NOTES ON THE SABI GAME RESERVE.

By Major J. Stevenson Hamilton,
Warden, Government Game Reserves.

THE outcome of the general feeling in the country—a feeling which, by the way, was no new one—that the remnants of the once magnificent fauna of the Transvaal ought to be rescued from the complete extirpation which threatened them, was the establishment, a little over four years ago, of the Government Game Reserves, or, as perhaps they might be more definitely styled, Game Sanctuaries.

In July, 1902, was reincarnated the old Sabi Reserve, originally established in 1898. In the following year, at the request of the principal landowners concerned, the country up to the Oliphant's River, especially valuable from a game protective point of view, as being the home of the few remaining specimens of certain species not found elsewhere in the country, was added. About the same time another reserve was declared between the Letaba and the Limpopo Rivers, an area consisting of entirely unsurveyed and unalloted Government ground, seldom in the past visited by any except hunters and a few prospectors, and by these only during a few months in the year. It had been very considerably, in some places entirely, denuded of game by white hunters as well as by the native population living in, or close to it, but, owing to the fact of adjoining Portuguese territory still holding a not inconsiderable stock of game, the prospects of development appeared encouraging. The reserves are throughout coterminous with the Portuguese boundary on their eastern side, and extend thence westwards for a distance of approximately fifty miles. Needless to say the whole area embraced is what is known as Low, or Bush Veld, rising from an elevation of 400 feet, just underneath the Lebombo Hills, to from 900 to 1,000 feet on the western borders.

Many readers of the *Agricultural Journal* are, no doubt, well acquainted with the general configuration of this country, but, for the benefit of such as may not have visited it, some slight sketch of its general character may not be out of place. In the first place it differs essentially in nearly all its characteristics from the higher bush country of the Eastern Transvaal, *i.e.*, that found at a greater height than, say, 1,200 feet, and under the foothills of the Drakensberg, while varying itself considerably in different localities. Speaking generally, the country included in the reserves may be said to consist of a more or less pronounced series of undulations gradually merging into an almost flat terrain as the Portuguese boundary is approached, the whole permeated by deep cut watercourses, and clothed in a varying but monotonous garment of more or less stunted forest

in which the acacias predominate. Here and there, by the banks of the few perennial streams, or by the numerous dry watercourses, we find a larger growth of timber; but, speaking generally, the task of obtaining long and fairly straight poles of the necessary durability to render them suitable for the requirements of house-building, etc., is a difficult and long one.

In places, the expanse of bush opens out into small clearings, comparatively, or even entirely, bare of trees, while, looking down from any elevation, curious winding avenues, also treeless, may be remarked meandering through the surrounding bush like rivers; the soil in these is often of a black spongy nature in which, after rain, a horse flounders as in a bog, but which quickly cakes into a hard surface and does not seem to be associated with the existence of permanent water. In other places, again, the bush closes to the densest of thickets where the *wacht-en-beetje* and mimosa thorn trees grow so closely that a man may only win his way through with much difficulty and rending of garments.

Features of the country are the outcrops of granite which spring up in the shape of solitary kopjes composed of huge tumbled masses of enormous boulders standing like sentinels on guard at intervals of a few miles and which serve as the homes of colonies of baboons.

Water is very scarce, a few large perennial streams water the country flowing from west to east, being, generally, direct or indirect affluents of the Limpopo. There are, besides, a multitude of watercourses varying from the size of considerable rivers to that of small drains, all only holding water during the rainy season, and then only for a few days after each deluge of rain, and in the larger of which, during the remainder of the year, water is only found with difficulty in stagnant pools or by digging in the sandy beds.

The soil, on the whole, is sandy by nature and shallow, with a tendency to become richer and deeper as the foot of the Drakensberg is approached. Granite rock is elsewhere commonly struck after a very few feet of digging, which may probably account for the stunted nature of the vegetation, for, although grass fires are, no doubt, responsible for much twisting and warping of sapling trees, they only occur in the neighbourhood of native dwellings and public thoroughfares, and are usually owing to the numerous deeply cut watercourses of a comparatively local nature; whilst in the huge tracts of absolutely uninhabited country where no grass has been burned for many years, there is no perceptible difference in the class or size of the trees met with. Indeed, the general incapability of the soil away from the banks of the watercourses to grow large timber has been shown by the attempts to grow gum trees which, although carefully tended, have, except in a very few cases, either shown the same stunted appearance as the local trees or have grown to a good height in four years, but with the roots running along the top of the ground, so that storms will, in a short time, certainly dispose of them.

As far north as the Sabi River the bush is denser in character, and the mimosas more plentiful than between that river and the

Oliphants; in the latter district, too, the solitary kopjes are less numerous, and the country on the whole flatter. About ten miles south of the Oliphants, the Mopani tree is, for the first time, met with, and after the Letaba is passed it predominates over everything else; thence north the Baobab (cream of tartar tree, as it is sometimes called) becomes more and more numerous; it is not found south of the Oliphants River. A very dense bush extends from just south of the latter river, right up along the Portuguese boundary, with just here and there a few breaks, to where the Limpopo marks the northern boundary of the Transvaal; much of this is quite impenetrable, and is seldom if ever entered even by natives.

Summer temperature varies from 95 to 110 degrees Fahr. in the shade ; a few degrees more may have been registered on exceptionally warm days, but the latter is the greatest shown at Sabi Bridge in the last four years. The most oppressive weather, however, is that usually experienced about March, towards the end of the rains, when the thermometer perhaps does not indicate more than 90 degrees, but the moisture soaking the atmosphere renders the slightest exertion a labour, and the white man feels tired an hour or two only after getting out of bed.

Malarial fever is prevalent throughout the game reserves; it is at its worst towards the close of the rainy season, but cases, no doubt, do occur at all times, and most of the "old hands" in the Low Country suffer from relapses chiefly during the winter months or healthy season. Natives coming from the High Veld seem to suffer from malaria in a greater degree than do white men, and even local natives are not always immune. Last year, for instance, one of the native police died from blackwater fever, although he had been bred and born and lived in the country all his life. Some few cases occur each year amongst the natives of the district, especially in the eastern parts. So far, none of the white staff of the Game Reserves has been so unlucky as to contract this very serious type of malaria, but one man had it shortly before joining.

Horse sickness would appear to be present throughout the year, though less noticeably so during the winter; certainly from September to the end of May no unimmune horse has a chance of surviving more than a month or two at the longest estimate. All domestic animals seem peculiarly liable to liver and stomachic complaints, especially from the middle of March to the middle of May. Biliary fever sometimes completely sweeps off the dogs in a district, and, in fact, to have any chance of retaining livestock during the dangerous months, the greatest care in segregating them from outside influences has to be maintained. Even with the utmost vigilance, losses are certain to occur.

Crops are difficult to raise owing to uncertain rainfall and fecundity of insect pests. It is customary for the native crops to fail at least two years out of three. A good year as regards rainfall generally implies swarms of locusts and a plethora of other insect scourges. In the year 1902-3 no grass grew until the end of January.

Irrigation would present considerable difficulties and imply very large outlay, as, owing to the deep channels of the perennial streams, considerably below the level of the surrounding country it is not easy to make use of the natural fall. There are no perennial springs known in the low country, though these are not infrequently to be met with amongst the foot hills.

The native population is few and scattered; in recent years, partly owing to the gradual dessication of the country, and partly owing to the hunting being stopped, many have removed their habitations to the more productive portions of the Low Veld, lying west of the Reserve boundary, and under the hills. Previous to the inauguration of the Reserves these people contented themselves with planting mere patches of grain, and were, in fact, to a great extent independent of what they were themselves able to grow, as they lived on, and by, the game, trading the meat which they did not require, together with skins, in exchange for various foodstuffs either with white men or with natives outside the game districts whose supply of cereals was more plentiful. These now remaining plant more grain, and display greater concern in the care of it than is said to have been formerly the case. Before 1899, the country under discussion was a little-known wilderness, which white men—if the short period of the building of the Selati line is omitted—never entered except during the four healthy months, when hunters came down to lay in their summer store of biltong and supply of skins and horns, while prospectors roamed through it with a commendable persistence only equalled by their want of success. Latterly, the opening of the Netherlands Railway and the building of the Selati Line brought a good many sportsmen and others from the towns in addition to the regular hunters.

During the rest of the year the land was given over to Nature and the Kaffir. Swarms of natives from Portuguese territory would then come in, and, secure from interference, would hunt to their heart's content, returning across the border before the time came round again for the annual visits of the white men. These natives, who led a semi-nomadic life, sowed each season a few crops around their various hunting camps, coming back each year to a different locality as their inclinations and the movements of the game might induce, but always camping close to the waterholes and cutting out all the best timber in order to make way for their mealie and Kaffir corn patches. The game was being rapidly killed out, of course, and the best trees destroyed. This had been going on in an increasing degree for a matter of twenty-five years, or since the cessation of the Swazi raids.

The idea underlying the establishment of the Game Reserves was primarily to effect the rescue from complete destruction of the last of the big game, by providing a surer, more special, and efficient method of protection than was possible in the rest of the country, and under the ordinary game laws. The localities selected were those which the malignancy of the climate and other untempting conditions

during most of the year had, in the past, caused to be studiously avoided by white settlers, and in which, from the same causes, the native population was few, scattered, and, to some extent, nomadic. From these very conditions which rendered it so repugnant to man, the country had proved the last haven of the big game. It was desired first of all to get the latter on a thoroughly good footing within the Reserves, to allow them to breed undisturbed and unhindered, so that the more numerous species might spread, and, after having filled the grazing grounds within the Reserves, gradually overflow into the country round, while the rarer species might have a chance to get upon a sound basis.

At first the game was found to be in a far from satisfactory condition ; it was scarce, timid, and constantly on the move, a state of things not conducive to an adequate increase of species. Some kinds of animals were upon the verge of disappearance, and it was possible to cover very large tracts of country, especially in the western portions where the winter hunters had been most active and numerous, without seeing a sign of life, nor even a solitary spoor. The bush in such places seemed "dead." Moreover, the carnivorous animals had not suffered relatively to the game. It may seem surprising, but it is nevertheless the fact, that it was rather the exception than the rule for white hunters to devote any attention whatever to the predatory animals. Wild dogs were not deemed worthy the expense of a round of ammunition; there was evidently no unseemly haste to pursue the lion. Native hunters practically never wantonly interfered with the larger carnivora; it is usual with natives to destroy only such individuals as have made themselves a nuisance by attacking live-stock, a rare occurrence so long as there is game about. Consequently, the little disturbed beasts of prey were found congregated in considerable numbers wherever the game had collected in remote corners in order to be immune from the hunters' rifles—and, no doubt, a larger percentage of game was being killed by them than would have been the case under ordinary conditions. There can be no room for doubt that, in the absence of prompt measures, the great decrease in the natural food of the larger carnivora would have rendered them at no distant date a positive danger to the adjoining and inhabited parts of the Low Country.

The first care was the selection of suitable men for the posts of rangers, which may, perhaps, sound an easy task, but is in reality a matter of some difficulty. A man must be prepared not only to lead a lonely life, and to travel about the country at all seasons and in all weathers, but must cheerfully incur the certainty of ordinary malarial fever and the possibility of blackwater. He must also be thoroughly conversant with native languages, customs, and idiosyncrasies, interested in game and all pertaining to it, an expert bushman, and possessed of some knowledge of police work, and of methods of working native constables. Above all, he must be thoroughly active, reliable and trustworthy. It is clear, therefore, that an efficient ranger must be possessed of qualities not met with in everyone, and

is not the sort of man who would be long out of a job however hard the times. The white staff having been made up, each ranger was allotted a district for the good order of which he was responsible, and having under his immediate orders a small number of native police, who were usually distributed on the picquet system.

At first there was a good deal of native poaching to contend with, which was gradually suppressed so far as Transvaal natives were concerned, but the Portuguese border has still to be carefully watched as most natives there have guns, and it is not a difficult matter to slip backwards and forwards over the border, while after being detected, and if not actually caught, Portuguese territory is sanctuary for the native subjects of that country. Exciting struggles in this frontier region are not uncommon, and one of the native constables was actually killed by poachers last year. Nevertheless, there is no doubt that a wholesome fear of the consequences of hunting in the Transvaal has been established, and that natives from over the border only venture a very short distance inside and hurry back as quickly as possible.

The natives actually resident in the Reserves do little, if any, damage now. Game is found grazing with confidence close up to kraals; the people, in fact, are getting accustomed to the habit of not hunting. The effects of the early steps taken were not long in becoming apparent. The game in a short time became more settled in its habits, finding that it could graze undisturbed. Animals accustomed to seek the shelter of the densest cover from dawn to darkness began to come freely into the open. Water-loving animals, instead of retiring far up the dry ridges during the day, as had been their wont under persecution, were soon found resting under the trees by the river bank. The game began to return to its natural habitat.

At the present time, the really marvellous tameness and confidence in man shown by the majority of the animals, both great and small, is remarked by every observant visitor. It is no unusual thing to pass troops of game standing or lying ruminating in the shade within 100 yards of the path who scarcely take the trouble to get on their feet to stare at the intruder. Wildebeeste, sable, and zebra accompany the traveller here and there, consumed with curiosity as to what manner of things he and his horse may be, dashing furiously past, pulling up with a jerk across the path in front, cutting all sorts of queer capers, and finally standing staring after the traveller till he is out of sight.

It is truly terrible to think of the destruction which a conscienceless reprobate armed with a magazine rifle could effect amongst these confiding creatures. Hence the necessity of strict regulations regarding routes of traffic and the carrying of firearms. I have not infrequently seen duykers and steenbuck who have got up on hearing someone approaching, after a short inspection, calmly lie down again in full view and go on cropping the grass.

It has often been stated, I am bound to say I think in the beginning by self-interested parties, that the preservation of game

encourages the undue increase of vermin, which are likely to become a public danger. I have even seen it stated, rather to my amusement, that the Reserves are nothing but breeding grounds for lions and other predatory animals. Now, it must surely be obvious to anyone who keeps an open mind on the subject, that the increase of game in a district tends not to drive away the carnivora, but to keep them inside, where they are enabled to procure a good supply of their natural food; there can be little inducement to them to wander away outside in order to pick up a precarious livelihood. In fact, the only factor at all likely to urge them to take this course might be the making of things too unpleasant for them inside. Even left to themselves, carnivora never increase out of a due proportion to the game on which they prey, as is sometimes ignorantly stated, always supposing that man does not step in, and by destroying the game, unduly upset the balance of Nature. The latter, indeed, may be trusted to be a tolerably good regulator of such matters, and if she suffered her laws to be so inefficiently drawn up as to allow the purely flesh-eating animals to be equally prolific with the others, surely long before man made his appearance upon the scene at all, the latter would have entirely disappeared, and the former been reduced either to altering their diet or to following the somewhat violent example tendered by the historical cats of Kilkenny. But nothing of the kind did, in fact, occur; our first records of uninhabited districts show them more often than not to have been teeming with animal life of all kinds, and yet, previous to the appearance of man, especially of man equipped with firearms, upon the scene, such creatures as the lion, the leopard, and the hunting dog must have led an existence very nearly ideal. When the game has, by the efforts of man, or through the agency of some epidemic, become unduly reduced, then the carnivora, driven by hunger, do, no doubt, become a very real danger both to the resident and to the traveller, but, given ordinary conditions, they will never, in such a place as a game reserve, assume the preponderating numerical proportions sometimes credited to them.

Moreover, the reduction of carnivorous animals to, and their retention within, proper and moderate limits when carried out on methodical principles, ought not to, and does not, present any insuperable difficulties, so that, far from increasing, they ought to decrease in numbers considerably, while the game, upon the other hand, multiplies unhindered. With the decrease in numbers of predatory animals comes a corresponding decrease in competition, which cannot act otherwise than as an incentive to retain them in their accustomed haunts. Indeed, judging from the returns of carnivora killed in the neighbouring districts, and comparing them with those of the Government Game Reserves for the same period, one is forced to the conclusion that so far from the various beasts of prey having spread into the surrounding country, they have almost entirely left the latter and gone down into the game reserves. For, in one district, there is only a return of nine predatory animals shown as killed, and in another none at all!

Personally, I am convinced that predatory animals in a wild state tend to increase very slowly. The argument is sometimes used that because the canidæ and the felidæ give birth to several young ones at a time they must, therefore, increase if not kept down at a greater rate than any given species of herbivorous animal, which, as a rule, produces only one offspring per annum. Especially would seem the rate of production of the African Hunting Dog (*Lycaon pictus*) to be often exaggerated ; owing to the fact that as many as a dozen young ones are sometimes found collected in one nursery, some observers have jumped to the conclusion that they must be the offspring of one mother. Females killed, however, have, in my experience, never been found to contain more than three or four, and the congregation of a large number in one place more probably points, it would seem, to their being the offspring of several mothers. It is, moreover, exceptional to see more than two or three young animals in a pack of, say, a dozen individuals, which would not be the case were the litters as large as popular conception would have them. Lionesses, again, have generally three cubs at a birth, but it is generally agreed that seldom more than one or two of these see maturity. Owing to the relatively short period of gestation of these animals, and the consequently early period at which the cubs are weaned, it might be inferred that, in a wild state, they would breed annually, as in captivity; but here the influence of environment makes itself felt; before the mother can undertake the care of a new family the juveniles must be taught to be independent, to hunt and kill animals larger than themselves without assistance, and this process of instruction, no doubt, eats into some considerable period of time. A lion cub of a year old is still a comparatively helpless animal, his large canines are only just beginning to obtrude their points, and the milk teeth which he still uses are weak and fragile things. At that age, though as big and heavy as the biggest dog, he still has a long time to go before he becomes capable of taking the field himself, free from maternal guidance.

The care and trouble taken by a lioness and her mate in teaching their young family to kill game neatly is well known, as well as the amateur results of the latters' first attempts in that direction. This is a question of considerable interest, and one which gives rise to a great deal of discussion, many persons of experience in the hunting veld stoutly maintaining that the increase is at a rate which, when the question is considered, would, if correct, have the effect of setting Nature's arrangements at defiance. Although, owing to his secretive tendencies, opportunities of observing the habits of the leopard are less frequent than in the case of the lion, there can be little doubt, or, at any rate, circumstances point to his increasing in a very similar ratio to the latter. The number of cubs at a birth is similar, and I have twice seen young cubs early in September.

The hunting leopard or cheetah is somewhat scarce with us and generally restricted to the less thickly bushed districts. I think that it is exceptional for this animal to attack anything larger than an impala

Plate CLXXIII

The Fowl Tick.

(*Argas persicus*).

A. Dorsal (upper) surface.

B. Ventral (lower) surface.

C. Eggs, much enlarged.

D. Tick, natural size.

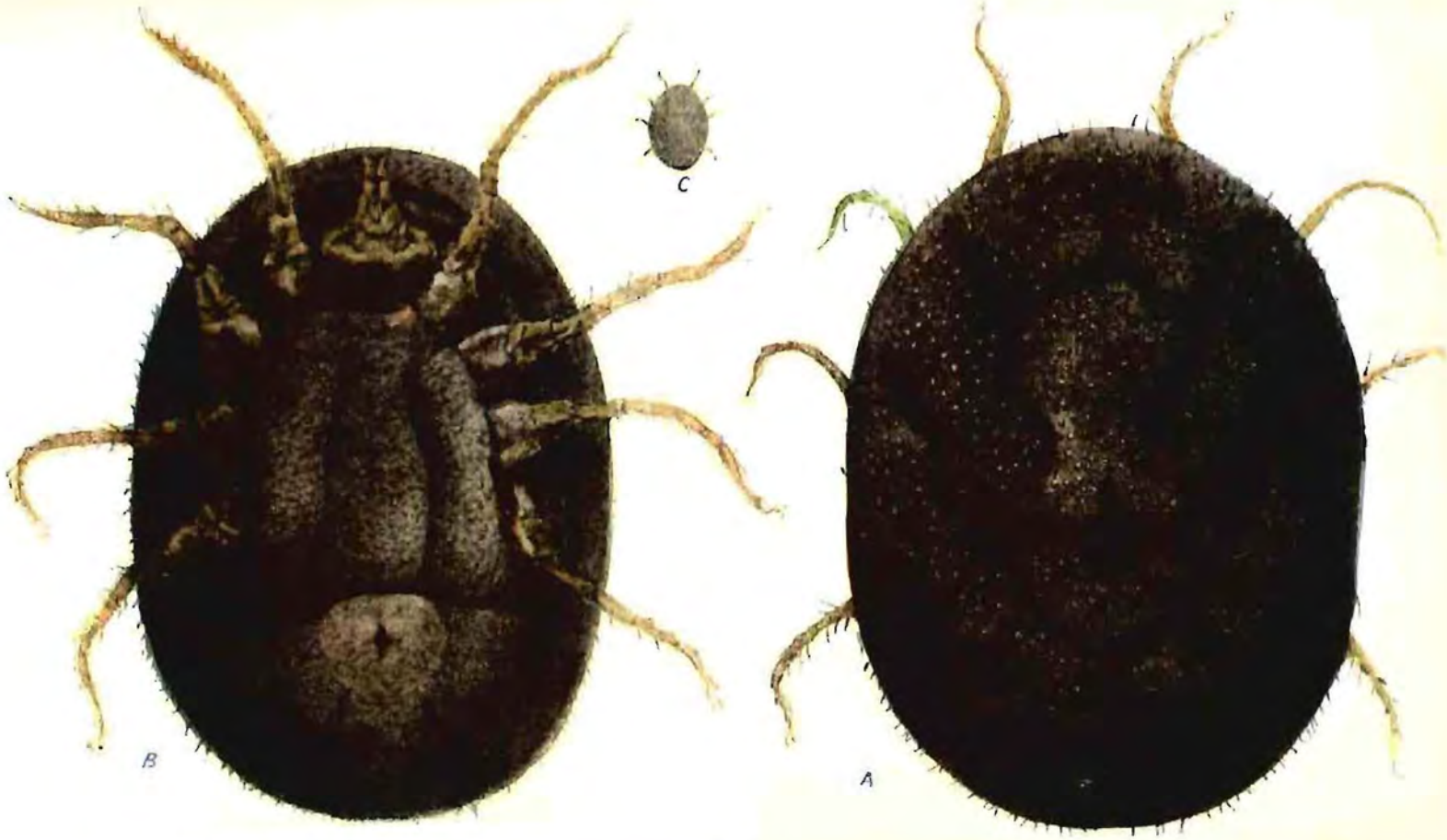

Plate CLXXIX.

The Tampan.

(Ornithodoros savignyi caecus).

A. Dorsal surface. *B.* Ventral surface. *C.* Tick, natural size.

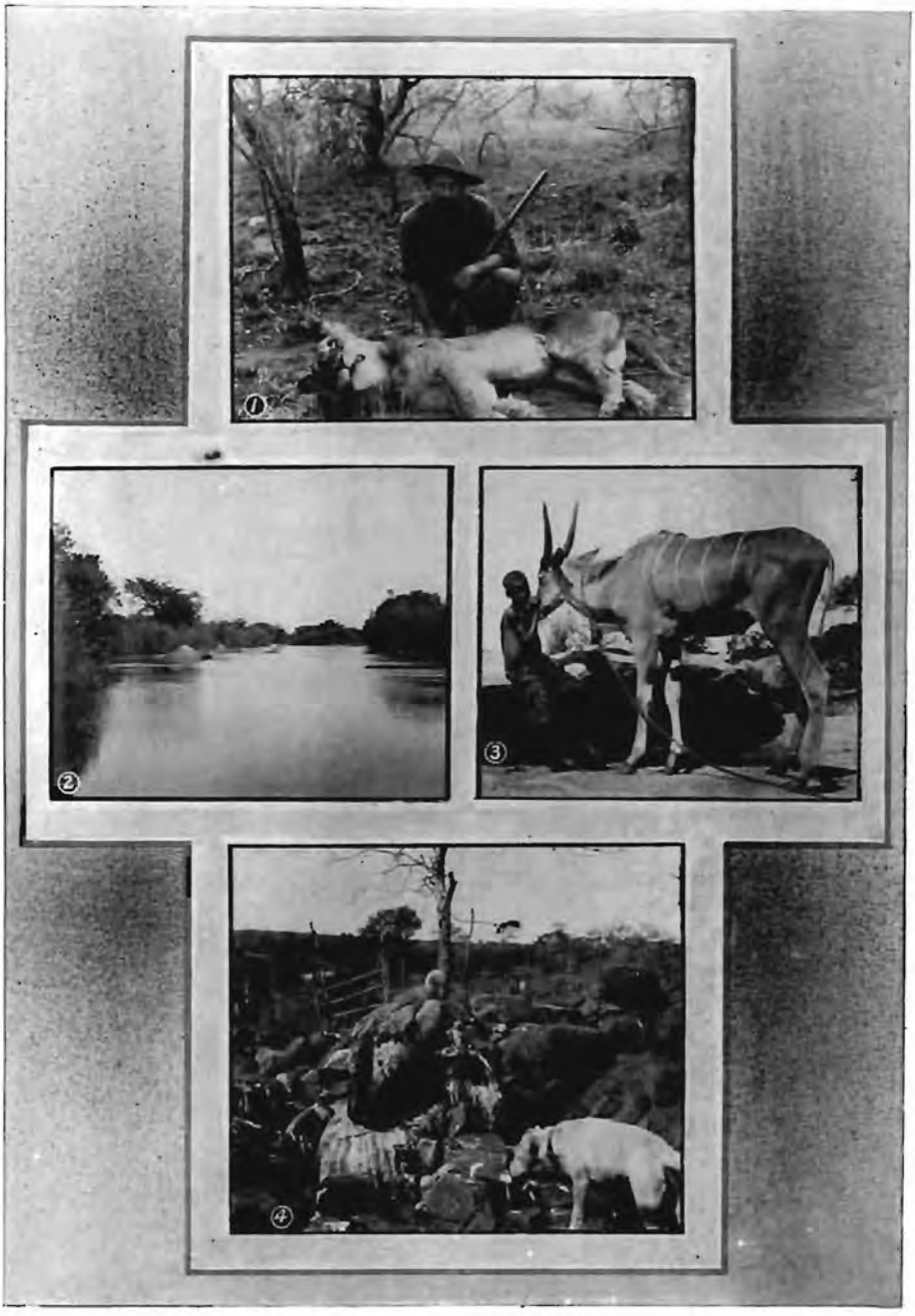

Plate CLXXXI.

Views on the Sabi Government Game Reserve.

or reedbuck. Of smaller carnivora, the caracal or South African lynx (rooikat) is certainly the most formidable and destructive; besides game birds, he preys on all the smaller buck and the young of some of the larger animals. The serval or tiger bush cat is a less powerful animal than the last-mentioned, and finds his principal victims among the birds, but young duykers, young steenbucks, etc., also come to his net. The Kaffir cat (*Felis caffra*) is the last of the true cats found in the Reserves, and is most destructive, as is well known, to all birds, including poultry. The large family of the Viverridæ is well represented, the genets, of which there are two species found, being the most numerous and destructive of the larger kinds; they play havoc with the guinea fowl and francolin, and are frequent visitors to the poultry yard. Genets appear to have three young ones at a birth. The small spotted genet is generally found in hollow trees in the bush, generally in rather dry places. The rusty spotted genet, on the other hand, seems to affect the vicinity of the rivers. The civet cat is remarkably numerous, especially south of the Sabi, sometimes attaining to a very respectable size. This animal is often given a very bad character, but I am nevertheless inclined to believe that he is, to some extent, maligned, and that such mischief as he may perpetrate is a good way behind that performed by the Felidæ and most of the larger Viverridæ. Examination of droppings tend to show that his food consists largely of the scaly earth worms which come on top of the ground after rain, of the berries of the thorn tree known to the natives as "Mpafa," sometimes of rats and mice. He is also not averse to carrion and can be caught in a trap baited with a bit of meat or a dead bird. Although practically every other description of predatory night prowler has been caught at one time or another in the vicinity of the fowl roosts, I cannot call to mind a civet cat in such a situation. That is my personal experience, though it is said that he will kill poultry sometimes.

Most of the Mungooses, of which, with us, H. Caffer (large grey mungoose), H. Albicauda (white tailed mungoose), and H. Galera (water mungoose) are the largest, prey upon rats, mice, birds, sometimes reptiles and insects. The little Wahlberg's mungoose (*Helogale Parvula*) is really a public benefactor, as the examination of the contents of a good many stomachs has shown scorpions and centipedes to be a favourite food; ants, beetles, and other insects are also, no doubt, caught; it is said that snakes are frequently attacked by these little animals. Probably most of the smaller cats and viverridæ will do this on occasion.

Amongst birds of prey, the magnificent martial hawk eagle is perhaps quite the most destructive to small game, but several of the other larger species of Accipitres run him close. A bateleur eagle (which is, however, not a true eagle) was kept for a considerable time in captivity, became very tame, and was tested in various ways as regards food. Small birds of various kinds were kept in his cage, and he never made any attempt to interfere with them, nor did they betray the smallest apprehension of him. On the occasions of one

or other of these small birds dying, however, the bateleur, as soon as he was sure that they were really defunct, greedily devoured them. The same thing was noticed when dead rats or mice were inserted ; he invariably waited a good time watching for any movement, and when they continued to lie still he would hop down and assimilate them; the bateleur is, moreover, generally to be seen in the neighbourhood of a "kill," and I am inclined to think that he subsists on very little besides carrion and reptiles, and perhaps eggs if he can find the latter in the bush. The buzzards are, I think, generally speaking, quite harmless. The yellow billed kite is one of those unfortunate creatures labelled with a name sufficient to condemn him anywhere, "kuiken-dief." What can be expected of a bird with a name like that! I suppose those frequenting the neighbourhood of the Sabi are particularly well behaved either by nature or because they have a wholesome fear of the Regulations; however that may be, there is a very considerable collection of poultry at my station who run about freely everywhere. The yellow billed kite arrives in considerable numbers every year at the beginning of the summer, and, throughout that season, seldom less than four or five are hovering about at one time over the yard during the whole day, swooping down to pick up bits of offal and any scraps thrown out of the kitchen. During four years I have never known a single chick to be harmed by these birds. Eagles and hawks of many kinds have, from time to time, taken toll, but I must give the yellow billed kite, so far, a clean sheet. For a considerable time I admit sharing the general belief, and invariably shot them whenever seen, but, after a time, seeing that it was not possible to get rid of them owing to their number, and that no chicks seemed to be taken, I gradually desisted, and now they come and go as they like. No doubt a bird having once done evil, might be tempted to make a practice of it, but, in their unsophisticated state, I do not believe that these birds prey on live mammals at all. They are great carrion eaters, and seem as quick as the vultures themselves at picking up the sight of a dead animal.

All species of game within the Reserves have increased and done very well in the last four years. Of course several decades of ruthless destruction cannot have their effects nullified in so short a time, and many rarer kinds of animals are still extremely scarce. It is a short affair to slay a creature such as a giraffe, for instance, but, at the rate of one young one in three years or so the increase is a slow and tedious matter, and the process of reconstruction takes time. The same refers to the elephant, the rhinoceros, and the hippopotamus. Elephants have very tentatively begun to make their appearance in some of their old haunts, but are evidently as yet by no means sure of their welcome. Fortunately, there are still a considerable number in the thick bush over the Portuguese border. The larger antelopes breed regularly once a year, and have one young one at a time. At that season it is necessary to be especially on the alert, as all kinds of predatory animals, as well as natives with their dogs, are alive to their chances. The eland was, unfortunately, exterminated in the

Transvaal, but we have recently imported some young ones from Portuguese East Africa in the hope of being able to domesticate them in the country. There really seems very little reason why the eland should not fulfil most or all of the functions of cattle, while being immune to many of the plagues which affect the latter. He is exceedingly docile, gentle, and intelligent, and his size, strength and weight are equal to anything required.

Ostriches have done particularly well, and are now quite numerous in their favourite localities.

The existence of such institutions as game reserves would seem to be necessary in a country like the Transvaal where the great body of public opinion is intensely anxious to preserve the fauna, but where the presence of a minority of white men who are reckless or lacking in foresight, and of a large native hunting population who practically would, under ordinary circumstances, have the big game districts to themselves for eight months of the year, would soon cause the game to cease to exist. The impossibility of effectively enforcing the Game Laws outside the Reserves is conclusively proved by the numerous reports and complaints of game destruction which have latterly been coming to hand from all of the less frequented parts of the country in ever increasing numbers. In the north and north-west we hear of waggons loaded up with biltong, chiefly representing royal game, of hunters' camps everywhere, and general disregard of any of the interests of the game. In the east, again, there has been serious destruction, so much so that sportsmen are asking that something may be done to put a stop to the reckless waste and pointing out that, at the present rate, a few years will see all the game vanished. In these last districts, there seems little reason to doubt, at least so far as the Low Veld is concerned, that it is only the "feeding" from the neighbouring game reserve that has allowed of many animals having continued to exist even up to the present.

Under conditions at present obtaining, it is clear that the maintenance of such sanctuaries alone gives guarantee for the continued existence of the magnificent Transvaal wild fauna. As is the case with domestic animals, a certain extent of land can support a given number of animals only, and as few, if any, of the herbivora are omnivorous as regards the vegetable creation—each species having its own particular and favourite grass, plant or leaf—when the particular food becomes too scarce in any given spot to support the number of animals present, the surplus must of necessity wander further afield in order to seek means of support. Thus, when by strict protection, the Game Reserves have become well stocked, there will be a considerable annual overflow into the surrounding country, which will spread in a greater or less degree afield relatively to sane methods of shooting being observed or the reverse. But, no matter how the game is shot down outside, so long as the Reserves continue, this overflow will always be maintained, and there will be sport to be had, though manifestly less than would be the case were the game outside not destroyed to such an extent as to obviate the local increase

and spreading which the sparing of females and a rational system of hunting would induce. And here is, perhaps, the crux of the whole matter—*the sparing of females.*

If only the importance of this could, by any possibility, be borne in upon everyone, then there would be but little necessity for game-reserves, for making certain game "royal" or for many of the other at present unavoidable restrictions. It should be remembered that the killing of every female means not the destruction of one animal only, but, potentially, of many. As a rule, the true sportsman would seldom desire to bring one down, but there are, unfortunately, many—in addition to the mere hunters for purposes of gain—who measure their success by the number of their "bag," and who, in trying to attain to a large total, are quite oblivious of either age or sex. The custom of pumping lead out of a magazine small bore rifle promiscuously into a troop of game or after single running animals at such distances as preclude accurate shooting cannot be too deeply deplored. For one animal picked up under this method probably four or five get away more or less maimed and injured to die in agony, or crippled, to fall victims to the first prowling beast of prey encountered. Very possibly, many of those following this system see no harm in it, and consider it to be a most admirable method of procedure, but, emphatically, it is not sport, and the sportsmen of the country would do well, in the present depleted state of the game, to endeavour to inculcate by every means in their power a more rational appreciation of the joys of the chase and a deeper consideration for that fauna which Nature has lavishly provided indeed, but which is very far from being inexhaustible. The sportsman, as differentiated from the mere "shootist," finds a multitude of joys in the selection of his specimens, and the studying of the habits of the game which are quite unknown to the other. Hunting in the old days was a very different matter; the hunters were dependent upon the game for their existence, they knew their work, ammunition had to be husbanded, while the game was present in such enormous numbers that it is not surprising that it seemed inexhaustible. The large bullets used, as well as the accuracy of the hunter's aim—it being important not to waste a shot—generally accounted for most animals hit. Viewed from a sporting standpoint, it must have been glorious to ride over the boundless veld at a stretching gallop in the rear of a troop of great game, feeling that every shot from the slow loading weapon carried must be made to tell ; for success the hunter was dependent upon his own craft and skill. But these days are past, and it is not emulating the prowess of bye-gone Nimrods, this pouring of a stream of small bore bullets, which to be deadly, must be very accurately directed into a terror-stricken herd of flying buck, with subsequent more or less casual picking up of the fallen. In these days of repeating rifles, when ammunition is to all intents and purposes unlimited, when there is no question of necessity, and when game, moreover, is in many parts on the verge of extermination, other methods must be used if we are to avoid that

contempt of future generations which we should thoroughly deserve did we deliberately eradicate and wipe off the face of the earth the many species of beautiful and harmless animals with which the country has been so liberally endowed. The game, though in sadly attenuated numbers, is still with us, but throw open the sanctuaries, and some three or four years at most would see the very last of anything larger than a duyker throughout the Low Country, for with the disappearance of the sources of replenishment, the animals would quickly disappear, and the Bush Country would become nothing but a deserted, lifeless, fever-stricken wilderness, shunned by man and abandoned by its natural denizens. Once the game is gone we can never get it back.

The population of the country is very different, numerically and otherwise, from that which pursued the wild game over the limitless plains in the old days. For one man armed with a muzzle loader, we have now fifty equipped with magazine rifles. "*Tempora mutantur, et nos mutamur in illis.*"

There is no doubt but that the tsetse fly formerly was responsible for the saving from destruction of a good deal of game, as it kept hunters from going otherwise than on foot into the "belts." However, the fly disappeared after the rinderpest, not as is sometimes loosely averred because the game was finished, because we know that it was not—even a certain number of the buffalo surviving—but from the much more probable reason that it itself died from the effects of sucking the blood of the diseased animals. Since that time it has been unknown in the Transvaal, nor does it seem probable, seeing that it is equally absent from Portuguese territory adjoining, and from contiguous portions of Rhodesia that there is much likelihood of its early return.

There can be no doubt that game preservation in general meets with hearty support from practically all who have a stake in the country. The majority of farmers are not blind to the advantages of having a good head of game on their farms; it represents a considerable asset. But in this matter it is well to think broadly; in order to benefit the private owner game should be well preserved throughout, on Crown land as well as on private land; we want to see it well spread over the country, returning perhaps to haunts from which it has been long absent. Some of the animals now found in the Bush Country of the Game Reserves are really indigenous to the Middle or even High Veld, from which they have been forced gradually by persecution. Notable amongst these is the roan antelope, who habitually favours open country, but here is often found in comparatively dense bush. No doubt such animals, if left alone, would surely, if slowly, tend to wander back. There is no doubt that it will be possible to supply farmers artificially with certain kinds of buck in the future when the Reserves have themselves become well stocked, and except to those who look on the fauna of a country merely as so much cheap meat and leather to be exploited for purposes of personal gain as quickly as possible, and without regard to those who come after, such institutions should be popular as forming the

nucleus or nursery in which the game increases undisturbed, and from which it can spread naturally, or be brought artificially to all parts of the country.

The people of this country should not shut their eyes to the fact that on the action of the white man alone depends the annihilation within a short time of the game or its continuance and increase. It is easy, and a comfortable way of shirking responsibility to say, as is often done, that the Kaffirs are killing all the game. This is simply nonsense, though I am far from saying that the native would not do his best had he the means and opportunity, but, deprived to a great extent of firearms as he is, and unable to organise the big drives of game by means of which, previous to the advent of the white man, most of the slaughter was done, he can never exterminate nor even greatly reduce the game. The only places where game could, and would be, exterminated by natives are the present game reserves bordering on Portuguese territory in which latter nearly every native has a gun, and are fast extirpating all the game on that side of the border. It should be remembered that even in these past days the utmost efforts of natives and of beasts of prey had nowhere in Africa effected any appreciable reduction in the number of animals. Of course in the present depleted state of the game, natives can do, and, indeed, are, responsible for a good deal of damage by means of dogs, gins, snares, and small local drives of kloofs, reedbeds, etc., and, without doubt, guns are here and there hidden away and let off on the quiet, so that continued vigilance is required. But while the natives in general are not possessed of firearms, and, moreover, receive some supervision, one shooting party of white men will probably kill more buck in a week than all the natives of that district put together will account for in a year.

Probably it is not above the mark to say that even when we allow for damage done by native poachers from over the various borders, white men kill a hundred buck for every one killed by Kaffirs, and, moreover, the victims of the native dogs and snares are generally such animals as duykers and steenbucks, which will probably be the last two species to vanish from the country, while the white man's range is only limited by his shooting licence, and not always, alas, by that.

I merely emphasise these points, not from any feeling of admiration of the Kaffir in regard to his relations to and feelings for game, but to try to point out how important it is that sportsmen should realise the immense importance of arousing public feeling and awakening sentiments of true sport, so that the force of public opinion will become so far reaching and effective that it will no longer be considered "smart" to evade the game laws which are, after all, framed entirely for the public benefit, and no longer a matter for boasting, but rather one for studious concealment and remorse that a huge bag has been made and numbers of females and undeveloped animals ruthlessly and wantonly slaughtered. The days of shooting in order to make money out of the sale of horns, hides, and biltong are, or should be, things of the past. The era when that state of

things was desirable has passed with the multitudes of wild animals which once covered the land. It was all very well in a wild, half, or wholly unexplored country as this once was, but now with almost every part of the Transvaal attainable by railway, and with a large population all anxious to have each man his chance at the vanishing game before it is all gone, it is necessary if we want to save any part of the latter, to adapt ourselves to the example of other civilised countries.

The United States is a case in point. They had let things get to an even worse pitch than we have here, when suddenly the public conscience awoke, and it was discovered that if anything was to be done it must be done quickly, and money must be spent freely. Hence the celebrated Yellowstone Park and the less well-known Reserve in Wyoming which is, or was, guarded by a military post and patrolled by a troop of United States cavalry in addition to the ordinary game wardens, while the most rigorous methods are, or were, in force. Our condition as regards game is, doubtless, not so bad as theirs, nor is our population so lawless as to demand such draconian methods; all that is required is just a little better realisation of what is going on. Some of the railway records of meat sent by train alone would probably startle a good many people were they to be made public. As years go on there seems every likelihood of the shooters increasing in inverse ratio to the game, so before it is too late it is to be hoped that that public feeling which can alone be of lasting effect may be aroused and that a happier era may dawn.