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A SURVIVAL SPECIAL ON AFRICAN WILDLIFE
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ANDRE DEUTSCH

total of 102 square miles. This excludes the inner rim of the Crater which of course must be regarded as crater habitat as far as certain species, for example rhino, are concerned. It is however, difficult to calculate the areas involved as the country is so broken, and it is not known for certain just how far beyond the edge of the rim the range of the various species concerned extends.

A refinement of the principle that the rain comes from the east, is that the short rains come from the north-east, and the long rains, usually about twice as heavy, come from the south-east. Thus there are areas with mountain conformation which get the full benefit of the short rains, but are in rain shadow in respect of the long rains; in consequence the short rains which they enjoy are usually heavier than the long.

All this affects the type as well as the distribution of the vegetation, determining both where forest occurs, and what type of forest it is. Species preferring drier conditions are naturally more common on the western side; a case in point is the East African cedar, the principal forest tree of Makarut, the westernmost mountain of the block, and it also occurs on the northern, i.e. the drier, slopes of Sirua and Lolmalasin. The Lodge area falls halfway between the moist east and the dry west and as a result has no cedar. Elspeth Huxley's description of the Lodge 'poised on the rim, surrounded by tall junipers which scent the crisp air with a fresh cedary mountain aroma' may be justified by poetic licence, but is ecologically incorrect. What combination of climate, rainfall and soil ordained that Oldeani, and no other mountain in the group, should carry such a large area of bamboo is not yet known.

The soils of the area are of course determined by the geology, but even here the prevailing wind has played its part, carrying the dust of the eruptions of Lengai to the west, and covering the Sale plains with their characteristic sand-dunes. Thus a combination of altitude, rainfall, soil and many other factors, including the presence of wildlife and man, determine the vegetation. I have attempted to compile a simple sketch map, Fig. 3, indicating the main vegetation zones: within such a broad framework many sub-divisions and graduations must obviously exist, but for an understanding of the land use pattern it seems sufficient to think in terms of two broad categories, highland and lowland, and then to divide each into four or five vegetation types. The highland area covers just over 1,000 square miles, that is, one third of the Conservation Area, and the lowland area about 2,000 square miles, i.e. two-thirds.

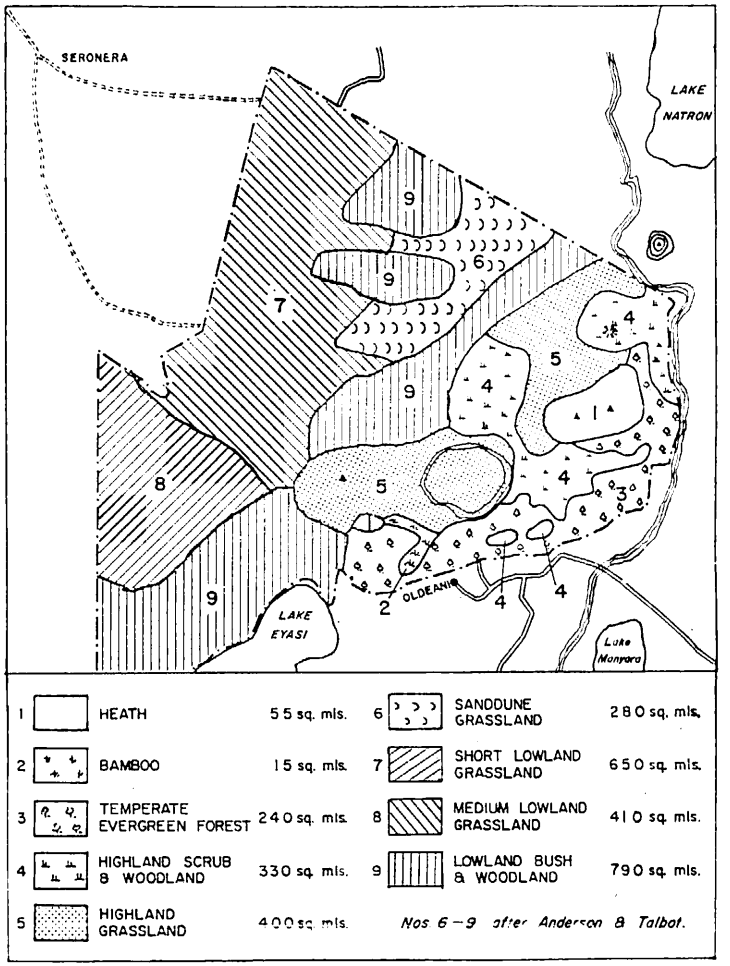


Fig. 3 Main vegetation types of the Ngorongoro Conservation Area

muscatel grapes. A natural grove of these occurs on the Crater wall near the Forest Resort and I know of a single specimen growing at the side of the Lerai road. It requires no feat of imagination or of translocation to get these growing around the modern buildings, and that in fact was just what the early lodge builders did. Some of the *Hygenea* trees planted about 1936 are still growing round the lodge, but a number of them have recently died, after a very short life of only 30 years. Luckily the species is very easily raised by conventional forestry methods, and recent plantings have been from nursery-raised stock; perhaps their lives will be longer. Another delightful indigenous flowering tree is the Cape Chestnut, called by the Masai *ol arash*. Again specimens of this tree can be seen on the Lerai road; when in flower the whole tree is covered with mauve blossom, an entrancing sight. Although again easily raised from seed this is a slow grower and one must have patience if results are to be achieved.

A quick growing screen is provided by the *Crotelerea*, a leguminous bush with yellow flowers which grows about fifteen feet high. When nurtured in a garden it grows very rapidly; if one makes a road through grassland, the disturbed turf breaks out into a solid bed of *Crotelerea* seedlings. But when I tried stirring things up by a few plough furrows outside the fence of the dairy farm or the ill-placed eucalyptus plantations, I got no results whatsoever, not even when handfuls of *Crotelerea* seeds were scattered along the furrows. So here again there is room for research. The Masai elders say that where one now sees extensive areas of *Crotelerea*, there was once open grassland. Their view is, and they are astute observers of nature, that after a period the *Crotelerea* reaches maturity, dies off and the area reverts to grassland; then after a time it again dominates.

One introduction which might be justified in that it is at least indigenous to Tanzania (north of Kigoma on the shores of Lake Tanganyika) is the *Spathodea nilotica* or Nandi flame. This does well in the nursery at Ngorongoro, but the altitude is probably too high for it to blossom well: however even without the flowers it is a handsome tree and might well be persevered with.

Another African transplant which I tried is the Zimbabwe creeper, as I was anxious to cover an atrocity which I could not at the time afford to demolish – the hangar-like edifice which was originally erected to house the prisoners engaged on the construction of the Lerai road. I converted this into a cow-shed as I was anxious to get the

experimental dairy farm established without delay and without undue capital expenditure – indeed a case of swords into ploughshares, or cells into cow-byres. The Zimbabwe creeper certainly grew well, but did not produce the mass of pink blossom which is its characteristic in its home habitat.

For the rest, I deplore the introduction of pines, cypresses and monkey puzzles: what is wrong with the majestic podocarpus or the delicate aromatic East African cedar?

We have digressed rather far from the subject of fire, but it is not entirely irrelevant to consider what species of trees should be used to restore the ravages of uncontrolled fires or to ensure an adequate supply of domestic fuel.

Fire can be a useful tool in wildlife management, just as it is in livestock production. Even in the case of the short grasses of the Crater floor it is noticeable how grass which has been burnt and reflushed is preferred by the wildlife to the unburnt stale grass. I have seen such areas grazed flat, whilst the adjacent areas of unburnt grass – of the same species, but at a more advanced stage of development – remain ungrazed.

Grass fires as already explained keep down the intrusion of woody shrubs into grassland, and it is obviously desirable to keep the Crater floor 'clean' and open. So where there is sufficient grass a late fire is preferable, because it will be fierce and hit hard the encroaching scrub. If, on the other hand, it is desired to 'thicken up' the cover, as on the Crater wall, an 'early' burn is desirable, that is as soon after the rains as it is possible to get a fire going at all. This will not be fierce, but will serve the purpose of removing the bulk of combustible material, and so obviate the risk of an accidental, uncontrolled 'late' fire which will damage the shrubs and set back the thickening-up process.

An even better agent for removing shrubby growth from grassland is the rhino. There is a low growing spiky shrub which grows on the plains on the Crater floor called *Pluchea monocephala*, a favourite food of the rhino. They can be observed rooting this out, and leaving the grass untouched, for all the world as though they were groundsmen engaged on weeding out plantains from a cricket pitch.

The firebreak running round the eastern foot of the Crater wall was established for the following reasons. Above the firebreak, early burns are desirable to encourage 'thickening up'; below the firebreak 'late' burns will keep the grassland clean. The long-term effect of fire control

which go to make up the overall picture. That is why there is more satisfaction in seeing an eland or rhino in Ngorongoro than in a zoo, and why all jarring notes should be avoided: there must be no buildings in the Crater, roads must be as inconspicuous as possible, bridges should be a simple plank without handrails or whitewash. Equally, any animal out of its ecological context is incongruous: and in any case, why should we repeat for the tourist what he has already seen elsewhere? Each park should surely preserve and develop its own individuality.

Biomass, a term which we must now introduce, has been defined as 'the weight of a population of organisms per unit area'. The basic idea is not new; farmers and ranchers have long thought in terms of so many acres per beast. From this developed the idea of a stock-unit, which has now been standardised as a one-thousand-pound animal. Smaller breeds of cattle, and of course sheep and goats, were written down *pro rata*: average Masai cattle count as two-thirds of a unit, i.e. 666 lbs. and sheep and goats as one-tenth, i.e. 100 lbs. The same process was then applied to wildlife; thus a 2,000 lb. rhino would represent two stock-units, a 660 lb. antelope two-thirds of a unit, or a 100 lb. gazelle one-tenth of a unit.

The concept of biomass can be illustrated by the Crater wildlife census which is compiled from time to time by aerial counts kindly undertaken by the Tanzania National Parks and the Serengeti Research Institute. The total of each species is then reduced, according to average weight per animal, to 1,000 lb. units. These can then be added up, giving the total wildlife biomass in relation to the area of the Crater.

Such a figure, however, ignores one important factor, the domestic stock, which utilise the same area and largely compete with the wildlife for the available grazing. So, to make the count complete, the cattle, sheep and goats of the Masai must be included. These of course are counted by a different method, house-to-house visits by enumerators who count the stock as they leave the houses in the morning or return at night. This gives much more detailed information than an aerial count of domestic stock could possibly reveal. One not only gets an accurate count, but also details of the age and sex of the beasts, and of the ownership. The domestic stock can, like the wildlife, be reduced to 1,000 lb. units.

The result of such an exercise in relation to the 1966 census of wildlife and domestic stock is shown in Table I. From this it will be seen that the total stocking rate is 9,269 stock units: converted into biomass, i.e.

TABLE I

Stock in the Ngorongoro Crater, 1966

	Total	*Weight factor*	1000 *lb. units*	*Percentages*
WILDLIFE				
Wildebeest	10,438	9/20	4,697	50.5
Zebra	4,040	3/5	2,424	26.2
Hartebeest	67	7/20	24	0.3
Eland	320	1½	480	5.2
Waterbuck	85	7/20	30	0.3
Gazelle: Grants & Thomson's	2,100	1/10	210	2.3
Rhino	109	3	327	3.6
Hippo	34	2½	85	0.9
Total Wildlife			8,277*	89.3
DOMESTIC STOCK				
Bovine, mature	1,295	2/3	863	9.3
Bovine, immature	203	1/3	68	0.7
Small stock	294	1/10	29	0.3
Donkeys	48	2/3	32	0.4
Total Domestic Stock			992	10.7
GRAND TOTAL			9,269	

* This figure differs slightly from that given in the 1966 Annual Report – 8,310.

weight per unit area, the figure is 113,000 lb. per square mile. This compares with 125,000 lb. per square mile in the Manyara National Park, where fears have been expressed that the heavy stocking rate is leading to habitat degradation. Conditions there are however very different from Ngorongoro, the altitude being about 2,500 feet lower, with consequent difference in vegetation. The Park wildlife is being hemmed in by a rising lake level and by cultivation, resulting in an excess of elephants, and at the same time the near-extinction of the wildebeest

which inhabit it, that if it came to a showdown, the elephant would have to go. There are probably about a dozen more or less permanently resident there, though there is considerable coming and going. Lucky is the visitor who meets an elephant in the open, in transit so to speak, as did the writer when he took the photo facing page 128. It was in December, 1966 when I visited the Crater with my son Ian. We had often met up with good tuskers in the forest, we had at times seen elephant in the open on the floor of the Crater, but never before had we been so fortunate as to meet such a magnificent tusker right in the open. When meeting elephant on a forest track there is no room to manoeuvre, so it is unwise to approach too closely: if one comes up behind a herd moving along a road very often a cow is found acting as a rearguard, who turns round and makes token charges at intervals to ensure that no-one approaches too closely – and one is never sure when a token charge will turn into a real one! Out on the plains, however, one feels more confident in approaching the subject more closely, taking photos, and then moving on ahead to wait for the serenely undisturbed subject to catch up and have his photo taken once again. At certain times of the year the permanent residents of Lerai forest come out regularly of an evening to graze the attractive pastures of the surrounding plains, thus permitting close-up photography.

A more serious worry than the problems of the Lerai forest is the fact that the elephants of the Ngorongoro highlands are rapidly having their regular migration routes cut. Owing to the difficulties of aerial counts in thick forest we do not know how many there are in the forest areas, but up to 90 have been seen at a time, and a population numbering hundreds is not unlikely. There is evidence that this elephant population migrated regularly from the highlands to the lowlands at certain times of the year. One of the motivating factors is said to be the seasonal prevalence of the red safari ant in the forest; if an elephant gets these up his trunk the irritation is such that he will bash his trunk against a tree till it becomes badly lacerated. I have not seen this myself, but having from time to time had my camp-bed raided by these ants, I can well believe the story.

How Ngorongoro has been subject to a flanking movement is described above (p. 64) and illustrated by Fig. 4. The closure is almost complete, but the danger of the Ngorongoro elephant being isolated does not seem to be fully appreciated. The damage they might do, both to the tourist trade, by ruining the habitat, and to agriculture by

interfering with water supplies, is incalculable. I hope that the selfish sectional interests which led to resistance to my proposals for migration routes will eventually be subordinated to the long term benefits of the nation as a whole.

The rhino were in a very bad way and very much in the news when I returned to Ngorongoro in early 1961 after five years absence from Tanzania. In July, 1959, the controversial excision from the Serengeti National Park and the creation of the Conservation Unit were legalised. In the ensuing six months eleven rhino had been speared by the Masai – of which two recovered. In the following year, 1960, twenty were killed or wounded by the Masai, eight of these in or near the Crater. This made headline news in the press and many heads nodded with an 'I told you so' expression. *Ngorongoro Doomed – Rhinos Exterminated – Ngorongoro's Last Rhino* – were typical headlines.

Dr Grzimek in *Rhinos Belong to Everyone* reveals how he fostered the agitation for stronger Government action by issuing all German tourist parties – which trade he has done so much to stimulate – with predrafted telegrams or letters of complaint about the situation in Ngorongoro. These were to be sent to the authorities and issued to the press of Tanzania by the tourists on arrival at Ngorongoro. If in fact these were issued in considerable numbers, very few were actually dispatched, though I can recall receiving one from Fritz Walther, who has so generously allowed me to reproduce some of his delightful antelope drawings in this volume – truly the *amende honorable*.

The Director of National Parks gave a factual broadcast which was subsequently published in *Wildlife* in December, 1959, in which he stated, amongst other things: 'To those who believed that the withdrawal of the National Parks from the Crater highlands would condemn the game of the Ngorongoro Crater to extermination, these spearings are indicative of the beginning of the end. To others, however, including the Park Trustees, they indicate as yet no more than the expected reaction of the more irresponsible Masai elements, who firmly believe that the 1st July marked the dawn of the golden age when all control over killing of game would lapse.'

In trying to ascertain the causes of this outbreak of rhino spearing, others went so far as to postulate that the Masai had launched on a policy of extermination of the rhino in the Area so that it would no longer be attractive to tourists and they would be left in peace.

I personally have come to the conclusion that neither of these

theories was correct. It will be recalled that 1959–60 were years of severe drought which only broke at the onset of the short rains of 1961. Throughout all the pastoral and wildlife areas of East Africa grazing animals suffered severe hardships during this period. Certain areas of Masailand lost up to two-thirds of their bovine population. The Nairobi National Park was littered with dead wildlife. Famine relief was issued by Governments, both in Kenya and in Tanzania for the alleviation of human suffering.

Ngorongoro was, in fact, less severely hit than any other area of Masailand. This may have been in part due to the better water and grazing facilities in the area. It may also indicate that the stocking rate was not unduly high. But however that may be, the Masai were anxious to obtain money to purchase cereal foods. As explained elsewhere this is no new feature of Masai life. What was new was the fact that their cattle were so out of condition that they could not fetch a good price on the local market. How were they to raise money? The spearing of rhino provided the easy answer, particularly if the trader who provided the cereal was willing to take rhino horn in direct payment – and no questions asked.

The truth of this explanation is enhanced by the figures that I was given, but quote only from memory, in respect of Amboseli where the authorities estimated that during the famine period their rhino stock dropped from some 200 to about 60. This figure may be exaggerated, but there is a lesson to be drawn from this for the future: in case of famine, ensure that credit facilities are readily available for the Masai who are an honest people, and will meet their obligations when conditions return to normal.

At the time, however, when the situation was not so well understood it was obvious that speedy action had to be taken to bring the situation under control. In the case of burglary or housebreaking it is a well known police maxim that if you can get at the 'fences' you will soon control the situation. The same principle obviously applied to the rhino horn trade. Catch the dealers and exporters and the killers would cease to function. I was not alone in thinking that a nation-wide reward scheme might prove effective. At a meeting in Dar es Salaam in early 1961 representatives of the Ministry of Agriculture and Natural Resources, the Police, the Information Department and the Ngorongoro Authority decided on a nation-wide campaign offering a reward of Sh. 1,000/-, i.e. £50, for information leading to conviction for rhino offences.

A garish-coloured poster was plastered up at District Offices, local courts and schools throughout the country, in English and Swahili reading –

> Sh. 1,000/- reward will be paid to anyone providing information leading to convictions for killing rhino without permit or for selling rhino horn illicitly. Take such information to the office of the Local Government, Police, District Officer, or the Ngorongoro Conservation Area Authority, Box 3102, Arusha.

The response to this appeal was immediate and startling. A number of schoolboys thought they would receive the reward merely for submitting their ideas on how rhino poaching might be checked. One such idea which, if practicable, would doubtless have proved effective, was that convicted offenders should have both hands chopped off in public!

But apart from such verbal responses the practical results of this campaign were equally gratifying. One case, for instance, occurred near Tanga where 86 rhino horn were hidden in a deserted house. One of those concerned must have done a quick calculation and concluded that the Government reward of Sh. 1,000/- was greater than his share would have been when the horns came to be sold. In consequence he talked. The horns were recovered and convictions obtained. This was probably the most profitable of many cases which came to the courts and also led to the recovery of horn. The scheme was, in fact, more than paying for itself in recovered horn and fines.

But difficulties soon arose; it was obvious that we had interfered with an established market, well controlled by custom. This market was that of information. Police informers soon started complaining that the prices paid for information about rhino were quite out of proportion. If news of a dead rhino was worth Sh. 1,000/-, how much was news of a human corpse worth? Why were the police paying such paltry rewards in respect of murder, arson, burglary and the like? So the campaign was watered down by the insertion of two little words 'Up to' before the Sh. 1,000/-. However, in spite of this niggling attitude the campaign had served its purpose, not only in so far as Ngorongoro was concerned; it had doubtless been of assistance throughout the territory.

But the success of this scheme should not blind us to the effect of the local measures which were taken. In 1960/61 before I took over as

Conservator, the local officers, in particular the late Bill Moore-Gilbert of the Game Division, and Peter Doole of the Provincial Administration, were indefatigable in their efforts to cope with this trade. Their success is measured in the prosecutions instituted, and the convictions obtained – eighteen accused appeared before the Ngorongoro Magistrate's Court alone (in addition to others elsewhere), with imprisonment of a total of 48 months and fines totalling Sh. 7,050/-. At the Masai headquarters station ten cases led to 111 months imprisonment.

The rise and fall of the Ngorongoro rhino scare is best summarized as follows: during the years of the National Park regime when records were kept, 17 rhino were speared in 7½ years. Then came an upsurge, 31 in 18 months. In 1961 the spearings were recorded as 12, and by 1962 killings were down to three at which level they remained over the next five years. The significance of these last figures is even greater when it is appreciated that they refer to the whole of the 3,000 square mile Conservation Area and not only to the Crater highlands, as was the case with the National Park figures.

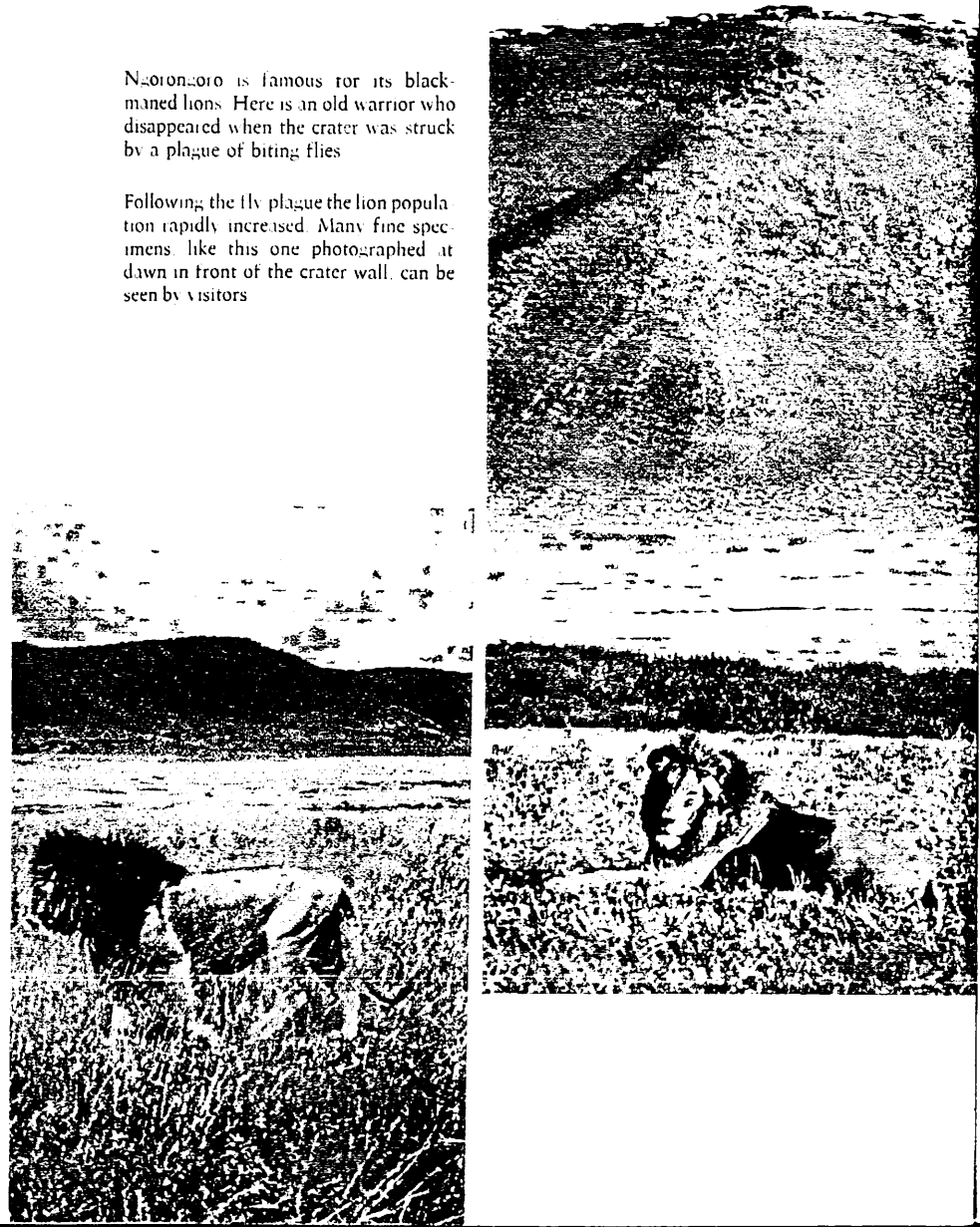
In quoting these statistics I must be perfectly candid and state that I have rejected some of the wilder statements concerning the killing of rhino in and around Ngorongoro, particularly one by Elspeth Huxley in *Forks and Hope*, published 1963: 'The Olduvai Gorge used to be full of rhino. And then, in 1961, in the space of six months, the Leakeys counted over fifty rotting carcases in the Gorge, all speared by Masai. Whether or not their motive was political, they had taken the profit; every horn had been removed.

'Since then the Leakeys have not seen a single rhino at Olduvai.'

This demonstrably false account is unfortunately typical of the wildlife 'crusaders' and illustrates how a good case can be discredited by exaggeration. John Goddard's work has shown that the gorge was inhabited (1966) by over 70 rhino. With an animal of such static habits it is clearly impossible that the population built up from nil to 70 between 1963 when Elspeth Huxley was writing, and 1966.

The recent low figures of rhino spearing, as set out above, should not, however lead to any sense of complacency. Mr Guggisberg in his book *S.O.S. Rhino*, has shown with what rapidity the situation may change. In Nepal, for instance, there were till recently between 300–400 Indian one-horned rhino. By 1964 the encroachment of agriculturists and the action of poachers had reduced the number to 185. Again, Uganda was complacently reporting 300–350 white rhino

Zebra round a fresh water swamp, with the Crater wall in the background



Ngorongoro is famous for its black-maned lions. Here is an old warrior who disappeared when the crater was struck by a plague of biting flies.

Following the fly plague the lion population rapidly increased. Many fine specimens like this one photographed at dawn in front of the crater wall, can be seen by visitors.

in the West Nile area in 1954–55–56. In 1966 this total was reduced to 71 and the only way of saving the white rhino in Uganda was considered to be the translocation of as many as possible to the Murchison Falls National Park.

The black rhino has also been greatly reduced in number throughout East Africa. As Guggisberg points out, the early explorers walked past them in their tens and twenties, day after day.

This scene has changed radically in 50 years. Some of the disappearance is due to shooting, for pleasure or profit, as witness the bags of the early sportsmen. Sir John Willoughby and three brother officers from the Indian army shot 66 rhino in the Taveta region near Kilimanjaro in the course of four months. Count Teleki and his party, the discoverers of Lake Rudolph, shot 99 rhino in the course of their safari. Another party was alleged to have shot 80 around Machakos in 1893 in less than three months. Further cases on the German side of the border are Dr Kolb, who killed 150 before one killed him; a Herr von Bastineller, a companion of Dr Kolb, killed 140; and Herr von Eltz, the first commandant of Moshi Fort, about 60 between Moshi and Kahe. These figures reveal not only the bloodlust of the so-called sportsmen, but also the extraordinary density of the rhino population.

There are, or were, folk who appeared to get a thrill out of rhino shooting. Joseph Thomson, in his *Through Masailand*, written after his journey of 1883–84, records his experiences thus:

> I was more successful in finishing a sleeping rhinoceros. I crept up to it with the customary precautions, and in the process I experienced the usual sensations as of crawling centipedes about my spine, a wildly pulsating heart, a feeling of sweating blood, staring eyes, and gasping for breath, till on getting into actual danger, my nerves became braced up, my muscles like iron. When within a few yards, I took swift and silent aim. As the report echoed with startling roar I dropped to the ground like a hare. The great black mass instantly became animate. Jumping up, it stared wildly around, and then with blood spouting out of its nostrils like water from a fountain, it ran a short distance, to topple over dead. It had been shot through the lungs.
>
> After this feat . . .

Perhaps this is actually what he felt, or perhaps he had his eye on his

book sales and the impact this fanciful writing was likely to have in Victorian clubs and drawing rooms!

However, he and his ilk were shortly debunked by Dr Baumann, who, possibly with Thomson in mind, had severe things to say about rhino shooters. Granted he shot three in Ngorongoro himself, but this action at least had the merit of relieving the famine-struck Masai. Dr Baumann comments:

> Hunting [rhino] is not nearly so difficult or dangerous as it is claimed to be by professional Nimrods. The rhinoceros is not very shy, and if the wind is favourable, one can easily approach to within thirty paces, without disturbing them. To hit a rhinoceros at thirty paces, you do not have to be a spectacular shot and if the bullet hits the chest or (with a smaller calibre gun) the head, the animal usually collapses without further ado. If wounded anywhere else, it either runs away at such speed that there is little hope of catching it, or it attacks the hunter. This moment is usually the one described with vivid horror by the Nimrods. The companions flee and only the hunter bravely faces the charging colossus. This sounds terribly dangerous, but the 'charging colossus' is nearly blind and one step aside is sufficient to make it miss and it charges past. When it stops and looks around for its enemy the hunter has plenty of time to kill it with another bullet at close range.

Nevertheless rhino hunting continued, on licence as and when game laws were introduced into the East African territories. Some shooting was by genuine sportsmen, out for a good trophy, but much was by pioneer farmers, many short of cash, who sought to add to their income by taking out a licence to shoot elephant and rhino every year.

The horn-length of the Ngorongoro rhino compares favourably with the black rhino found anywhere in Africa. A cow rhino from the Oldeani forest had an anterior horn of 47¼ inches (world record 53½) whilst a bull from the Dulen area has produced the world record posterior horn at 32½ inches.

Another cause of reduction in numbers is, of course, the change in habitat caused when land was taken over for ranching or farming. For example, the establishment of the Oldeani coffee plantations must have cleared out literally hundreds of rhino. These were either shot – and I know that the farmers took a heavy toll of rhino – or moved out as the bush was cleared. A contemporary account recorded by A. R. Siedentopf – no relation to the Siedentopf brothers of Crater fame – in his book *The Last Stronghold of Big Game* refers to the clearing of the Oldeani coffee shambas: 'All the other game learns quickly that it is best to avoid any contact with man, and changes its trail accordingly. Only the rhino persists in the precedence of the right of way. So the stupid beast goes on stamping through the fields and flattening time and again the tender coffee seedlings which the farmer replaces meticulously day after day. Then comes the hour when the planter's cup of wrath overflows and the bully gets himself shot.'

The carrying capacity of country in respect of rhino can be extraordinarily heavy. Take for instance the Crater itself. Here John Goddard has recorded 110 rhino on the Crater floor in the three years 1964–66: this figure includes births during the period. Some, it is true, do not spend the whole time in the Crater, but there is reason to believe that their range is not very great and that they do not penetrate far into the surrounding forests.

It would have been possible to determine the range of these rhino had the proposal for fitting them with radio transmitters been carried through. Most conservationists are aware that this technique has been used successfully in other parts of the world, particularly on checking the range of grizzly bears in the Yellowstone National Park. When I saw it in practice there I considered whether to apply the same technique to rhino in Ngorongoro. There are many ways of fitting these transmitters to the subject of the research. The grizzlies carried theirs on a collar, which also acted as an aerial. In other cases where the subject pulls off an externally attached set these are inserted subcutaneously. As far as the rhino was concerned I suggested somewhat facetiously that the best method would be to drill a hole in the horn of the immobilised rhino and insert the transmitter. Carrying the fantasy further I pointed out that this could be a self-financing scheme as the horn drillings could then be sold on the black market to cover the purchase of the transmitters! When the biologists came to give serious consideration to the radio idea it did seem that the horn-drilling technique might indeed be the best way of fitting these transmitters. Unfortunately this idea has not yet been put into practice for lack of funds, but I record it here in the hope that it may be taken up later.

However, with our lack of knowledge of the depth of penetration into

the forest let us suppose that the Ngorongoro rhino use an amount of forest equal to the Crater floor for grazing, which amounts to 97½ square miles. To double this area only requires a penetration of just over two miles, inclusive of the Crater wall. This area, 195 square miles, gives a stocking rate of one rhino to every 1.8 square miles.

This, however, is nothing compared to the situation in the Lerai forest. Here a total of 23 rhino are resident, of whom only six appear outside from time to time. The remaining 17 are permanently resident in the forest. To allow for the grazing consumed outside the forest, suppose we say the forest is carrying a permanent population of 21 rhino. Its total area is 750 acres. This means 35½ acres per rhino, or 19 rhino to the square mile. This appears to be an extraordinarily dense population, but looked at another way it is not unreasonable. Apply the concept of the stock unit, that is a 1,000 lb. beast. The rhino can be taken as representing about two stock units – the average male weighs around 2,150 lbs. and the female 1,950 lbs., but immatures must also be allowed for. This means 18 acres per unit. Granted the same bit of country is also carrying elephants, waterbuck, etc., so the total grazing rate must be something in the nature of 10 acres per stock unit. This is nothing remarkable as good pasture can carry cattle at twice that level of stocking. This criterion, of course, cannot be extended to the whole of the Crater which obviously could not carry 19 rhino to the square mile. The vegetation is less, the herbage is not so suitable, and it is grazed over by many other species.

The point arises, is the rhino population of Ngorongoro increasing or decreasing? The figures quoted earlier in this section show that over a 15 year period a total of 75 rhino were speared. This does not include the Huxley figures from Olduvai, but if we make some allowance for spearings there the average must have been something over five per annum. It can also be assumed that the population throughout this period has been roughly that which John Goddard found, namely 110 in Ngorongoro plus 70 at Olduvai. Add to these an allowance for the remaining portion of the Conservation Area – for the count of dead rhino applies to the whole Area. Here we are guessing, but a suitable figure might be 120, making a round figure of 300 rhino in the Area.

John Goddard, in a scientific paper, examines closely what is termed the recruitment rate, that is the rate of new individuals produced each year expressed as a percentage of the total population. The optimum recruitment rate would be obtained if each cow reproduced every 27 months and the calf survived till the next calf was born. This optimum would be 12.8 calves per year. From actual observations over the three years John Goddard estimated the recruitment rate in the Ngorongoro population to be 7.0 and at Olduvai 7.2. He concludes: 'The mortality rate deduced from skulls, reports, etc. is no greater than this, so there are good grounds for optimism concerning the rhino of the Area.'

In the same paper he has some interesting figures concerning the movements, or rather the lack of movement, of rhino. Hans Klingel published some figures in *Oryx* showing how static these beasts were. Guggisberg likewise mentions this feature, but uses the term stability rather than territoriality. Goddard went into the matter in much greater detail and worked out what he terms the average home range of these animals, that is the distance over which they wander. He finds that in Ngorongoro the males average 6.1 miles and the females 5.8. At Olduvai the range is greater, being 8.5 miles for the males and 13.7 for the females. These figures of course refer to undisturbed populations in a series of good years. One would like to know more about the movements in bad years, though here observation in the Tsavo Park during the drought years culminating in 1961 indicates that the rhino stay in their own territory and die rather than seek pastures new. Also, one would like to know more about the effect of disturbance in the case of country being taken over for settlement. Do the rhino move elsewhere, and if so, how do they fit in with the territorial claims of their fellow rhino in the country which they penetrate? Again, the observations quoted above indicate that they do not, but the sources I have quoted are chance records and not systematic scientific work. From this it can be seen that, although our biologists have greatly enhanced our knowledge of the rhino over the last few years, there are still a lot of questions to be answered. This can only be done by adequate expenditure of funds and manpower on research.

The widespread poaching of rhino throughout Africa, and the high price of horn both on the legitimate and the black market raises the question, why this sudden upsurge in rhino killing? The first point which is very clear is that it is due to external and not internal demand. As Guggisberg points out, no people or tribe in Africa believe in the medicinal properties of rhino horn. A few, such as the Chagga or the Masai, presented their leaders with carved rhino horn clubs as emblems of office, but natural deaths amongst the rhino would more than supply this demand.

The general assumption to account for the increased overseas demand is that as the Asiatic rhino was decimated to the point of extinction so the demand for the African product increased. But the trade in rhino horn from Africa is by no means a new feature. In fact, it was first mentioned in *The Periplus*, a traveller's guide to the East Coast of Africa written in the first century AD. Ivory and rhino horn are mentioned as exports from the Red Sea ports: then coming right down to Rapta – probably Pangani – it is recorded: 'There are exported from this place a great quantity of ivory, but inferior to that of Adalis and rhinoceros horn and tortoise shell (which is in best demand after that of India) and a little palm oil.'

When reviewing the trade in rhino horn, we find the uses to which it is put were and are numerous. The common concept is that it is used only as an aphrodisiac, particularly in India. This is only partially true; but even if the consumers could by education be persuaded that their belief in the efficacy of rhino horn has no scientific backing, nonetheless the trade would doubtless continue.

Many other uses for rhino horn have been recorded by authors both ancient and modern: buttons, belt-buckles, scabbards and knife handles. One of the most intriguing uses was as drinking cups, used especially by rulers, because of the belief that they protected the user from poison. Such cups were used in Asia up to recent times, but they also have been used by some British and European monarchs and Popes.

Describing the use of the horn as medicine, Dr Lee Talbot in *A Look at Threatened Species* says: 'Usually the horn is ground to a powder and mixed with water or coconut oil. Among the cures this mixture is supposed to effect are the following: to remove a thorn from the palm of the hand, apply the horn oil to the back and the thorn will work right out; to ease childbirth, the expectant mother should drink some of the mixture just before the baby is born; to shrink lumps, stop infections, close cuts, sooth irritations or cause broken bones to heal properly, just apply the mixture to the nearby skin surfaces and rub well.' In summing up he does write: 'Today the greatest demand for rhino horn is based on its supposed value as an aphrodisiac and this widespread belief accounts for the greater part of its market value.' But it is obvious from the information available that if this particular superstition were overcome a demand for rhino horn would continue to exist, probably in excess of the dwindling supply. So vigilant measures must be maintained to control the illegal killing of rhino and the illicit trade in horn.

But to return to the Ngorongoro rhino: whatever the external factors, whatever may be rightly or wrongly reported, here in the Conservation Area we have an opportunity second to none in the whole of Africa to preserve in perpetuity and to make accessible to the visiting public a healthy population of these unique survivals of past ages.

The strongest weapon which we in Tanzania have to maintain rhino stocks around Ngorongoro is the *co-operation of the Masai*. When I say that the excessive rhino spearing of the 1959/60 period was due to famine conditions, it must not be implied that if there is no famine there will be *no* rhino spearing. My own experience as a District Officer in the 1930's and 1940's confirms the figures of the National Park period: namely, that when man and rhino share the same environment there will always be *some* rhino spearing. This, however, is not an argument to say that the best way of ensuring the survival of the rhino is to move the Masai: *provided they are on our side*, they are better where they are, and more valuable to the cause of conservation than a whole army of paid game scouts.

What is the cause of this limited, occasional rhino spearing? Sometimes it is just plain juvenile delinquency; involving not particularly rhino, but any type of wildlife; like juvenile delinquency everywhere – Europe, America or Japan – it will always be with us. The issue is, to what degree? And to what extent can it be controlled? I recall the case of two young uninitiated Masai, aged about 14 and 12 respectively, who were out herding their cattle. When they arrived with their charges at the usual watering place, a deep gully, they found an elephant in possession. So they climbed the banks of the gully till they were above the elephant, and one of them planted a spear in his back, which penetrated the kidney and caused immediate death!

Also there occurred a case of a youth creeping up on a sleeping zebra foal and spearing it, but fortunately the more usual way of a Masai youth to show his prowess is to run down a buck and then take a nick out of its ear to prove his success, rather than killing it.

As far as rhino are concerned, I am convinced that many of the clashes are unpremeditated. A couple of Masai warriors will go wandering over the grasslands, spears in hand. A rhino is seen lying between them and their destination. Now the ordinary foot-traveller, be he black or white or whatever, on seeing a rhino in his way, will make a considerable circuit to avoid a head-on clash. But not so the Masai: with a devil-may-care attitude he steams straight ahead, just to prove to

himself that he is not going to let a rhino deflect him off course. Then the rhino charges, the Masai stands and spears him, and if the case gets as far as the courts there is a genuine plea of self defence.

Sometimes one also gets the genuinely vicious rhino. The reason for such an attitude obviously varies: sometimes a rhino has been speared and retaliates by charging either the spearer, or perhaps sometime later, an innocent passer by. Others get worked up when another rhino intrudes on their territory and it may be, though this has not been proved, that if a human passer-by happens on a rhino in this state, he gets charged. Again it might happen that a human gets between a cow rhino and her calf: elsewhere I describe how a rhino gave a lion short shrift in these circumstances, and it is unlikely that a human would be treated otherwise.

But whatever the causes, these attacks do take place. I have myself seen one unfortunate young herdboy with the bone of his leg exposed from the calf to the thigh by one sweep of a rhino's horn. Again, during the famine period 1960–61 an old man, pretty emaciated himself, was driving his emaciated cattle across the Crater to market. A rhino for some reason resented his presence, he was not fit enough to take evasive action, and was gored to death.

So sometimes the boot is on one foot, sometimes on the other: but whatever the clashes – Masai/rhino or rhino/Masai – they are a small price to pay for preserving the *status quo*, and common sense, publicity and Masai co-operation can keep such clashes to a minimum. At one time the authorities were up against a blank wall of non-co-operation when investigating rhino killings, but I found that once the Masai leaders were led to understand that they were participating in the administration of the Conservation Area, and benefiting from it, their co-operation was assured. Of course, all the locals, men and women and children know when a rhino has been speared, and who the culprit is. If they inform the authorities the culprit is apprehended, and even if he produces a plea of self-defence, he can be punished for 'failing to report the wounding of a dangerous animal', if in fact it was only wounded, or 'failing to produce a Government trophy to the authorities' if the rhino was killed. For these very necessary and sensible provisions exist in the laws: if you, either as a licensed hunter or as an ordinary citizen acting in self-defence or defence of property, wound, but fail to kill, a dangerous animal, you must report the matter, so that the authorities may take action and warn the public. Many an innocent passer-by has been

gored to death by a buffalo which some thoughtless hunter has wounded.

Equally, if under licence you shoot a rhino, elephant or whatever, you must produce the horns or tusks for registration: if on the other hand you have killed in self-defence, you must safeguard and hand over these valuable assets so that the nation does not lose their value.

Of course the Masai who spears a rhino and reports the matter is not punished, but the very fact that he has reported makes it highly probable that here is a case of genuine self-defence.

If the elders spontaneously come forward with information, as happily they have been doing in recent years, this keeps the number of spearings down. It makes the dare-devil moran think twice before approaching a rhino too closely, and discourages the genuine criminal: nothing is more discouraging to the would-be offender than a high ratio of convictions to offences committed.

This is one of the reasons – there are others, put forward elsewhere in this book – why I always resisted, and will continue to oppose, the removal of the Masai from the Crater. It would cause such resentment, not only amongst the Crater Masai, but throughout the Conservation Area and beyond, that the spirit of friendly co-operation which we have succeeded in building up over the years would be lost. Once again the investigator of a spearing would be up against a blank wall of 'don't know'. Offenders would get away unpunished, and further offences would inevitably follow. So let's leave the Masai where they are!

The hippo of Ngorongoro round off the picture, and complete the microcosm of East Africa which the Crater presents. People often wonder how the hippo got into the Crater – but it is really not remarkable as Hippo Pool in a direct line is only 18 miles from the nearest point on Lake Eyasi and 21 from Lake Manyara. Even allowing for a circuitous route, it is not more than could be covered by a hippo from early one evening to late the following morning. After all, they graze out from their watery homes for up to 5 miles, i.e. a ten mile return journey in a night, so there is no reason why a determined hippo should not double that distance without undue dehydration. A conservation officer once met a hippo on the eastern rim, but it is not certain in what direction it was making; the incident proves, however, that the Crater wall forms no obstacle to hippo movement.

At present there are about 35 hippo in the Crater. But for the resourcefulness of the late Bill Moore-Gilbert there might have been

none – for when the drought was at its height in the latter months of 1961, all the pools were dry and the hippo, believed at that time to number about 18, were concentrated in Lerai forest in a swamp fed by the waters from the springs of Lerai. But 18 hippo in a small swamp soon turned the scanty water supply into thick mud. The hippo were so cramped that they were piled one on top of another, and it is believed that one, if not more submerged and never surfaced again. Then Bill had a brilliant idea. As anyone can observe from the Crater rim, the waters of the spring branch out in delta form, following four distinct water courses: this is most advantageous ecologically speaking, as the spread of water means a greater area of forest and more suitable habitat for its denizens. Bill argued that if all this water, currently being dispersed, were concentrated into one channel, it would make one good swamp instead of four bad ones. So he blocked the channels of the other streams so that all the water flowed down one, and thus the hippo were saved.

Readings taken at the time showed that the flow from the springs never dropped below a million gallons per day. So even if we get a recurrence of the 1961 conditions the same device can be applied to save our hippo stocks. There will always be enough water for this purpose, in spite of the relatively small quantities of water which is pumped up for use at the Lodges and houses on the rim.

6 The Carnivores

The lions of Ngorongoro have long been famous, but curiously enough were not mentioned by Dr Baumann, Ngorongoro's first European visitor. In the days of German rule, the Siedentopf brothers must have taken their toll, for ranching and lions obviously do not go well together. The only reference I can find to this period is one in Dr Grzimek's paper 'A Study of the Game of the Serengeti Plains', where in a footnote he says: 'Mrs Eva Wenkel, Berlin-Sehlendorf, who was living with the Siedentopfs . . . for more than one year, wrote me that one could hear lions roaring from a far distance during night time but that she never had seen some in the crater. Apparently lions behaved quite differently at those times when there was hunting in the Ngorongoro.' Dr Grzimek's view is confirmed by the early hunters of the 1920's whose accounts are quoted below.

The first hunting party of the British period of which we have a record is that of Sir Charles Ross, who, following his visit, purchased the Adolph Siedentopf farm on the Munge river from the Custodian of Enemy Property. Barns' book *Across the Great Craterland to the Congo* contains numerous references to lion hunting. Barns states:

> The lions of Ngorongoro were what we called 'daylight' lions, for, owing to their being unmolested, they were, more often than not, to be seen abroad in the day time. Although numerous everywhere they were located as being especially so on the opposite side of the crater, [i.e. opposite to Lerai where the party was then camped] which decided us to shift camp to the North-West corner of the Magad Lake.
>
> The crater wall on this side is cut into at frequent intervals by deeply wooded ravines or *kloofs*, which had become the

> living in these areas to renounce our claim to all those parts of the Serengeti Plains lying within the Northern and Lake Provinces which lie to the west of the line shown to us by the District Commissioner, Masai, on the 13th and 14th March and the 20th April, 1958.
>
> We understand that as a result of this renunciation we shall not be entitled henceforth in the years to come to cross this line which will become the boundary of the new Serengeti National Park and which will be demarcated. We also understand that we shall not be entitled to reside in or use in future the land lying to the west of this line, which we have habitually used in the past.
>
> We agree to move ourselves, our possessions, our cattle and all our other animals out of this land by the advent of the next short rains, that is before the 31st December, 1958.

Then followed the signatures of 12 Masai elders and an explanatory note reading:–

> The line mentioned above is that marked in brown pencil on the plan attached to P.C.'s minute No. CC1/9/135 of 21.3.58. The above boundary retains for the use of the Masai the wells in the lower Olduvai and korongos to the north thereof: the Ildashi wells: the Meiran'gwai wells: and the grazing adjacent thereto. Lake Lgarja in its entirety will remain within the new Serengeti National Park.

The document concluded with the signatures of the executive officer of the Masai Federal Council as interpreter and of the Provincial and District Commissioners as witnesses.

Looking back, I honestly do not think a more workable solution could have emerged. The 1956 Sessional Paper would have landed the Park Authorities with *three* parks to cope with. Besides presenting difficult problems of administration, they were all of doubtful ecological viability. Professor Pearsall's solutions would have produced a crop of troubles, arising from the grazing rights for the Masai which he proposed within the Park. The Committee's solution avoided most of the pitfalls, but in my view, both today and at the time, the Government did well to adjust the Committee's recommendations as they did.

The Masai lost Moru and the Western Serengeti, over which subsequently discovered evidence confirms their century-old claim. But in the course of that century, particularly in recent years, they have been shown the way to produce, without detriment to the habitat, more cattle from the land remaining to them than could have been produced from all the country they occupied in the past. They have, generally speaking, chosen to ignore such advice and so forfeit any sympathy that their loss might have engendered. Further, the Ngorongoro Masai weathered the 1960/62 drought with a minimum of loss and hardship, in spite of the loss of Moru.

The Parks lost Ngorongoro and Empakaai, but the nation did not. Ngorongoro *might* have developed better or more rapidly, from the tourist point of view, under the Parks than under the Conservator, but the record of the present system is impressive. Empakaai *might* have been 'opened up' but in my view once it had been cleared of agriculture it is best 'kept on ice' till such time as a demand justifies its development as a nature-trail-on-foot area.

The Forest Reserve maintained its *status quo*. Certainly more might have been done to protect the smaller clumps of forest lying outside the reserve, but whether by fire control or from natural causes, considerable areas of grassland are reverting to woodland.

The wildebeest lost nothing; they still hold the trump card of malignant catarrh, which drives the cattle off their grazing grounds just at the season the wildlife requires it.

The rhino, whose fate seemed so doubtful, have an assured future. Not only is poaching under control, but research has revealed a much brighter picture than was at one time feared.

So, in spite of the criticisms levelled at the Government's decision at the time, the outcome has not been unsatisfactory. Some of the weaknesses which revealed themselves have been removed. Adjustments in the administrative machine have been made: the 'Authority' has been replaced by the Conservator; the Unit has been absorbed into the Ministry as an integral part of the organisation; the staffing position seems with Canada's help to have a rosier future. Also adjustments in boundaries have been made on the Parks side, which safeguard areas previously susceptible to poaching and to encroachment. But this is anticipating the story of more recent events.

The Authority speedily demonstrated its uselessness in administration. On the organisational side the four professional and technical

officers, all European, not all of wide experience or great tact, in their enthusiasm to do a new job well formed a pressure group to demand drastic action and sweeping changes in the land use pattern. This, as might be expected, caused the conservative Masai members to become more resistant to change than ever. With the situation thus polarised, the Chairman, a young District Officer, was in no position to persuade either his technical colleagues to display more patience or the Masai to accept some small measure of change. As a result the Authority ground to a halt: meetings were suspended, the last being on the 9 May, 1960, less than a year after the Authority had been set up.

It was at this juncture that the Tanganyika Government invited me to revisit the area and tender advice on the sociological aspects of the *impasse*. I had just resigned the directorship of the Rhodes-Livingstone Institute for Social Research in Lusaka, Northern Rhodesia, and agreed to undertake this task on an honorary basis. I spent four months, January to April, based in Arusha, frequently visiting Ngorongoro and Dar es Salaam for consultations. I completed my report on a voyage to England, my daughter acting as honorary typist, the main recommendations being the reorganisation of the Authority and the establishment of an Advisory Board. There were also many detailed recommendations concerning the improvement of relationships with the Masai, measures to encourage the tourist trade, closer cohesion amongst the 'team', further research, and so on.

On the subject of the 'Authority' I thought it worth while attempting to resuscitate this defunct body, with stronger professional representation on the one hand and more and younger Masai on the other. To get more objective minds to bear on the problems, I suggested that the provincial officers from Arusha should replace the local forest, game, veterinary and water representatives. I also suggested that the Authority should be a statutory body, self-accounting in financial matters. It must be realised that at that time, 1961, the future of the organisation at Ngorongoro was completely uncertain. Not only capital funds but current expenditure was being drawn from the Colonial Development Welfare Grant of £182,000 which had been made to Tanganyika to enable the country to put into effect the recommendations of the Serengeti Committee. This meant that the salaries of the staff, my own included, came from this source: in the case of civil servants seconded from departments, forestry, game, etc. their salaries were reimbursed to the departments concerned. Where the money was to come from to

continue these payments beyond June, 1964 when the grant expired, no one knew. One of the principles on which the Colonial Development and Welfare grants were given was that of 'pump-priming', i.e. the money was regarded as a means of getting a project off the ground and by the end of the period the recipient was expected to carry on alone with the scheme. I felt that if all sources of revenue were diverted into the Authority's coffers there would at least be enough to keep it running, but emphasised that funds would have to come from outside for capital development. Further experience and study have taught me that only in very exceptional circumstances do parks pay for themselves: their benefit lies not in direct revenue earning, but in the indirect revenue which they stimulate in the tourist industry, hotels, transport, sale of curios and so on. Further, the revenue from the firewood plantations was to prove very unreliable; due to various set-backs very little revenue has accrued from this source, or is likely to accrue for some time yet.

So in retrospect it was fortunate that my idea of a self-accounting Authority was turned down, although at the time no alternative was proposed. We just drifted along, drawing our funds from Colonial Development and Welfare: but this scheme was due to close on 30 June, 1964. When the deadline drew near, the Government of Tanzania (as it had then become) manfully accepted its responsibilities and agreed to carry the costs of the Conservation Unit.

This was a great step forward. It guaranteed the survival of an administrative machine to run Ngorongoro in perpetuity: just as there will always be a Forest Division or a Medical Department, so the Conservation Unit should always be there.

To return to my 1961 proposals, the other important suggestion was the establishment of an Advisory Board. This idea had already been put forward, unbeknown to me, by Sir Julian Huxley, in his report to UNESCO entitled *The Conservation of Wildlife and Natural Habitats in Central and East Africa*. Indeed the composition he suggested was much the same as mine, designed to ensure that the responsible Minister received the best advice possible. In addition to governmental representation I suggested that there should be a representative of local wildlife and tourism interests, an overseas representative covering the same ground, the Director of the East African Agriculture and Forestry Research Organisation at Maguga near Nairobi (then, as now, an East African Common or Community Service), the professor of zoology from Makerere College, Kampala, Uganda (at that time the University

of East Africa with campuses at Kampala, Nairobi and Dar es Salaam had not been established).

The omission of the Director of National Parks was criticised, but I felt that tension between the park authorities and the Masai should be allowed to die down before such an appointment was made. Close informal liaison with the parks was of course maintained, particularly on research matters, and the link has now been formalised, as I always intended it should be at the appropriate juncture.

I felt that the Advisory Board should be a statutory body, i.e. appointed under the law, with a legally-defined composition, terms of reference and procedure. In the varying circumstances of modern government, many types of statutory body have emerged, with the Ministries exercising various degrees of control. In some cases the Minister is bound to consult the board on certain specified matters, and if he refuses the advice proffered, he must record in writing his reasons for so doing. In some cases a greater measure of freedom is given to boards to run their own affairs, e.g. the Board of Trustees of National Parks, but even then there is usually a 'small print' clause in the Act obliging the Board to fulfil any direction which the Minister may see fit to give it. And even if such clause does not exist, Government always has the whip hand for it can cut off the subsidy or other form of financial aid if the board does not behave itself.

However, the idea of a statutory board was rejected. One reason for this was a feeling held by some that it was an infringement on the sovereign rights of an independent state, such as Tanganyika became in December, 1961 to invest non-citizens with a legal right to advise a Minister as to his duties. This was not very valid as I proposed only three outsiders out of a total of 11 members. The present membership amounts to 19 of whom 11 are local, two from neighbouring Kenya and six from overseas. I revert to its future status in Chapter XI.

The Arusha Conference of September, 1961 called by the International Union for the Conservation of Nature and Natural Resources (I.U.C.N.) formed a convenient occasion for a review of my recommendations. It was attended by many leaders of thought in the conservation field, Sir Julian Huxley, Peter Scott, Bernard Grzimek, Dr Wasawo, Dr Worthington and several others, who were invited by the Tanganyika Government to advise on the current situation at Ngorongoro, which most of them also visited at that time. It was perhaps fortunate that Ngorongoro at that time presented itself as an

'all time low'. The drought was at its worst; rhino spearing had been heavy (see p. 93); intrusion of domestic stock was considerable, and the Authority was at a standstill. These conditions made it impossible for Government to ignore the complaints and advice of the assembled conservationists. Particularly was this so as Prime Minister Julius Nyerere, shortly to become first President of the Republic of Tanganyika, had, with his Ministers, just presented the 'Arusha Manifesto' to the conference. Although it has been frequently quoted, it certainly bears repetition in the present context.

> The survival of our wildlife is a matter of grave concern to all of us in Africa. These wild creatures amid the wild places they inhabit are not only important as a source of wonder and inspiration but are an integral part of our natural resources and of our future livelihood and well being.
>
> In accepting the trusteeship of our wildlife we solemnly declare that we will do everything in our power to make sure that our children's grand-children will be able to enjoy this rich and precious inheritance.
>
> The conservation of wildlife and wild places calls for specialist knowledge, trained manpower and money, and we look to other nations to co-operate in this important task – the success or failure of which not only affects the Continent of Africa, but the rest of the world as well.

How, in the light of this, could Government ignore the plight of the 'wild creatures amid the wild places they inhabit'? In the course of prolonged discussion, tactfully and skilfully presided over by Clive Mace, Permanent Secretary of the Ministry of Lands, Forests and Wildlife (so renamed following the Conference) there emerged the idea of a Conservator responsible through the Permanent Secretary to the Minister for the 'conservation and development' of the natural resources of the Conservation Area.

This idea was approved by the Cabinet, so, though I took office as Chairman of the Authority and functioned as such for several months, it was accepted that I would become Conservator, with changed responsibilities, as soon as the necessary legislation could be put through Parliament. The position was legalised in an amended Act

functioning machine capable of handling the increased intake of tourists, whilst at the same time conserving the natural beauty of the Area and coping with local development. Faced with conflicting interests the Conservator was in a position that he could not please everyone. It has been explained how it was decided to make Dulen the focus of agricultural development, and to resettle the outlying pockets of cultivation there. It was a three year battle to get the squatters out of Empakaai Crater: my successor eventually succeeded by going in with a posse of police and standing firm against the threats of a group of hysterical spearmen. At Dulen itself difficulties also arose in the form of elephants. Rather than have them shot I invested in bird scarers, a device activated by calcium carbide which exploded with a deafening bang at intervals. This was not successful – after a short period of effectiveness the elephant got used to the noise and ignored it. However, I thought it was worth trying, but the locals did not; the Regional Commissioner received the following indignant letter written on their behalf, translated below from Swahili to English.

> Greetings, Sir! With respect we write this letter to inform you of the damage which we have suffered in our farms which have been destroyed by elephants, also with reference to the letter of the Conservator of the 31st May, 1963 which prohibited the Game Scouts from shooting these elephants which are ruining the farms of the people of Dulen. We understand completely that poverty is one of the three enemies of Tanganyika. The people are cultivating in order to get rid of the enemy of poverty but we people of Dulen are supporting this enemy by following the letter of the Conservator which said that these elephants should not be shot . . .
>
> Your Excellency, this order of the Conservator displays the cruelty of a he-goat such as we have never seen in Tanganyika, but only in South Africa where our African brothers are treated thus by the Boers. Further, we say straight out that the Conservator is not here at Ngorongoro to help the Masai, but to hurt them and keep them down in their previous state . . .

And so on in similar vein. Which shows that the Conservator just cannot win!

Without further facts and figures I shall endeavour to sum up the

period of my Conservatorship. I feel I can claim some credit for having established a sound foundation for development on a basis of multiple land use. Rhino poaching was contained and a system of publicity set up – annual reports, newsletters, bulletins, press handouts, etc. – to ensure that this and other achievements received notice. By this means world-wide misgivings concerning the partition of the Serengeti National Park were to some extent allayed.

Tourism went ahead by leaps and bounds. The overseas factors giving rise to this were of course beyond our control, but the Unit managed to keep facilities expanding at a rate sufficient to cope with the influx.

Poaching or illegal killing of wildlife other than rhino was maintained at a minimal level. By several accidents of history and geography the wildlife of the Serengeti is as safe, if not safer, in the Conservation Area as in the National Park; when this point was got across to the public much of the opposition to the Conservation Unit died down.

Research went ahead both through workers directly associated with the Area – Goddard and Estes – and several visitors from the Serengeti Research Project (later Institute), Klingel, Kruuk and others. These workers not only added greatly to our knowledge of the species they studied, thereby facilitating management; they also provided reassuring figures concerning wildlife numbers. In particular, Goddard's counts of the rhino population of the Crater and Olduvai, duly publicised, did much to reassure public opinion and to refute the wilder statements of over-ardent conservationists.

Following the tensions of the National Park period and of the brief reign of the Authority, relationships with the Masai improved. The elders became more co-operative in the matter of investigating rhino killings and in producing the culprits. The same attitude was not apparent in the matter of forest trespass, but this time-honoured offence has been going on in spite of heavy fines ever since the Masai were denied free access to the forest. Whilst the damage so caused is serious it is less so than the heavy attrition of the rhino population which with Masai co-operation is now under control.

In the field of animal husbandry the situation was contained but little positive progress made. Excessive grazing on the Crater floor was kept well under control. Stock numbers throughout the Area fluctuated, but by Act of God and not due to imposed control: firstly famine reduced the cattle population, and when a return to good rainfall