

AFRICANA

R 509

Incorporating The East African
Wild Life Society's Review

Vol. 5 No. 8 1975 Shs. 6/-



SPECIAL ISSUE - ON THE AFRICAN ELEPHANT



THE ELEPHANT'S SENSE OF DEATH

THE following account of the mysterious behaviour of elephant at the death of its own kind—and of humans and other animals—is a chapter of a book "Among The Elephants" by the Manyara research scientist IAIN DOUGLAS-HAMILTON and his wife ORIA. The book is due to be published in February next year by Wm. Collins and Sons.

TO ME the death of an elephant is one of the saddest sights in the world.

The day we met Torone Sister Number Four an elephant in the southern section of Manyara Park unexpectedly in the Ndala woods she was an epitome of vigorous life, a powerful member of her species, the growth of scores of years fused her skeleton and muscles.

This marvellous organism, was co-ordinated by a brain conditioned by decades of experience. Motivated, at that instant, in defence of her family, she bore down, like a mighty battleship going full speed ahead, upon Mhoja and me. Next second, separated only by a pin-point in time and the deadly passage of lead through living tissues, she was a collapsed mound of flesh, a colossal lifeless wreck, with a tiny hole in her head from which came a thin trickle of blood.*

To a statistician the only significance of death is in its effects on population dynamics and the causes of death are analysed for their relative importance. For human beings and for elephants death remains significant in the behaviour of the survivors. In life individuals of both species are tied by strong family bonds and frantic attempts may be made to save a sick or dying relative.

Many great zoologists including Charles Darwin have thought that animals possess strong emotions and I have little doubt that when one of their number dies and the bonds of a lifetime are severed, elephants have a similar feeling to the one we call grief. Unfortunately science as yet has no means of measuring or describing emotion even for human beings, let alone for animals.

It is perhaps not surprising that attempts to assist a dying elephant may continue long after it is dead. Mhoja and I searching for more elephant paths up to the Marang Forest one day heard the loud bawling of an elephant calf in distress about a hundred feet up the Endabash escarpment. It was coming from our left, so we cautiously worked our way across the face of the scarp until we were very close to the source of the noise. Peering through the foliage I could make out the head of a cow at a curious angle to the slope. Her eye was open but she didn't move. In front of me a tree jutted out, and by swinging up into its branches I was able to get a better view.

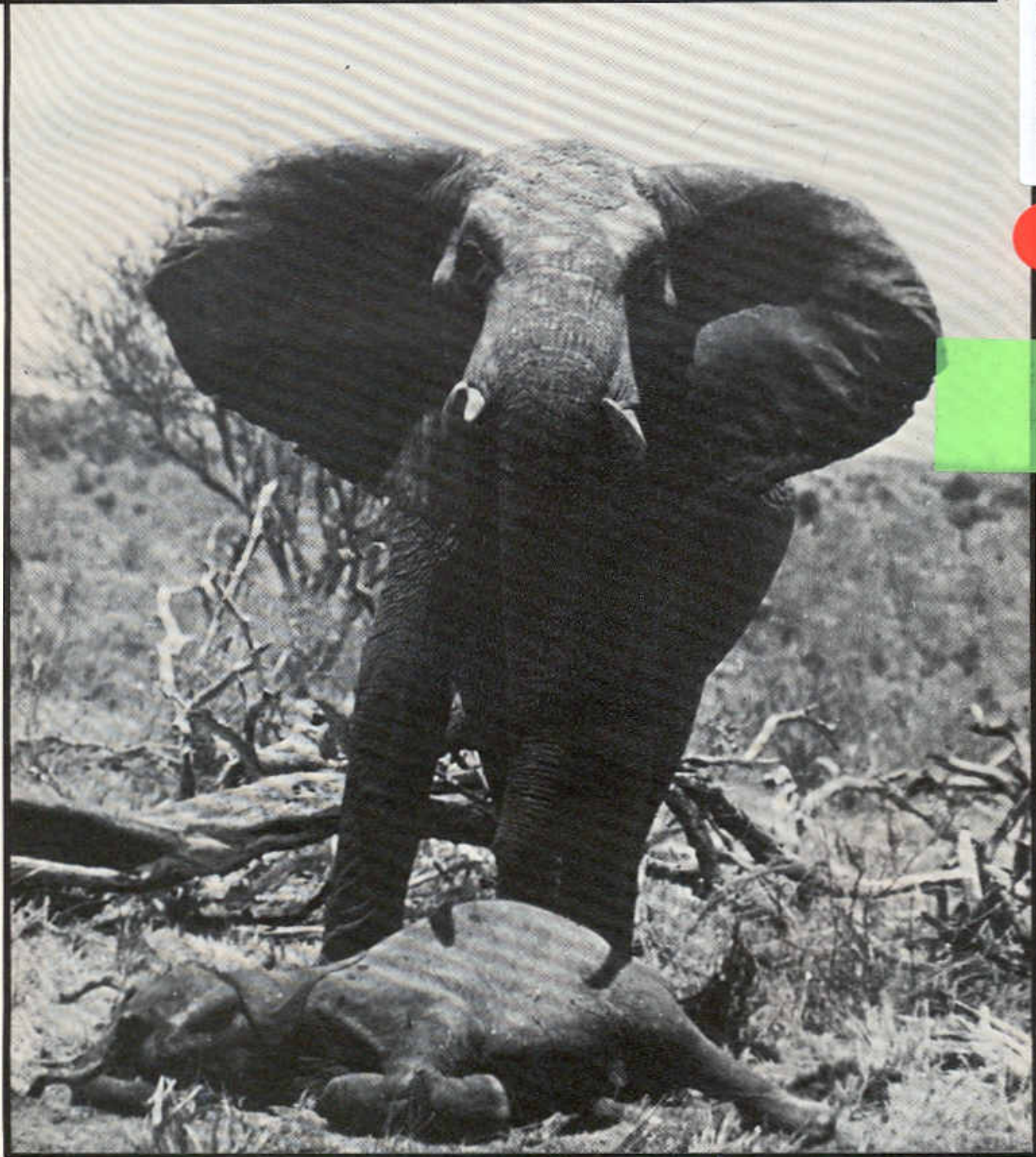
*The elephant was shot by the Ranger who otherwise would have been killed.

Now I saw quite clearly a scene of great natural drama. The cow, an adult, was lying on her side down the slope; one of her hind feet was wedged between a boulder and a thick tree and she was hanging from it. Her head was bent backwards at an acute angle and she was stone dead. Next to her stood three calves of different sizes. The eldest was moaning quietly but every so often gave vent to a passionate bawl. The second just stood dumbly motionless, its head resting against its mother's body. The smallest calf, less than a year old, made forlorn attempts to suck from her breasts. Then the eldest knelt down and pushed its head and small tusks against the corpse, in a hopeless attempt to move it. I watched them for fifteen minutes repeating these patterns of behaviour until suddenly they caught my wind and wandered slowly away.

On closer inspection I found that the cow was still warm and that no flies had settled on her, so the accident must have happened only a short time earlier. Trees which had stood in the path of her fall were broken and boulders dislodged. I back-tracked the path of her descent to a point about 400 feet up the slope where I found her last footprints. It appeared that she had stepped into a pig hole covered in vegetation, lost her balance and rolled out of control down the precipitous slopes. There were several cliffs and in places it looked as if she had bounced down them leaving the vegetation undamaged. The calves must have had some difficulty in finding her afterwards, for the nature of the terrain would have forced them to make a wide detour. It seemed that they were not aware that she was dead, although they must have known something was wrong. Perhaps they could not adjust immediately to the finality of her death.

Similar behaviour has been well authenticated elsewhere. Shortly after this incident Harvey Croze a scientist at the Serengeti Research Institute and a photographer friend of his witnessed the death of an old cow in the middle of her family unit in the Serengeti.

Her dying dragged out over an afternoon in that lovely rolling northern country, not far from where we had darted a young bull. Harvey first noticed her lagging behind the family unit; when she fell they all clustered around her, putting trunks in her mouth, pushing against her and trying to raise her. The most prominent was an independent bull who happened to be with the cows and

Y DROUGHT WITH MALNUTRITION KILLING OFF THE WEAK AND THE YOUNG

DROUGHT in Tsavo East National Park has taken a terrible toll in the past few years. The Chief Biologist with the Tsavo Research Project estimates 6,000 elephant casualties in the year 1970-71 when these graphic pictures by ALAN ROOT were taken. This represents perhaps as much as 30 per cent of the total Park population—mainly very young and very old animals. The picture sequence shows the extraordinary community behaviour at the event of sickness or death, as discussed in the extract from Iain and Oria Douglas-Hamilton's book.

calves, and he at times kept the others at bay while he attempted alone to aid the dying elephant. She died there among her family, and they stayed with her for several hours longer.

The bull in his frustration at failing to raise her, indulged in totally irrelevant behaviour. He mounted the dead cow as if he were attempting to copulate, before finally moving off with the others. One cow, presumably she had a particularly strong bond with the dead animal, stayed longer than the others, only withdrawing reluctantly at night fall.

A more extreme attachment to a dead animal was witnessed by Bill Woodley, the Warden of the Aberdares National Park in Kenya, who told me he observed cows and calves defending the body of a young female for three days after it had been shot, and even more bizarre is the account given by Rennie Bere in his book *The African Elephant* of a cow who refused to abandon the decomposing corpse of her new-born calf, and carried it round for days resting on her tusks. The only other animals I have heard of doing this are baboon mothers who may carry a dead baby for a week or more.

Such a responsiveness to inert bodies is of obvious value in saving a member of a group who has temporarily collapsed. The helpers may also later benefit from the sick animal's recovery when it resumes its role in the family unit's life. It may participate in the communal rearing and defence of the calves, or if it is the matriarch herself, may continue to lead in times of stress and benefit the family unit by drawing on her accumulated stores of experience.

A zoologist brought up in the theory of natural selection must always try to explain such apparently altruistic behaviour in terms of the helper's own advantage, or in cases where one animal sacrifices itself to save another, such behaviour must statistically tend to perpetuate the genes which prompted it, by increasing the chances of survival in a closely related animal that carries those same genes. What is far harder to explain in these rational terms is the value of the extraordinary interest which elephants sometimes show in corpses even when they are decomposed.

After ten days of rotting in the woodlands Torone Sister Number Four was reduced to a foul black cavity enclosed by a bag of skin, with bones sticking out. The tips of her feet had been gnawed by hyaenas and some of the metacarpal foot bones were missing. I paid her a visit every day to watch the return of all the salts and minerals to the ground. In the rains this process was speedy and within a few more weeks I expected to see grass and herbs sprouting from the dark fibres that had once been her stomach contents.

On the tenth morning a large number of elephants came up from the south to the Ndala woodlands. I was curious to see what they would do if they found the corpse, so I parked the Land-Rover just behind the carcass, with a clear view, and awaited events. After a little while a large matriarch named Clytemnestra appeared with her family unit behind her. She was a fierce inhabitant of the south whose range overlapped in many places with that of the Torone sisters, and she must have known Torone Four when she was alive.

As soon as she caught sight of my vehicle she brandished her ears and looked sideways in my direction. Having made this aggressive flourish she continued quietly on her path. Over the four years I had known her she had calmed down a great deal and was now almost used to quiet vehicles. The tourist explosion and the ever-increasing stream of cars through the Park even down in the wilder regions was gradually having its taming effect on all elephants except for the irreconcilable Torone sisters and a few others.



A REVERSAL of the normal man-elephant conflict—this time with man the victim. He had an injured leg, could not escape the charge and was killed seconds after this picture was taken.

Clytemnestra continued for several paces, and then all of a sudden she caught a whiff of the corpse blowing towards her on the wind and spun round. Her trunk held out like a spear, her ears like two great shields, she strode purposefully towards the scent, like a mediaeval olfactory missile of very large proportions. Three other large cows came right behind her, heads suspiciously raised, until they closed around the corpse. Their trunks sniffed at first cautiously, then with growing confidence played up and down the shrunken body, touching and feeling each bared fragment of bone. The tusks excited special interest. Pieces were picked up, twiddled and tossed aside. All the while they were aware of my presence at ten paces' distance. Never had they come so close to me before.

One of the young cows took two paces in my direction and tossed her head angrily; the others reacted to her mood, and the spell cast by the corpse was broken. They made perfunctory threat displays and moved away. But for my proximity I felt their investigation would have gone on longer, and I cursed myself for being too close.

Before this incident, I had heard of the elephant's graveyard, the place where elephants are supposed to go to die. This persistent myth I knew to be untrue after discovering elephant corpses scattered all over the Park. I had, of course, also heard that elephants took a special interest in the corpses of their own kind; it had sounded like a fairy tale and I had dismissed it from my mind. However, now after seeing it with my eyes I collected every reliable account I could find and the earliest I discovered came from David Sheldrick. In 1957 from Tsavo he wrote:

"There is now fairly convincing evidence that elephants have a strange habit of removing tusks from their dead comrades. In Tsavo East over the past eight years, the Warden has recovered a great number of tusks from elephants—which had died from arrow wounds or from natural causes—and has found in many instances that the tusks have been removed and carried anything up to half a mile from the carcass. In other cases, the tusks have been shattered against trees or rocks. Quite obviously, no hyaena could manage to drag or move a tusk weighing up to 100 lb for no purpose. The lack of teeth marks, and the fact that some of them are smashed, showed it could be elephants that resorted to this practice.

"Sheldrick's deductions were quoted by Alan Moorehead in the *Sunday Times*, but later debunked by Richard Carrington in his book *Elephants* as an attractive piece of African folklore... simply based on tribal gossip but not supported by any eyewitness accounts. However, similar reports persisted, such as the following from the Uganda Parks in 1958.

"An elephant with a badly damaged foreleg had to be destroyed near Paraa. Immediately afterwards, the body was approached by two other elephants. Both circled the body very slowly, after examining it in great detail with the extended tips of their trunks, which were never allowed to make contact. One then made a systematic but unsuccessful attempt to draw the tusks.

More recently, Simon Trevor, after leaving Manyara to finish his film in Tsavo, witnessed a similar spectacle and filmed it. Elephants approached a corpse, which had little left apart from skin and bones. They sniffed the tusks and bones systematically and then carried them off into the bush. They did not however smash the tusks.

Clytemnestra's exhibition and these reports convinced me that it would be worthwhile setting up a crude experiment to test if elephant bones really did have some special significance for live elephants. I couldn't believe that the behaviour I had witnessed was a coincidence.

I found an elephant carcass and transported its skin, tusks and bones to the Ndala River pools. There were a large number of family units in the area and one by one they came down to drink. In most cases as soon as they became aware of the bones they showed great excitement, raising their tails and half extending their ears, grouping around and carrying out a thorough investigation, picking up some of the bones and turning others with their feet.

They usually became huddled in a tight circle so that I couldn't see what they were doing, except when an elephant raised a bone above its head. These reactions in six out of the eight groups that came near the bones by the river made it all the more puzzling that the remaining two groups simply walked over the bones as if they weren't there.

Later, when making our own film about the Manyara elephant



research project for television, I made a similar experiment in the Ndala woodlands. This time I set out the bones on one of the most commonly used woodland trails, with the camera crew retired a little downwind where we could get a good view through our long lenses without disturbing the elephants. The corpse belonged to a bull which had been shot in the farm nearest to the south of the Park while raiding some maize fields.

After waiting for about twenty minutes, a large group of cows and calves appeared, led by a familiar tall gaunt matriarch. It was none other than Boadicea with her kinship group. It seemed at first that they would pass the corpse. Then a breath of wind carried its smell directly into their trunks. They wheeled *en masse* and cautiously and deliberately closed in on the body. Shoulder to shoulder the front rank drew nearer, ten trunks waving up and down like angry black snakes, ears in that attentive half-forward position of concern. Each individual seemed reluctant to be the first to reach the bones. They all began their detailed olfactory examination. Some pieces were rocked gently to and fro with the forefeet. Others were knocked together with a wooden clonk.

The tusks excited immediate interest; they were picked up, mouthed, and passed from elephant to elephant. One immature male lifted the heavy pelvis in his trunk and carried it for fifty yards before dropping it. Another stuffed two ribs into its mouth and revolved them slowly as if he were tasting the surface with his tongue. The skull was rolled over by one elephant after another.

To begin with only the largest individuals could get near the skeleton, such as the crush. Boadicea arriving late, pushed to the centre, picked up one of the tusks, twiddled it for a minute or so, then carried it away, with the blunt end in her mouth. The rest of the group now followed, many of them carrying pieces of the skeleton, which were all dropped within about a hundred yards.

Virgo was the last to leave, and catching sight of me she came close by with a rib in her mouth, and waved her trunk as she went past. It was an uncanny sight to see those elephants walking away carrying bones as if in some necromantic rite.

An observation of Ian Parker further supports the idea that elephants may be able to recognize the place of death even after the carcass has been totally removed. He was once herding by aircraft a small family unit during a cropping operation and they were moving steadily towards the gun party on the ground when suddenly they changed their course and headed for a discoloured patch in the soil.

Parker realized that here was the fibrous content of an elephant which he had 'utilized' three weeks previously. Despite the elephants' nervousness caused by the aircraft they all stopped when they reached the spot and made a thorough investigation with their trunks, huddling together for a few minutes before moving on to meet their fate.

As curious as the smelling and removal of bones is 'burying' behaviour. I have never seen this but it has been so widely and consistently reported, often by reliable witnesses, that it must be accepted as fact. This behaviour is elicited by fresh corpses or even animals not yet dead, and it is not confined to elephant bodies, as the following examples will show.

George Adamson has written of an old woman he knew who was buried alive by elephants. She was a Turkana and one evening, when walking home with her son, he stopped behind a bush bidding her at same time to follow the route ahead. She was half-blind and soon strayed from the path. After wandering until nightfall she lay down under a tree and fell asleep. She was woken a few hours later by an elephant over her playing its trunk up and down her body. Paralysed with fear she lay motionless. Presently other elephants came and, trumpeting loudly, buried her under a great pile of branches which they broke off from trees near by. The old woman was not found until next morning when her faint cries attracted a herder who released her from the imprisoning branches.



THE BONES and tusks of a dead elephant mysteriously excite the living. Pieces are smelled, picked up, tasted and occasionally carried away for several hundred yards.

Professor Grzimek has recorded four second-hand accounts of elephants, both bulls and cows, killing human beings and later covering them with vegetation and soil.

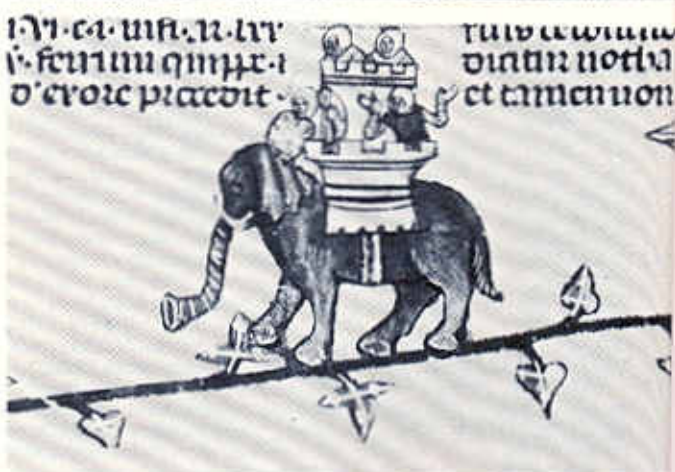
The most interesting of these accounts involved a bull and took place in the Albert National Park of the former Belgian Congo in 1936. A tourist approached the bull on foot with his camera. Despite warnings from a number of the National Park staff that the elephant was well known to be extremely dangerous, he persisted in his attempt to get some pictures and the bull charged. Unfortunately the man had a bad leg and was not quick enough in getting away. Just as he turned to flee the Park employee took a last snapshot. The tourist was swiftly overtaken and the elephant smacked him down with a blow of its trunk.

Eye-witnesses allege that he was dead before he hit the ground, but to make sure the elephant knelt on him and drove a tusk through his body under the shoulder blade. The survivors returned after the elephant had left and found that the tourist's body had been covered with plants.

Continued overleaf



HISTORICALLY the elephant has had a relationship of extremes with man. On the one hand, tame animals have been cherished as beasts of burden, ceremonial spectacles, and tactical weapons of war; on the other, they have been destroyed from ancient times as crop pillagers or "beasts of the chase." These illustrations show elephant as an adjunct of man's aggression through the ages—and also a target for it!



SENSE OF DEATH *continued*

I was lucky to meet the avenger of the tourist, Professor L. Van den Berghe who later tracked down the bull and destroyed it. It was discovered that the cause of his bad temper was a deep ulcerated wound, full of pus, in his head, which had obviously been caused by a bullet.

Burying behaviour is not restricted to human bodies. In a Kenya Park report of 1956 a description exists of a rhino carcass which from tracks nearby, appeared to have been dragged some distance by elephants and then covered up with grass and branches. . . .

Accounts of elephants burying their own kind are well authenticated. Myles Turner (*formerly Warden of Serengeti National Park*) once made a living by taking out hunting parties. On one safari a client shot a large bull elephant out of a herd of about six. The survivors immediately surrounded the dead animal, and stood over him. Myles told his client that the elephants would disperse after a few hours; meanwhile they could retire a little and have their lunch. When they came back some hours later one bull was still by the corpse. The hunters managed to scare it away. Then they advanced to the dead beast and found to their amazement that the other elephants had covered the large wound in its head with mud, and had piled earth and leaves on the body. . . .

In spite of the fragmentary and incidental nature of the evidence, it is clear that elephants often show more than a passing interest in decomposed carcasses of their own species, even when little remains but the smell. One can only speculate about the survival value in any of this extraordinary behaviour. It is possible that the olfactory exploration might provide information about how the animal died which could conceivably be of value, but at the present stage this must remain a conjecture.

I have no idea why elephants carry bones. The special significance of the tusks which seemed apparent both to Simon Trevor and myself is equally mysterious, although of all the organs of the body they remain much the same in death as life, curving shafts of ivory, perhaps still with some signal effect. As with the burying behaviour I shall know no more about it unless I, or someone else, conduct

some controlled experiments designed to unravel exactly which stimuli elicit these responses, and then try to find out why. These phenomena are certainly not beyond the realms of experimental investigation. It is not enough to say that an elephant possesses a 'sense of death', and to leave it at that.

However, mysterious and fascinating the bones and burying behaviour might be, the relevance of death to the ecological problem could only be discovered through statistics, particularly in trying to answer the question of what controls the size of the population. I had shown that the breeding rate was healthy, but the net changes in population size, so important for the future of the Park, would also depend on immigration, emigration and the death rate.

In my sample of known family units I was able to record deaths in exactly the same way as births. If an animal disappeared and failed to re-appear I concluded that it was dead, even if I could not find its body. By the time the elephant conference came up to be held at Ndala I would have enough mortality data to inform my colleagues of the way in which deaths and births affected the size of the population, taking into account the effects of movements in and out of the Park.

The relative importance of different causes of death to elephants was also very much in my mind. This has hardly been studied in the wild.

The few figures which exist are mainly concerned with shooting elephants for sport, ivory, meat or crop protection. Nothing exists on the numbers that die from disease. Anthrax, rabies and arteriosclerosis have been diagnosed and the manuals about how to care for domestic elephants written by Indian and Burmese civil servants list so many diseases that elephants may be prone to, that one is left with the impression that, for all their size, they appear to be exceedingly delicate creatures. The old matriarch that Harvey Croze saw dying in the Serengeti succumbed to a streptococcus infection of her mucous membranes.

At Manyara I was able to locate fifty-seven elephant corpses in various stages of decomposition. Some I spotted from the air, or by following the descent of vultures, others from the reports of Rangers or tourist guides. Unfortunately many of the corpses were



too disintegrated for me to be able to find out the cause of death or who they were, but in other examples the causes were obvious.

Accidents took their toll; in addition to the cow who fell down the scarp there was a bull who became hopelessly stuck in one of the swamps of the Ground Water Forest. It was impossible to extract him and he was shot by the Park Warden. Across the Lake in the Tarangiri National Park another bull met his end when a baobab, which he had been in the act of eating, fell on top of him—this is not an infrequent cause of death in those areas where elephants weaken the trunks of these enormous trees by their persistent tusk chiselling.

If an elephant survives to old age, the ultimate terminator may be tooth wear and decay. When the sixth set of molars are ground to stumps, as I found in the mouth of one old cow, the mastication of certain rough, but necessary types of food becomes impossible and death follows.

Fighting is rarely fatal though I found one bull apparently gored to death by another, with a deep tusk-sized hole that pierced his brain. Predation by lions is still an important risk for calves. Twice I have observed lions eating small calves, and the one at Lindbergh's camp was definitely killed rather than scavenged.

Starvation, the ultimate controlling factor for many animal populations, had not made an appearance at Manyara. The Park elephants were remarkably healthy. Few were out of condition or suffering from disease. Some had skin growths or abscesses the size of tennis balls on their bodies but these usually sloughed off after a few months. One female had hundreds of wart-like growths that covered her trunk but this was a very rare condition. Typically the thighs, back, shoulders and forelimbs of almost every elephant were well padded with flesh. I never saw Manyara elephants looking like the walking skeletons that were later to make their appearance and to die in thousands in the Tsavo.

In Manyara's history the shooting of elephants has played an important role. Before the second World War the area was famed for good hunting, but not of elephants, since there were few large tuskers. After the Park was gazetted the first Warden killed any elephants that entered the village of Mto-wa-Mbu in an attempt

to 'teach them the boundary. To the south even large numbers were eradicated in the mid-1950s...

Other elephants were speared by the Wambulu. I once found a young female with a deep wound clean through her trunk, obviously caused by a spear. Every time she took a breath she blew frothy bubbles out through the straight cut edges of the wounds. Luckily she was a healthy individual and after a few weeks the holes closed up and she appeared to regain the full mobility of her trunk. From several corpses I recovered the heavy spear blades of the Wambulu.

Most shocking was the discovery of an entire family unit of seven that had been massacred inside the southern game fence. I found them where they had fallen, the matriarch and her six offspring one on top of the other. Mhoja dug around in the soil and uncovered a .470 bullet. This was not the work of tribesmen justifiably defending their crops, but we never found out who the poachers were, who used heavy calibre sporting rifles inside a National Park.

The greatest killer of Manyara's elephants, even after ten years of protection, was still their ancient enemy man. Statistically his effects on the scale I observed were not in the least harmful, although illicit hunting, if allowed to proliferate, would still be the greatest threat to the survival of these elephants.

The ecology of the Manyara Park depended entirely on the tolerance of man, the key factor in all elephant problems. Not only is modern man more tolerant, but he has stopped primitive hunting, which must have exerted profound effects in the past. The modern African elephant, *Loxodonta africana*, is a species not much older than man himself, even though its ancestors can be traced in the fossil record with greater ease than man because of their massive body size. The past, the present and the future of the African elephant is inextricably tied up with that of man, and no ecological study ignoring this factor can be realistic. To understand the elephant problem in its entirety I realized that I would have to pursue a study of the elephant's history in relation to mankind, as far back as it could be traced. ●