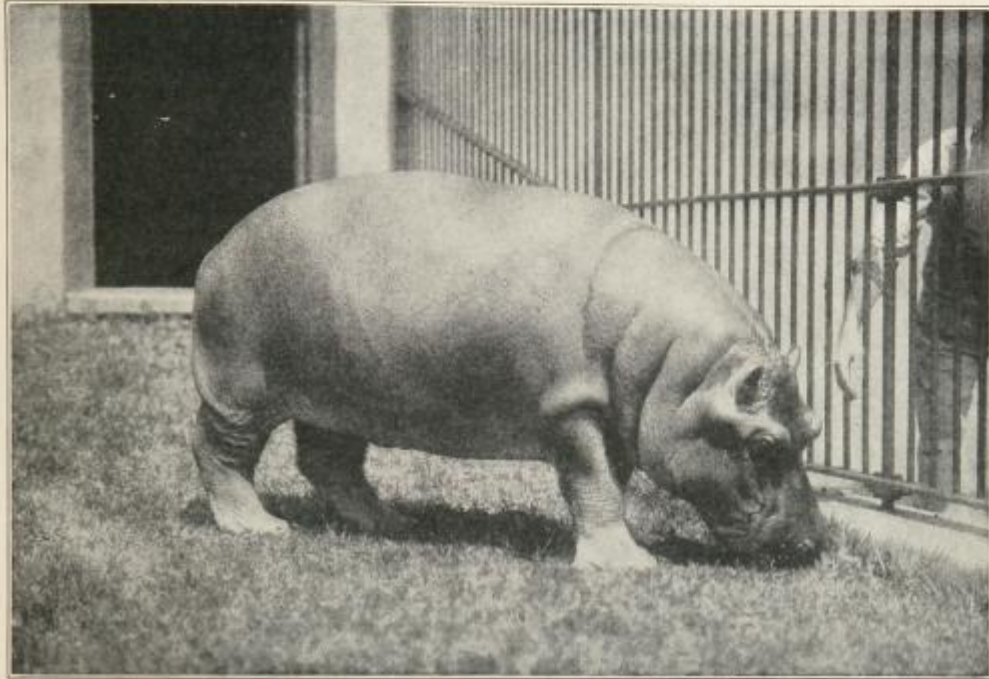
Philip R. Goodwin.

Drawn by Philip R. Goodwin.

A Nile group Square-mouthed rhinoceros, elephant, hippopotamus, kob, waterbuck, and hartebeest.

Ordinarily they were found singly, or a cow and calf—often two or three years old—together; or a bull might be with the cow and calf. They are purely grazers, grass-feeders, and live only where there are great plains covered with the dry African pasturage; but these plains are generally

in this position. About mid-afternoon they rose from sleep and began to feed, making their way toward the water after nightfall. They fed a good deal during the night also. They frequently rubbed their noses and horns against the big ant-hills, for what purpose I can not say. In



Female hippopotamus, four years old, Victoria Nyanza.
In the National Zoological Park, Washington, D. C.

dotted with clumps of bushes, and with a scattered growth of scantily leaved thorn-trees, acacias. The country is crossed here and there by broad, smooth, well-trodden trails, made by the elephants with some help from the rhinos, and often travelled by other game. We found the rhinos going to water, either at the Nile or some pond, during the night. They would then feed slowly back into the dry wastes, their spoor through the tall grass or over the burnt places being readily followed by expert trackers. About ten o'clock they lay down under some tree; occasionally standing motionless in the half shade for an hour at a time. Usually we found them lying on their sides, but sometimes kneeling. When roused they sometimes jumped at once to their feet, and sometimes sat up on their haunches like a dog; once Kermit saw one, that had been walking to and fro trying to make out what he was, sit down

walking they held their heads very low, the huge, square muzzles almost sweeping the ground. They trotted and if alarmed galloped at some speed.

They were slow, dull, stupid beasts, rather mild-tempered. Once a badly wounded one made an attempt to charge Kermit, and on another occasion, after he had spent some time taking photographs of a cow and calf, he got so close that the cow finally charged, coming on at a fair pace with the big, loose lips shaking from side to side. A big calf, over half-grown, also charged him, and he had to turn it by a shot in one cheek. None of the others of our party were charged, although we frequently watched the huge beasts close up and then withdrew while they trotted to and fro. They were not as nervous and irritable as the black rhinos, and their eyes were even duller. Once, having spent some time watching a cow

and her big calf feeding, as I stood by a tree thirty yards off, they finally suspected my presence and stopped to look at me. I withdrew for forty yards or so, not wishing to have them charge and force me to shoot in self-defence. Then I found the skull of one of their dead kinsfolk; one of the party stopped to pick it up and give it to one of the porters. We were talking and laughing; and all the time the two rhinos, their ears cocked forward, looked toward us with solemn bewilderment. So off we strode, and left them still standing, foolish and puzzled, among the sparse and withered trees in the dry landscape.

If they got our wind the rhinos usually made off at once; but if they merely saw us they would stare at us and move to and fro, their ears up and perhaps their tails cocked, with dull curiosity. We frequently found cow herons with them and once a party of black-legged egrets. The herons perched on their heads and backs with entire indifference, and the result was that the rhinos generally looked as if they had been splashed with whitewash. Once, while walking through rather tall grass, I saw some white objects moving rapidly off in single file through the grass-tops; and it took a second glance before I realized that they were white herons perched on the back of a rhino bull.

I have never known of a white rhino attacking man or beast in wantonness; but one of the few white rhinos on the South African game reserve, a bull, was charged and killed, by a stab behind the shoulder, by a solitary bull elephant, a big tusker, which was also on the reserve.

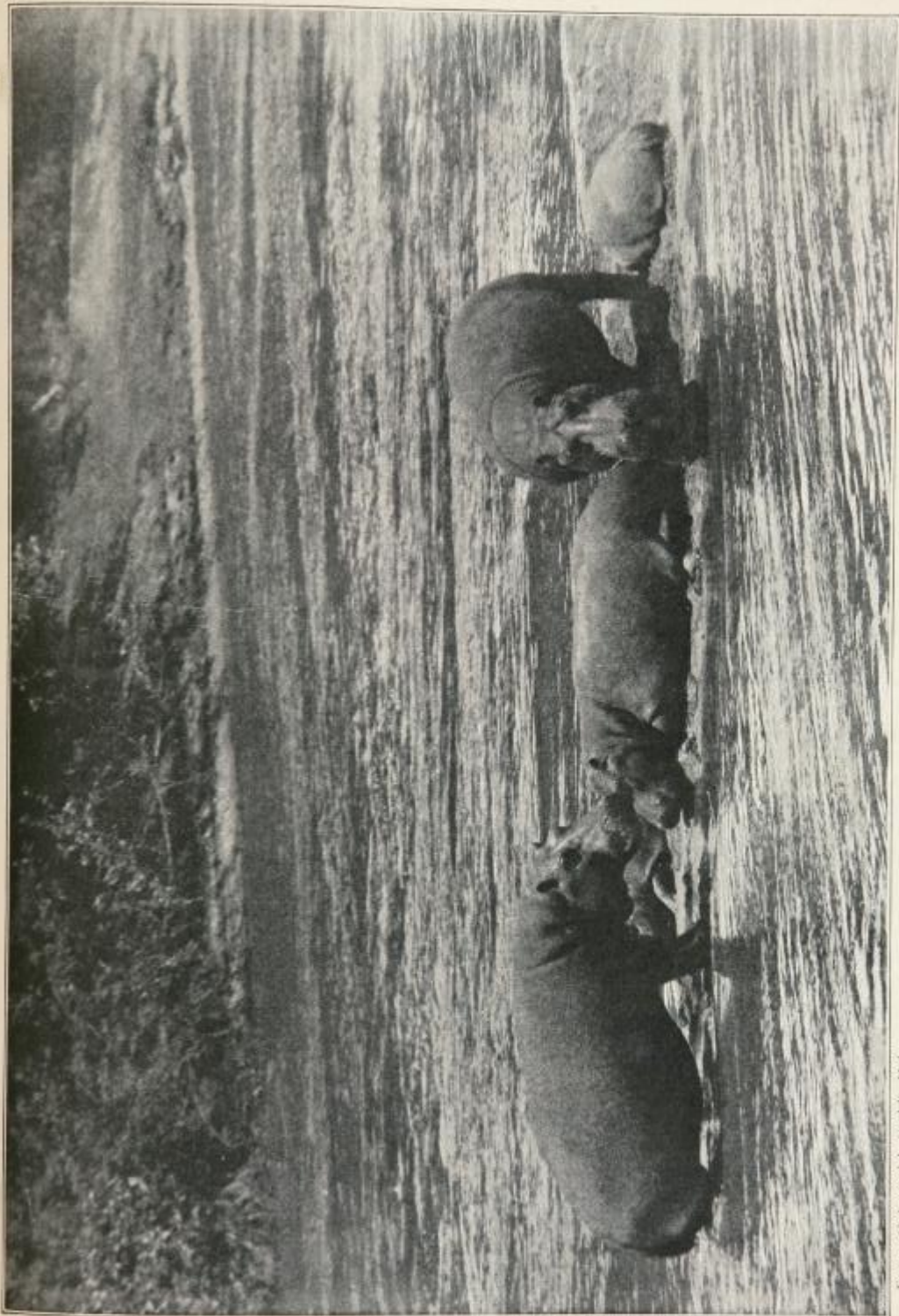
The white rhino has been termed a slow breeder. Of course, such a huge animal can not breed like a guinea-pig. But our experience goes to show that it is, for its size, really a rather rapid breeder, that the cows breed before they are fully adult, and that they breed again before the calf they already have has left them. Two of the cows which we found accompanied by calves had not yet shed all their milk teeth; and one cow, accompanied by a good-sized calf, was nearly on the point of giving birth to another.

THE HIPPOPOTAMUS

The hippo often wanders far overland at night, and doubtless thus wandered by day in the past ages before man became

the most formidable foe of all big creatures. In consequence, it is found in some land-locked waters, like Lake Nainasha, to which it can only have penetrated by extensive journeys across country containing no streams in which it could swim or hide itself. Where human beings are rare and relatively inoffensive, it is often found in streams so small that it seems extraordinary that so bulky a creature can dwell in them without being always in evidence; but in such streams it always finds some pool or quiet reach with a fringe of reeds or bush that offers it a chance to hide during the daytime. Where much molested it becomes excessively shy, and during daylight often lies for hours with only its nostrils above water, in the shelter of some tuft of water-grass or the like; and under such circumstances it is astonishingly hard to make out. But on the Nile, among the channels and shallows of the vast beds of papyrus, I frequently saw small herds or family parties of the obese, unwieldy creatures sunning themselves even at noon, half out of water, or out on the shore, with their heads resting on the mud or on one another's bodies. Biting flies hover over them and, instead of the ticks which infest the elephant and rhino, the hippos are hosts of small leeches which are often found in swarms fixed to the more tender parts. Not only have I seen herons and plover walking about and over them, but also birds that looked like tick birds.

We frequently found single hippo dwelling in tiny pools, usually surrounded by marsh, miles away from the nearest lake or river, and sometimes so high among the hills that the animals must have done some real climbing to get to them. On one occasion while on the Uasin Gishu we were camped by a reed-covered marsh with very little open water in it; we had no idea there was a hippo anywhere near; but when some of the men went to get water, after nightfall, they were threatened and thoroughly frightened by a hippo, and when we white men turned out to see what had happened we could hear the hippo in the darkness snorting and gambolling heavily about us, as we walked through the wet meadow of short grass. At night they were always very bold, and on their rambles came close to camp; or, if



From a photograph by Carl E. Akeley.

Hippopotami in the Tana River, near Fort Hall, B. E. A.

we were in boats, they would snort and plunge as they examined us with fearless curiosity close alongside. On the Nile there were masses of a little surface floating plant which we called water-cabbage, *Pistia stratioides*. Evidently when the hippos went ashore for a nocturnal walk they carried these plants with them, supposedly on their backs; for in the morning we would sometimes find them drying in the hot sun miles inland. In spite of their clumsy build, hippos trot and gallop fast. Their feet are kept far apart by the wide body and make paths with a ridge down the middle, so as to be recognizable at once. They swim well, but go at their greatest speed when they can gallop along the bottom in shallow water. They can stay under water a long time, and when they come to the surface they may send little jets of spray from their nostrils. I was puzzled by the noises they made. Occasionally at night I heard them roar, in a way that I thought must be done with the open mouth; but the ordinary sound was more like the exhaust of a steam-engine and I think it was made through the nostrils. At night they made all kinds of noises while in the water, and when on the bank, but I never heard them utter a sound when far inland on their rambles. In the daytime I once heard one uttering a series of meditative bubbling squeaks from its secure fastness behind the green wall of plumed papyrus.

The cow is devoted to the calf. When young it stands on her back as she swims. I do not understand the unconcern with which the hippos and crocodiles get on; for some of the latter are certainly large enough and greedy enough to kill a part-grown hippo. Probably the crocodiles dread the vengeance of the truculent old bulls and cows. They feast greedily on a hippo carcass; but so they will on the carcass of one of their own number. The hippo bulls fight savagely among themselves, and at times a ruthless old bully will maul other members of the herd. At Lake Naivasha a young bull which had been thus maltreated, and was badly scarred, must have gone slightly crazy in consequence, for he came on shore and attacked the cattle, and had to be slain.

Where unmolested hippos become very

insolent and not only ravage the gardens and fields but attack any one who interferes with them; and in places they attack and upset canoes, sometimes quite wantonly, sometimes because the assailant has been wounded or is a cow with a calf. After the canoe is upset they may wreck it with their huge jaws, and they may or may not assail the swimmers; in one case, in the Lado, an old native was almost bitten in two by a savage bull after his canoe was upset, and I was informed by entirely trustworthy people that in swimming cattle across a river savage hippos had been known to assail and kill them, wholly without provocation. After we left Africa an English official we had met was upset in a canoe by a hippo and then carried off by a crocodile. Usually there is no sport in hippo-shooting; it needs nothing but good marksmanship, and, as the brain is the target, accuracy and penetration are the only qualities demanded in the rifle. Ordinarily, from the circumstances of the case, there is not the slightest danger in hippo-shooting; yet I was once resolutely charged by a hippo which I shot in shallow water; with jaws open it came straight for the boat, which was between it and deep water. A wounded hippo will sometimes attack the boat of its assailant; and in rare cases an unusually truculent animal will charge out of the water and try to reach the hunter on land.

Hippos feed on land at night, as a rule, although I once saw two tearing up and eating water-lilies, or some plants that were among water-lilies, in the late afternoon. Naturally they find corn, beans, melons, and other garden products particularly attractive, and if they are plentiful will destroy the crops of all villages which lie along the water-front.

Once, on the Nile, while Loring and I were watching a monitor stealing crocodile's eggs we noticed a hippo in mid-stream. Although it was in the forenoon, when most hippos were resting, it appeared above water at about two and a half minute intervals, in the same place, breathed, and sank. This continued for an hour. The current was too rapid for him to rest; and it hardly seemed that he could be feeding on anything. I do not know what he was doing.