ANIMAL KINGDOM

The Story of Tsavo, the Great African Game Park

by

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National Park boundary
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CHAPTER 21

Armageddon for Elephants

THE development of the Park had reached the stage when there were now over 1,000 miles of road and some 12 airfields to maintain. There were Lodges and more houses, entrance gates and ticket offices, new subordinate staff quarters and camping grounds, elephant-proof road signs at all intersections, boreholes, dams, bridges and causeways. There was a sophisticated radio network embracing all entrance gates and outposts as well as the mobile patrols. There were over 12 heavy earth-moving machines and 22 lorries and Land-Rovers, 25 stationary engines, generators, pumps, trailers and implements. Tsavo East had gone a long way since the days of 1 lorry and 6 labourers, and it had also outgrown its original headquarters. There was now an urgent need to modernize the entire complex and improve the workshop facilities in particular, for the task of the mechanical section was made even more difficult because of the extremely primitive conditions under which they were expected to tackle major repairs, and as the smooth running of any Park is dependent upon the proper upkeep of its transport and machinery, it was important that proper facilities be established as a matter of urgency.

Year after year, an appeal was made in the estimates for the provision of funds for this purpose, and also for the construction of a new and better equipped office block. David's own pokey little office now resembled a junk shop and housed a conglomeration of commodities that could be stored nowhere else, ranging from tusk butts to stuffed rodents, old files to Rangers' clothing. He could hardly move in it, let alone find anything, which resulted in the office work being neglected even more than before! But the only funds forthcoming as the result of these pleas was a sum of £700, which was barely sufficient for one office, let alone the rest.

There is a tendency for the headquarters of older Parks to snowball into sprawling villages as additional units are added to cope with the growth of the Park. David was determined that this fate should not befall Tsavo East, and when he designed the new headquarters, it was with an eye to an entirely new composite unit, provision being made for all the Park's needs. The sum of £700 was therefore not much good to him.

But once again fortune favoured Tsavo East from an unexpected quarter; the railways, who until now had been a thorn in our flesh, being responsible more often than not for the destructive fires that plagued us in the dry season. Perhaps it was to make amends for this that they offered David the Dak Bungalow on condition that he undertook to demolish the building and remove it completely from the station yard.

The Dak Bungalow was a Rest House, dating back to the turn of the century and the beginning of the railway, when no dining cars were attached to the trains. Many such places had been built at various stations along the line, where the train halted to enable passengers to leave their carriages for a leg stretch and refreshments. They could even spend what remained of the night there if they happened to be getting off at this point. The Dak Bungalow's reputation for excellent bacon and eggs and absolute cleanliness lingered even until my time, but in the early days it was a particularly popular meeting place. A loud bell was rung to warn of the imminent departure of the train,

so that everyone could down their drinks hurriedly to scramble back aboard.

The Voi Dak Bungalow was a very substantial building with about ten good-sized rooms and teak doors shipped from India, for there had been no sawmills in those days. Massive steel girders supported an iron roof. David was jubilant, for with the material salvaged from the Dak Bungalow his new office block would become a reality, even with only £700. It seemed fitting also that this old building, steeped in history, which must have sheltered many distinguished personalities over the years, and seen many wild parties too, should not be entirely lost. Patterson, who hunted down the famous man-eaters of Tsavo, must have passed through those teak doors on many occasions. Our thoughts turned also to the man-eaters themselves, who had accounted for over 300 railway workers between them, and whose stuffed remains were reputed to be lying in an attic of a Chicago museum. We felt that they too deserved a place in Tsavo, and we hoped to try and bring about their return at some future date.

Today the remains of the Dak Bungalow are incorporated into Tsavo East's new elaborate headquarters. The rubble was fashioned into concrete blocks and formed the walls. Those same steel girders support the roof and the teak doors divide the rooms. Built on two levels and faced with the natural Tsavo stone, the headquarters comprises spacious offices for the Warden, Assistant Warden, Accountant and Clerk, a radio room and conference/operations room, an armoury, toilets and a guard-room with a built-in siren. The old offices, situated behind the new building, have been converted into much needed stores to house ivory and equipment. And in designing his own office, David indulged a long standing whim; he incorporated an aquarium into one wall, so that as he struggles with the always unpopular paperwork, he does at least get an illusion of coolness, which is more conducive to clear thinking!

There remains now the workshop to be brought up to date, and when this has been achieved, and the nerve centre of the Park has been modernized, there will be the satisfaction of

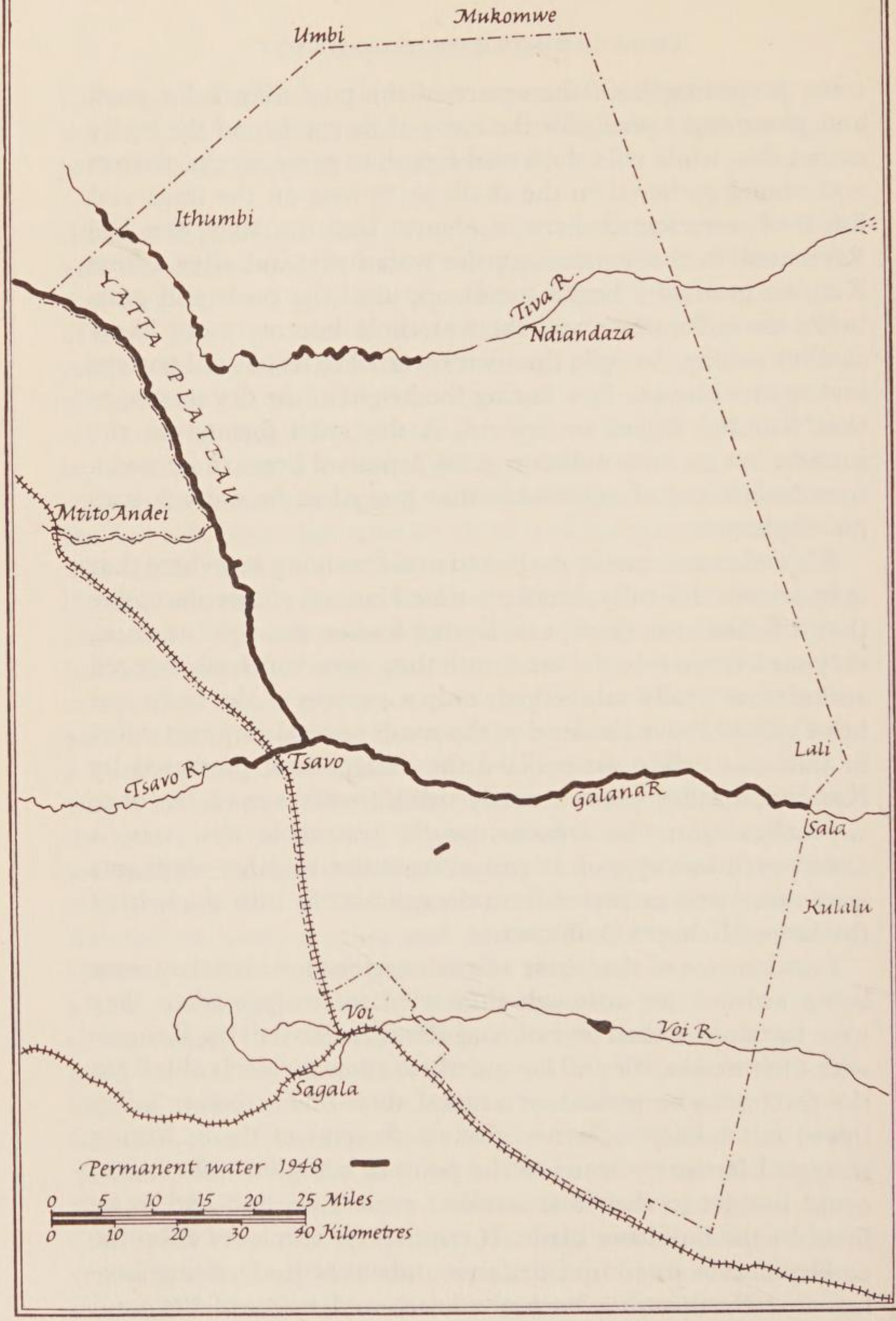
knowing that this most important aspect of the development of the Park, its headquarters, has not been neglected but has kept pace with the progress in other spheres.

Almost ten years had now elapsed since the drought of 1960–61, and the intervening period of adequate rainfall had dissolved that tragic period into only a memory softened by the passage of time. The vegetation in those formerly devastated areas had made a spectacular and rapid recovery, and so had the rhino population. The soil that was once bare and exposed was now well-covered with a healthy tangle of perennial grasses, shrubs, legumes and *Acacia tortilis* seedlings, which had appeared to replace the commiphora, and which now in places stood close on ten feet tall. Since that time an air of well-being had pervaded. The rainfall had been well distributed; food had been plentiful, the flow of existing springs had increased and many others had appeared. The conversion by elephant of large tracts of former bush country into open plainslands with scattered trees was complete in many places south of the Galana River, and those animals that thrived best in a more open habitat had multiplied a hundredfold. Tsavo East was, in fact, now a far better Park, with a lot more to offer the tourist, than at any other period in its history. Even the Voi River, which used to be a purely seasonal stream, had taken to flowing for long periods, pouring continuously out of the dam over the spillways to wander through its lower reaches and end up in the sea. The main channel, however, had periodically silted up in a number of places, and the river had altered course on a number of occasions during that time, spilling over its banks in times of flood to snake a new channel elsewhere. This development affected one of the loveliest natural water-holes of the Park – Kanderi, a shallow depression by the Aruba Road which was normally filled by the first main floodwaters from the river. Kanderi was a paradise for waterbirds of every sort and was situated in a pleasing and peaceful setting, with the lush riverine vegetation behind, and the twin hills of Ndara and Sagalla mirrored in its glassy surface. Several twisted, typically Tsavo

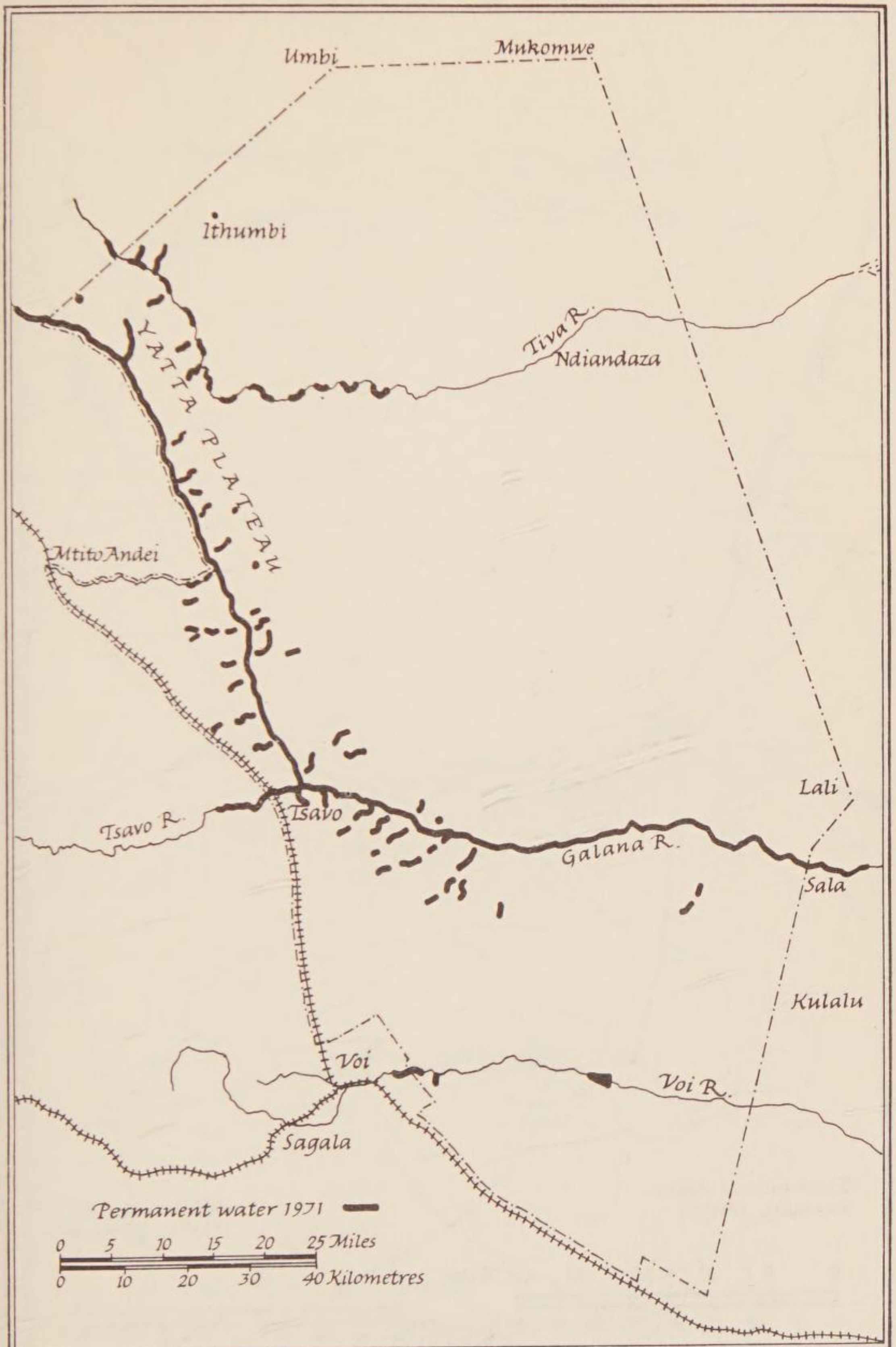
trees, projecting from the centre of the pool afforded a stark and picturesque perch for the snow-white egrets and the lovely sacred ibis, while wild duck and Egyptian geese, storks, darters and cranes gathered in the shallows to feed on the frogs and fish that were found there in plenty. Unfortunately, the Voi River took to flowing through this waterhole, and after a time Kanderi gradually began to silt up, until the reeds and grass broke the still surface and the waterhole became more like a shallow swamp. In 1969 the river reverted to its normal pattern and again ceased to flow during the height of the dry season, so that Kanderi began to dry up. A dry crust formed on the surface, but an accumulation of silt deposited beneath formed a treacherous bog of quicksands that proved to be a death trap for elephants.

Elephants are usually careful to avoid walking anywhere that may present difficulty, but for a time Kanderi was so deceptive that it fooled even them, and having broken through the crust, they sank down into the mud until they were hopelessly bogged and almost totally submerged, only a portion of the body and head visible above the level of the mud. Several elephants died in this way before we realized the danger now presented by Kanderi, for they were not easily visible from the road, but once we realized just how treacherous the waterhole now was, a close watch was kept on it and at least twelve other elephants were saved and extracted from the quicksands with the help of the large Michigan Bulldozer.

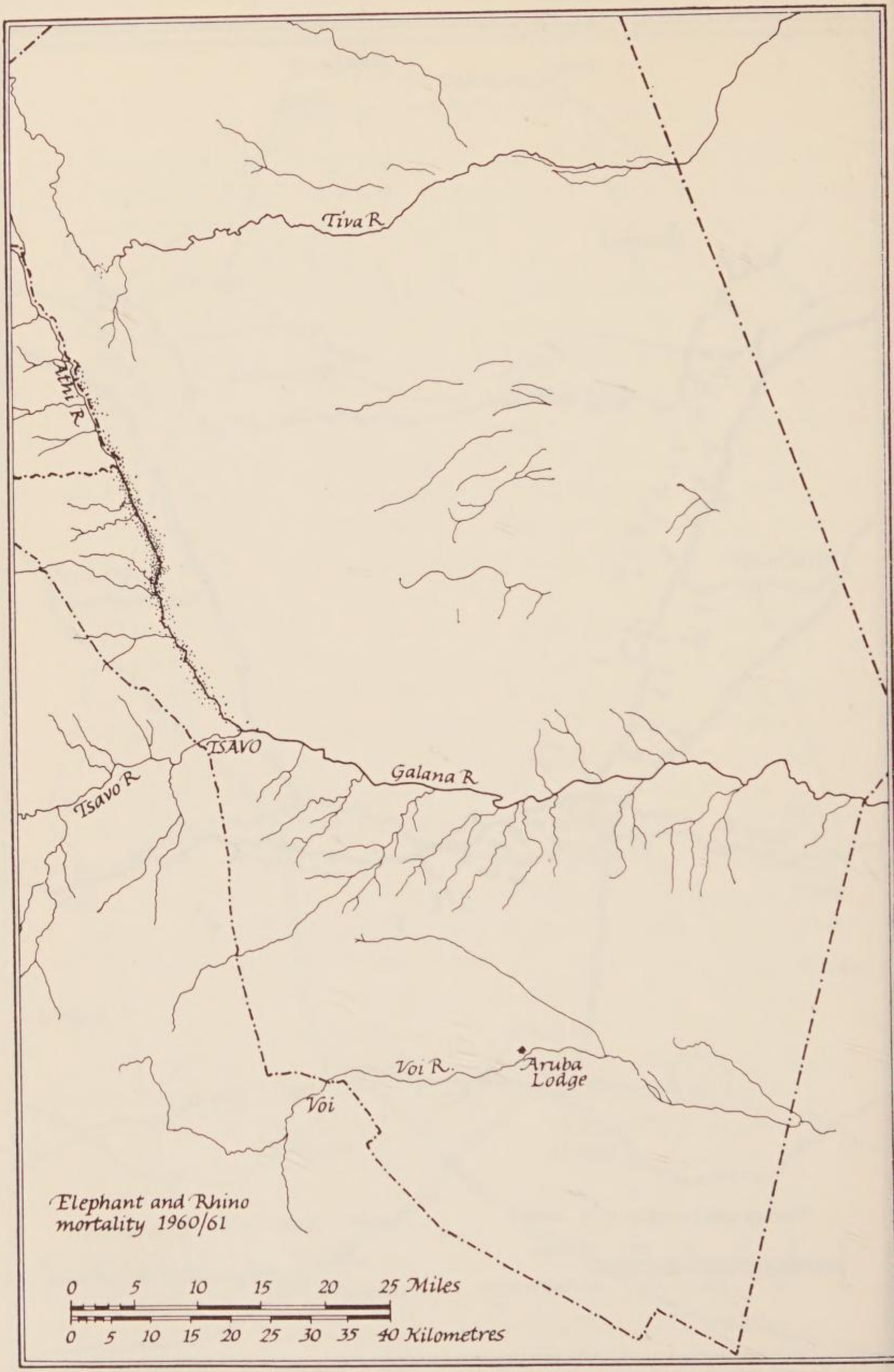
I am convinced that these animals understood that they were being assisted, for although they tried to struggle when they were first approached on foot, and attempted to flail the Rangers with their trunks, they all lay quietly to allow the steel cable from the tractor to be positioned around their bodies before being towed out bodily to firmer ground. Several of them, having struggled for many hours to the point of complete exhaustion, could not get to their feet unaided even then, and had to be lifted by the bulldozer blade. It requires quite a lot of effort for an elephant to stand up from a recumbent attitude, rising fore-legs first by throwing back the head, and many of the mud



Map of Tsavo East National Park showing
permanent water in 1948



Map of Tsavo East National Park showing
permanent water in 1971



Map of Tsavo East National Park. The dots represent elephant and rhino mortality in 1960/61

Map of Tsavo East National Park. The dots represent elephant and rhino mortality in 1970/71

victims could not summon the strength for this initial effort. By digging the blade carefully beneath them to include a protective cushion of earth, it was possible to lift them to their feet with ease. Once up, not one of them made any attempt to attack either the tractor or the people standing about, but simply ambled slowly past everyone to disappear into the bush, as though they knew full well what had been done for them.

There was one small elephant, though, who didn't appreciate our efforts to extricate his mother and older brother from the mud, so that the rescue operations on this occasion were greatly hampered by repeated attempts to protect his family. Everyone was constantly being chased in all directions, until finally the calf had to be persuaded to leave the scene until the operation had been completed, and he could be reunited with his mother.

A similar hazard to Kanderi appeared at the top end of the Aruba dam when the waters began to recede there as well, and one rhino that was unable to get to its feet was transported back to headquarters cradled in the bucket of the tractor shovel, which looked as though it had been made to fit. Sadly this victim never did recover, but died shortly after arriving at its destination.

Rainfall figures can be extremely deceptive, and even misleading, for so much depends on how the rain actually falls. A succession of general showers at well-spaced intervals do far more good than one heavy downpour, and although the totals recorded may be identical, the results are certainly not. With well-spaced showers the vegetation has a long growing period, whereas a downpour will result in a good deal of wash and will bring on a green flush that will soon wither if there is no follow up. Again, in a vast area like Tsavo East, the rainfall is extremely variable. Some places can expect an average as high as twenty-one inches a year whereas others are lucky to record ten, and the way those ten inches fall is critical, and can mean the difference between life and death to hundreds of animals.

Two rainy seasons can be expected each year in Tsavo; the 'short' rains of November/December and the 'long' rains normally due in March, April and May. Here again, the terms

'short' and 'long' which differentiate the two pluvial seasons in East Africa, are misleading when applied in the context of Tsavo where the position is more often than not reversed. Here, it is the 'short' rains that are the longest and most reliable, while the 'long' rains, although usually the main rains for the rest of the country, are in Tsavo erratic and unpredictable, and if the November/December rains are poor, then there is cause for anxiety.

We got an inkling that we were due for another severe drought period at the end of 1969, when the rain, although recorded as only slightly below average in most areas, was nevertheless extremely patchy and poorly delivered. This was followed by very disappointing long rains during the first half of 1970 that were particularly poor in that portion of the Park lying east of a line drawn on the map from Voi to Lugard's Falls. Here less than two inches of rain was recorded during the first half of the year. Our fears that the ten year drought pattern was once more to be repeated were now confirmed, but what was extraordinary was the fact that on this occasion the indications were that the area that was likely to be worst hit coincided with that which had escaped the effects of the 1960–61 drought, whereas the portion of the Park that had suffered such severe punishment at that time, was now in good heart and looked like escaping unscathed. It seems that everything in Nature usually evens out in the end and it was apparent that on this occasion conditions would be critical in the area lying east of Lugard's Falls. This included the Aruba area about which David felt especial concern, for he had been mainly responsible for its already desiccated appearance, when, following a fall of one inch of rain he had decided to burn the rank grass, anticipating further rain to bring up a fresh, green sward in its place. But not another drop had fallen since, so that the burn had turned out to be disastrous rather than beneficial. Never again, he vowed, would he be tempted into burning grasslands on the red laterite soil, which appeared to be far more fragile than the black cotton soil of areas of impeded drainage.

The term 'drought' when applied to events in Tsavo in

1970–71, is again misleading, for many people are led to suppose that a lack of water was responsible for the dire predicament in which the elephant and rhino found themselves in certain places. In some ways, this was true, but only insofar as a lack of water in the natural pans following the failure of the rains precluded the utilization by game of large areas of the Park which would normally have been available to them until the waterholes dried out. As it was, the game had to be totally dependent on the dry weather haunts for a much longer period than usual, and these areas had not had a chance to fully recover and rest from the previous season, the rains having been insufficient to promote any substantial regrowth in the vegetation. Food was therefore scarce, and became even more so as the dry season progressed and the pressure increased. The term 'famine' would probably afford a more apt description, for the Park was now better served for water than it had ever been before, and throughout the 1970–71 drought period the new springs and streams continued to flow, and in some cases even increased in volume. The term 'drought' on this occasion refers only to a lack of rain, which resulted not only in an absence of sufficient food, but an extremely low protein content in the parched vegetation.

The first to succumb in the stricken eastern belt towards the end of the 1970 dry season were elephant calves mainly from the 6 to 12 year age groups. It was distressing to see them in this tragic predicament. Emaciated and weakened, they lacked the strength to travel the long distances dictated by their elders, and finally refused to leave the permanent water at all, so that their mothers were forced to abandon them in order themselves to search for food further afield. Many fell prey to lions under these circumstances, but many others stood dejectedly beside the water until they died from malnutrition. This is not usually the long, agonizing end that people suppose, for Nature usually takes a hand in hastening the process. When an animal is low and in poor condition, the right climate prevails for a build up of the parasites in the blood, to which, under normal circumstances, the animal is immune, and either trypanosomiasis, one of the tick borne diseases, or pneumonia provide a quick release.

We have witnessed this fact on numerous occasions in animals rescued and brought back to headquarters, and which have appeared full of vigour one day, and dead the next. Stroppy was only one of many such cases, who would certainly have died had we not been there to administer a multitude of drugs.

About 300 elephant calves died before the short rains of November 1970 brought a reprieve, and it was interesting to note that those that were affected first were from the same age groups as recommended originally in the plan to reduce the population.

The abandoning of calves in times of stress was, of course, nothing new. It had occurred many times before in previous dry periods, and most of our elephant orphans had been acquired under such circumstances. Calves of this age are particularly vulnerable, having probably been recently weaned but not yet being as proficient at foraging for themselves as their elders. Handicapped by their size, they are often unable to make use of the available browse at a higher level, and they are the first to become weakened and unable to keep up with the herds. But, although such tragedies had been repeated many times before, more attention was now focused on this situation, for everyone was by now very conscious of the 'elephant problem' in view of all the controversy that had surrounded it over the years. Because of the severity of the drought we anticipated either a population crash or a mass exodus of elephants out of the Park, and although we were convinced that the steps taken by Nature to remedy the imbalance would, in the long term, be by far the most effective means of dealing with the problem, we suspected that it was bound to resurrect the controversy and generate quite a lot of heat in certain circles that were in favour of artificial manipulation, particularly amongst those who stood to gain in some way.

It is an odd quirk of human nature that whilst people are quite prepared to accept the organized death of large numbers of animals, easily satisfied by that magic word 'cropping', and easily persuaded of the need to avoid being emotional under such circumstances, they become extremely emotional when

Nature does the job, albeit efficiently, quietly, peacefully with no disturbance, and in a way that cannot be achieved artificially. There is suffering, of course, but suffering is a part of Nature, a process few creatures can escape and must endure at some time or another. Animals suffer every day in the wilds; they suffer when they are chased and killed by predators, when they are wounded in a fight, when they are sick, old, or handicapped and when they lose a loved one. But, they suffer too when they are cropped by being constantly harassed and terrified, for cropping, to be effective, must be continued once it has been embarked upon. Nature's way is selective and natural, and because of this offers a more permanent solution, removing the right numbers from the right age groups at the right time, which has a very marked effect on the future recruitment of the population. Furthermore, the stress to which the entire population is subjected triggers off adjustments in the breeding rate which cropping may even stimulate, aggravating the situation as Nature strives to recoup the unnatural losses brought about by unnatural means.

Although the short rains which started in November 1970 brought with them relief to the elephants in the eastern half of the Park, we suspected that this would only be temporary, for again the rains proved erratic and falls were well below average. By the end of the season the worst hit areas had recorded a total of only four inches for the entire year, which was one third of the normal average, and although there were the long rains still to come, which might interrupt the drought with a deluge, we feared that this was unlikely, and that we would have to steel ourselves to see through what was probably now inevitable. These fears proved correct, for the long rains were also inadequate to promote any noticeable regeneration of the vegetation in certain areas, with the result that deaths again started to occur in the same part of the Park as before, towards the end of August 1971, and escalated as the dry season dragged on. Again it was the calves that were first hit, but it was now not long before the cows suffered the same fate, when many of the old leaders succumbed. Very few bulls seemed to be affected,

probably because they were more independent and unencumbered by feelings of responsibility for the young and the herd generally. The calves, weakened and sick, held up the cow herds, so that the cows suffered a rapid decline in condition as the result of malnutrition, and eventually were not able to summon the strength required to leave the permanent water in search for food. Most of the deaths occurred actually alongside or within reach of permanent water; along river banks and on game trails leading to water, which is only understandable, death from malnutrition being preferable to death from thirst. Day after day the merciless sun beat down from a brassy sky with a fierce, dry, intensity. It was pitiful to see the decline of such large numbers of elephant as they wearily hung around waiting for the end with mute resignation and silent apathy. It was not uncommon to see entire herds fast asleep beneath the scant shade afforded by a few gnarled trees, lying flat on their sides, or standing dejectedly in a huddle patiently waiting for an old, emaciated leader to make the move she plainly never would. It was pitiful also to see the attempts made to raise a dying comrade, or lift a far gone calf to its feet, but what was most tragic, day after day, was the great grief of a mother who had lost her calf, or a calf standing pathetically beside an inert mother. On one occasion a cow, whose small calf had collapsed, spent several hours painstakingly trying to urge it to its feet again. First, she pushed it gently with her back foot in the way that mother elephants rouse their sleeping offspring, and when there was no response, she tried supporting it between her trunk and foreleg. Alas to no avail, and when the calf had breathed its last, she felt every inch of the lifeless little body as though to imprint it on her mind forever, before turning deliberately away and slowly ambling off. One could sense the intense emotional suffering of this cow, which was far worse, I am sure, than the physical pain connected with the drought. Post-mortem examinations carried out on several carcases revealed that the stomachs were in fact full, but that the protein value of the contents was as low as two per cent.

Elephants are, by nature, gentle affectionate animals, whose

ties towards one another are very strong, and who are capable of deep devotion and great loyalty. In some respects this was perhaps fortunate, for few individuals died alone, they were usually surrounded by friends when the end came. The rest of the herd would spend many hours standing beside a dying companion, and would not abandon her to her fate. Also many orphaned youngsters were probably adopted without any hesitation and cared for by foster mothers in the same way that Eleanor had accepted Bukaneza and Ndara extending to them all the devotion of a natural mother, even allowing them to suckle. So a bereaved infant was not necessarily doomed. Not so the unfortunate rhino baby, for the rhino too were very severely hit, suffering the same fate as had their brethren upstream in the 1960–61 drought. While an elephant baby will be accepted by the herd, a rhino calf is as good as dead itself once its mother has succumbed, and any strange rhino coming across a calf in this predicament, would be more inclined to kill it than adopt it. The plight of the poor rhino was therefore doubly tragic, for they were very much alone. And, as though all this were not enough, several luckless animals were found with snares around them to add to their misery, having obviously wandered into the neighbouring hunting blocks and tribal lands where anti-poaching measures had deteriorated to the point of non-existence. In fact, poaching outside the boundaries of the Park was now so serious that David, in his report, said, 'It must be recorded that poaching outside the boundaries has reached extremely serious proportions, and as the stocks of game outside the Park dwindle, there is a very grave likelihood that we must expect increased activity in the Park itself. It is essential that we be prepared for this onslaught and capable of containing it from the start. Poaching in the Park must not be allowed to get out of hand as it did in the 1950s, if the Park is to survive.' And although we had no jurisdiction over what went on beyond the Park boundary, David managed to obtain special dispensation for a combined Police/General Service Unit/Parks anti-poaching effort in the form of a series of raids, hoping that this might act as a deterrent. One elephant snared round the neck was drag-

ging two enormous logs on the end of the wire cable which left deep ruts in the ground, and which had caused the wire to eat right through the flesh almost to the spinal column, until this unfortunate animal was put out of its agony. Likewise, a rhino was found wandering around with its head practically severed from its body by a wire snare. This despicable form of trapping wild animals inflicts untold suffering every year, and is, sadly, very much on the increase in Kenya.

Rapidly the drought toll mounted. It was particularly distressing for David, who could not escape being in the midst of it all, and who had either to visit or fly over the area every day to locate carcases and guide ground patrols in to recover the ivory and retrieve the lower jaws which were needed for ageing purposes. When you love elephant and understand them as he does, then you, yourself, participate in their suffering and can't avoid deep sorrow which, day after day, leads to depression and a feeling of despondency. This was not eased by the hordes of photographers, journalists and television companies that dogged his brief periods of relaxation for statements and sensational pictures, so that even then he could not escape thinking, talking and even dreaming about elephant.

But it was not only in the Park that the elephants died. The drought, which turned out to be the severest on record, affected many outside areas as well. The effects of it were felt over a very wide area to the north of the Park, where hundreds of head of cattle and even camels were dying from starvation. Elephant also died in the neighbouring Galana Ranch (where, incidentally, they had been cropped in Ian Parker's time), and even at Kolbio near the Kenya/Somalia border. In the Park itself, ironically, one of the worst hit areas was none other than Kowito, where the sample of 300 had been removed for Dr Laws, but even this had made not the slightest difference. It is therefore doubtful if the large scale die-off could have been averted, even if the elephants had been cropped as had been suggested. Due to the exceptionally dry conditions, there simply was not enough protein in the vegetation to enable an elephant to thrive, so that only the strongest could hope to last out until

conditions improved with the onset of the rains, and any with impediments were ruthlessly weeded out. Nature selected the young, the old, the sick and the maimed, borne out by subsequent examination of the jaws of the drought victims, many of which carried deformities of some sort.

At this time, the survival or otherwise of the individual elephants in a herd depended to a very large extent on the leader. Those units led by an energetic and strong leader were in far better condition than those in charge of an old leader, who lingered too long at the water, and who felt the need to spend a lot of time resting. But, in the end, even the social structure of the elephant herds in the stricken belt collapsed completely. The family units disintegrated; cows took to wandering alone, abandoned and orphaned calves shuffled aimlessly about, making no attempt to join up with other elephants, but standing instead listlessly under trees. It became a struggle for individual survival, with only the most basic family ties withstanding the strain; that special relationship of a mother and her immediate dependent offspring. Very common also was a phenomenon peculiar to elephant, which is seldom seen under normal conditions, but which was a frequent practice amongst both calves and adults alike during the drought; their ability to extract quite large quantities of water from reserves in the stomach, by inserting the trunk into the back of the throat and sucking the liquid up into it so that it could be sprayed behind the ears and over the flanks, presumably as a means of regulating the body temperature. One young calf, standing disconsolately beside the body of her mother, was seen to spray herself in this way repeatedly from mid-morning until mid-afternoon when she was rescued and transported back to headquarters. Happily, this little elephant, called Sobo after the place where she was found, was one of those that had a happy ending, for out of Eleanor's large heart flowed comfort and love, so that Sobo now lives contentedly amongst plenty, a very different elephant from the emaciated, pathetic little creature that was brought in. Nor was she the only one we tried to help under like circumstances, but most of the others were too low to resist the shock of

capture, and succumbed within a few days. Eleanor always did her best, kneeling down to help us lift the drought victims, fussing over every new arrival, and adopting them all with no hesitation. Also, we never quite knew just how many elephants we would have each day, for she would collect odd waifs and strays down by the river, and bring them back home with her in the evenings. Sitting on the lawn in the evenings, we would be surprised to see five elephants filing up the hill instead of the usual four, and one day there were even six. Neither of the newcomers developed into permanent residents, however, being rather independent little bulls who opted out after several days, much to the relief of the attendant who had been given quite a rough passage by them. But then, one night, the lorry arrived with the minutest little elephant on board I think I have ever seen. The effort of bringing it into the world had cost its drought-stricken mother her life but the calf was strong and as soon as it had been lowered to the ground, shuffled from one person to the next ravenously hunting for a teat to latch on to. Although we realized that the chances of being able to rear this little elephant successfully were negligible, we decided to try nevertheless, this time with the help of Eleanor.

Eleanor was overjoyed at the newcomer and beside herself with excitement as it was pushed into the stockades. All her boundless tenderness and protective instincts welled up as she gathered the baby to her, rumbling endearments and feeling it all over with her trunk, coaxing it beneath her forelegs and encouraging it to suckle. I had meanwhile prepared a feed and, scrambling beneath Eleanor's tummy from the other side, substituted the bottle for Eleanor every time the calf attempted to suckle, which proved very successful.

The next morning the baby accompanied all the orphans, and its bottle of milk plus all the paraphernalia required for heating it, went along as well, for we had decided this time to try feeding the calf on demand. Every time it looked as though it wanted food, the attendant was instructed to dive under Eleanor and thrust the bottle into its mouth.

There was, however, one member of the orphan entourage

who hampered operations considerably – Bukaneza, who until now had enjoyed Eleanor's undivided attention and who didn't appreciate having his nose put out of joint. The main source of trouble was the presence of the bottle, which tantalized him beyond all measure, and drove him almost to distraction when he had to watch someone else enjoying what he felt should be for him. His frustrated yells rang out clearly throughout the day, so that it was possible to follow the orphans' progress at all times, and so obsessed was he with the bottle, he even refused to feed properly and began to lose weight.

But, as we had feared, sadly the little elephant also went on the decline, and every day it grew a little weaker, until the hollows in its cheeks and forehead took on that sunken appearance of the drought victims, and it looked hunched and sick. We knew that we had again failed, and that it was just a matter of time before the baby died, so we decided to put it down. The difficulty came in getting Eleanor to relinquish the calf. Every time we attempted to remove it, she became agitated and even annoyed, and simply refused to be parted from it. In the end the problem was solved by the arrival of another drought victim in a state of collapse, and while Eleanor was fussing around that, we were able to spirit away the little one and bring its suffering to an end. Fortunately, Eleanor was so concerned at the plight of the newcomer that she appeared not to miss the little elephant very much, or perhaps she realized what had happened. Another incident remains imprinted in my mind – an occasion when we were trying to revive a calf by getting it to take some milk and glucose, but were hampered by its inability to lift its head. Very deliberately, Eleanor took hold of one of its little tusks with her trunk, and lifted its head up for us, holding it in position for several minutes until I had poured the milk into its mouth. Was this really an accident, or did she understand what was needed?

Sadly, the only one out of many drought victims to survive was little Sobo, who rapidly became rounded and strong, stuffing lucerne into her mouth feverishly as though determined never to be hungry again. Bukaneza regained his privileged

position as Eleanor's favourite once the little elephant had gone, and Sobo came a close second. She obviously had no intention of being orphaned twice, for although on one occasion she became separated from the others and was lost for a day, she arrived back at the entrance to the stockade the next morning and joyfully rushed in as soon as the door was opened. The reunion with the others after this brief absence and her obvious pleasure and relief were touching to see.

The one very interesting fact that emerged from the drought was that the elephant in the affected areas made no attempt to move to where conditions were less critical. We never quite knew until the time came just how the elephant would react under such circumstances; whether they would move out of the area *en masse* in search of better pastures, or whether their fixity to home ranges was such that they would remain where they were and die of starvation. As it turned out, the latter proved the case. Those elephant whose dry weather territory coincided with the minimum falls of rain during this time died where they were in large numbers, making no effort to search elsewhere. It appears therefore that in the dry season elephant are anchored to their dry weather haunts. This fact was illustrated very forcibly not only on the lower reaches of the Galana River and around the Aruba dam, but also in a very narrow corridor adjacent to part of the Tiva River in the northern area, which just happened to miss all the rain. Here many elephant died from malnutrition although had they moved only five miles either up or down stream they would have found a plentiful supply of food.

The fact that elephant appear to be so localized in the dry season is probably very fortunate, and again has perhaps been ordained by Nature to protect the environment from the depredations of a large, roving population that could eventually eat themselves out of existence, cleaning out one area and then systematically moving on to the next. As it is, the numbers must fall in line with the carrying capacity of their particular dry weather feeding grounds in a drought year, and when the rainfall in an area is very low, the elephant and rhino resident

there in the dry season suffer. Theoretically, this periodic selective die-off not only ensures a healthy population, but should also allow the regeneration of the vegetation during years of normal rainfall to keep ahead of the demands upon it.

To date the only two species affected by the droughts in Tsavo have been the elephant and rhino, probably because these two particular species have attained their peak in numbers and now qualify for natural control. Certainly this is true of the elephant, but it could also be true in the case of rhino, for it was estimated that the Park contained well over 5,000 rhino, and although some 300 had succumbed west of Lugard's Falls during the 1960–61 drought, the population in that area was now healthy and in good shape while the position was being repeated, ten years later, east of Lugard's Falls. Quite apart from this, however, these two particular species are probably the most susceptible to drought condition due simply to their physiology. Whereas most other herbivores, many of which are ruminants, can extract the maximum benefit in terms of available protein from what they eat, the elephant and rhino have been endowed with a far less efficient digestive system, and as much as 6% protein has been recorded as having been passed in their droppings. Furthermore, due to their bulk, they also have to fall back on protein rich browse to supplement their diet in the dry season when the grass is tinder dry. And this, again, is probably no accident of Nature, for after all, whereas other herbivores are subject to predation, what predator apart from man can curb the increase in numbers of these huge animals? Drought is probably Nature's only means of controlling such populations.

It would have been too optimistic to hope that Nature could work out her solution to the elephant over-population without an outcry. The Park remained open throughout this period, and as most of the roads are aligned to follow the permanent water, the public could see for themselves what was taking place. Newspapers carried headlines like 'The Vultures find a Mighty Feast', '1,000 Elephants feared Dead' and 'Drought kills Tsavo Elephants', and the reaction of most people was, under-

standably, one of shock, of dismay and of sadness. People began to say 'Why was this disaster allowed to happen?', 'Why was it not forestalled by shooting the elephants instead?' and 'What are the authorities doing about it?' And the sort of thoughts that crossed the minds of those with an eye towards personal gain was 'What a *waste*, both in terms of protein and hard cash.' The fact that Nature was doing what the scientists had recommended should be done, but in a far more sophisticated and peaceful manner was eclipsed in a flood of emotional outbursts from the critics of the policy in Tsavo, who harked mainly on the 'wastage' angle and the fact that the Tsavo elephants could have been exploited rather than allowed to rot in the bush. The prospect of financial gain is, of course, always attractive and arguments that nourish this prospect can easily convince, but those who suggested this seemed to have lost sight of the very meaning of conservation, which, in a National Park especially, should be the foremost consideration. Conservation is defined thus by one of the top ecologists of our time: 'Maintenance of the energy flux is conservation; reduction of it is the opposite to conservation.' No one could, in all honesty, argue that the removal of large numbers of elephant from the habitat would be anything other than a reduction of the energy flux, and as such contrary to the fundamentals of conservation. The part an elephant plays in the ecosystem when it is dead is probably just as important as its living role in nature, and when one contemplates that it takes only five days for an unopened, entire elephant carcase to collapse, and only five weeks for it to disappear completely, leaving just an empty shell of dried skin and, of course, the bones as evidence; and this without the aid of scavengers and vultures, some idea of the magnitude of the energy flux is possible. Further illustration of the important role of insects can be gleaned from the work of Dr Malcolm Coe, who was seconded to Tsavo from Oxford University in order to study this aspect of the drought. He recorded no less than 84,700 insects in three kilos of elephant dung, and so, with this in mind, one can perhaps get a better appreciation of the astronomical numbers of organisms that must be active to

complete the recycling of an animal like an elephant in such a short period of time. But, who can possibly begin to understand fully the complexities of this process and its impact on the environment? And when one considers that by the time the storm clouds gathered and the first drops of rain fell to alleviate the situation, over 5,000 elephants had been recycled in this way, and when one visualizes what has been returned to the soil by those 5,000 elephants, one will realize that the term 'wasted' would have been more appropriate had those elephants been removed from the Park, and converted into cash instead; always assuming, of course, that one has the well-being of the Park foremost in one's mind. Nothing was removed from Tsavo, and so how then can it have been wasted, and if it had been removed, how then could we have reimbursed the habitat?

We began to wonder if it would ever rain again when September dragged into October, and October crawled into November. Still the sun beat mercilessly down, baking the earth and casting a shimmering heat haze that tantalized with an illusion of water. The strain was beginning to tell on David, and the great responsibility hung very heavily on his shoulders. He had postponed his leave but in fact he needed it badly.

The first half of November came and went, and although the clouds banked up promisingly each afternoon and the humidity was oppressive, still the rain held off – and more elephant died. This pattern was repeated day after day until the end of November, when the heavens suddenly opened one afternoon and those elephant in the eastern belt that had had the tenacity to cling to life until this day, were spared. It seemed fitting too that this should have happened on David's birthday, for nothing could have given him greater pleasure, or raised his spirits so successfully as did that first shower of rain. Joyfully everyone hurried outside to savour the first life-giving drops; to watch them fall in a puff of dust on the powdery soil, and to see them come with ever increasing intensity until the ground began to glisten and the water creep along in little rivulets. One could almost sense the quickening of the earth;

the hidden excitement of the birds, the insects, the frogs and the animals and the revival of the poor old elephants, as that soothing liquid straight from heaven poured over their emaciated bodies and brought with it the promise of renewed life. And, before the week was out, not a single elephant remained in the stricken eastern belt. Somehow the survivors managed to trek again, and they deserted that area of so much misery to congregate where the heaviest falls of rain had made the *nyika* burst again to life. For although elephant may be very conservative in the dry season, as soon as heavy rain falls, even many miles away, they somehow seem to know and overnight they migrate *en masse*. How they know where to go will remain a secret of Nature, probably forever, but the fact that they do is demonstrated every single year in Tsavo. Water in the inland pans means that fresh feeding grounds are now accessible, and the elephant are able to fill their stomachs again.

It didn't take long for the drought sufferers to lose their gaunt appearance, their listlessness and apathy, and again to romp in rain-filled pools and plaster the sticky red mud of Tsavo on their bodies. The air was heady with the minty scent of freshly plucked lush vegetation in which the sap was rising, and this combined with the heavy stable smell of large numbers of elephant brought about an atmosphere of well-being and plenty that left one wondering what all the fuss had been about. But it was always like this in Tsavo: a land of fierce contrasts and extreme moods that are reflected in its animals, its vegetation and even its people. However, the mopping up operations after the drought entailed an immense amount of unpleasant work. There remained hundreds of jaws to be brought in, and hundreds of tusks to be recovered. The work of the scientists was only just beginning, but we felt that the most important aspect of ours had probably now ended. We were glad that we had been able to steer Tsavo East through this critical period in its history, and having weathered the storm, David felt an intense lethargy and a compelling need to get away from it all completely for a time at least. To escape elephant and ecosystems, commiphora and conversion cycles so that he could relax again

and get things back into the correct perspective. We left the rain falling in Tsavo with an easy mind, and went as far from it as we could afford – to the southernmost tip of Africa. But, even there, gazing out to sea from Cape point, David said, 'I wonder how things are in Tsavo; whether the rains have been good; and whether enough elephant have died.' He paused and then added, 'I sincerely hope so.'

When we returned, we discovered that the short rains which started with such promise had not been quite so widespread as we would have liked, and had in fact again been below average. Would drought conditions be repeated in 1972 then? Was Nature not through with the elephants yet? The answers to these questions have yet to unfold, for no one can control the weather, but whatever happens, and however significant it may seem to us at the time, it will be but a flicker of Nature's eyelid, a fleeting moment in her vast design. Probably, the most effective way in which we can help is simply by keeping interference to the very minimum, and assess and try to understand the trends with the words of Confucius in mind. 'Study the past if you would define the future.' The Galla graves, Lord Lugard's waterfall, Sir Frederick Jackson's 'open country' and the great numbers of eland seen by Selous, healed scars on ancient baobabs and swings in elephant populations revealed by old records; all are pointers to what we can expect, but one thing is important; that by carefully monitoring events in Tsavo, mankind will be able to see for the first time what happens to elephant populations that are left unmolested, even within 'unnatural' boundaries. For nowhere in Africa where a parallel situation has evolved has it been allowed to develop to its natural conclusion. Always man has intervened, and tried to manipulate events usually with disastrous results. Wherever elephant are represented in any numbers, there is a 'problem', and the combination of elephants and scientists produces perfect ingredients for a monumental problem! Would it not be prudent to set Tsavo aside as a natural 'control', so that we can take a lesson from Mother Nature in the management of animal populations, a lesson which would be of the utmost importance

to many wildife sanctuaries in Africa, and if the balance between species seesaws, as it probably will, and if changes occur, let us not rush in where angels fear to tread, but keep the fundamental concept of conservation well in mind, as defined by Dr Fraser Darling: maintenance of the energy flux. It is this concept which has provided the guidelines for the management in Tsavo East to date. Changes are bound to take place in any biological community and some changes may, of course, be triggered off as the result of compression of habitat through human pressure outside man-made boundaries, but even so, appreciating but a fraction of the marvels of which Nature is capable, and the wonders she works to perpetuate each and every species; and mindful also of our present limited understanding of the complex processes involved, any clumsy attempts to redress the balance could be dangerous, well-intentioned efforts towards this end serving only to perpetuate an undesirable situation. There will be periods of drought, and there will be floods; there will be anxieties, problems, difficulties and doubts; and there must, unhappily, also be some suffering before the correct balance of species is achieved in such circumstances. It remains David's contention that the conservation policy for Tsavo should be directed towards the attainment of a natural ecological climax, and that our participation towards this aim should be restricted to such measures as the control of fires, poaching and other forms of human interference that tend to lessen the energy flux. It is his belief that herein lies the safest course for the wise management of the Park, and indeed, in a continent like Africa, for its very survival.

The International Convention of 1933 defined a National Park as 'an area set aside for the propagation, protection and preservation of wild animal life and wild vegetation, and for the preservation of objects aesthetic, geological, prehistoric, historical, archaeological or other scientific interest, for the benefit, advantage and enjoyment of the general public.' However, the activities of 'the general public' are often inimical to the best interests of the wildlife and vegetation in a National Park and there remains the constant need for vigilance, so that

that which it was our intention to preserve is not degraded, defaced or even destroyed in our efforts to cater for the needs of the public.

A good deal of faith had been pinned on research in the early days, but it was becoming increasingly evident that far too much had, in fact, been expected of the scientists, and in very few instances had it been possible for them to contribute towards the management of the Park by providing the correct answers in time to such vital issues as the long term effects of fires, whether altering trends in the habitat were desirable or otherwise from the point of view of overall soil fertility, or even the impact such changes may have on populations as a whole of the different species, and so on. This was, of course, due in part to the fact that such problems required intensive research and study over a very long period before any sort of accurate picture emerged, with the result that the scientists invariably found themselves simply overtaken by events. This tended to lead to requests for more staff, more equipment and more facilities, until there was a danger that the scientists themselves would become yet another problem, even with the best intentions in the world. More and more motorcar tracks left the roads to lead to experimental plots, exclosures, inclosures, rain gauges and other scientific paraphernalia, or to facilitate the observation of animals being studied, with the result that the natural unspoilt beauty of the wild scene was further marred by the marks of man. David had come to believe that ideally the research effort in any National Park should be kept within reasonable limits, with a team comprised of dedicated 'naturalist' scientists who were prepared to forfeit burning professional ambitions in order to become part of the permanent staff of the Park's organization, content to confine their work to limited objectives of direct importance to the well-being of the Park as a whole. He felt that it was important that the scientists working in a Park should consider themselves an integral part of the general Park's effort rather than privileged birds of passage, and that they should strive to further only the best interest of the Park at all times. There was no doubt that in Tsavo one of

the most important functions of research was to monitor carefully all the changes as they occurred, so that information so gained could be applied elsewhere with the benefit of hindsight.

But, whatever the future held for Tsavo East's inhabitants, the behaviour of the elephants during the brief rainy period that followed the long dry spell differed somewhat from that recorded during more normal years. For, although it is usual for large numbers of elephant to congregate in areas where the heaviest falls of rain have resulted in a plentiful food supply, the pattern this took following the heavy mortality sustained by the population during the drought was rather out of the ordinary. Normally, concentrations of elephant in the greenest areas are rather loose; more an aggregation of many different family groups in a given area rather than a definite combination of those units into one entity, and although several units may join up temporarily to form larger herds, this tendency was more marked following the drought. The elephant amassed themselves into very large herds, which roamed the countryside in close unison, bowling over the few remaining commiphora trees as though beset by a compelling urge to complete the cycle they had embarked upon, despite the fact that food was, for the moment, abundant. Many of the trees appeared to have been felled for little apparent reason, and even Eleanor was seen to march purposefully up to a spindly commiphora struggling for a place on the hillside, and heave against it with all her might in an effort to dislodge it, although many of the smaller branches and leaves were well within trunk-reach had she particularly wished to eat them.

This tree-felling obsession inborn in all elephants is surely something that is ordained by Nature; a means of releasing the nutrients locked in the wood, which have been drawn up from the earth over the years, but there is no doubt that it is also triggered off by a simple desire to 'show off' during periods of heightened activity, and the bulls are by far the worst offenders in this respect.

By April and May 1972 there were many enormous herds consisting of 200 and more elephants to be seen in certain green

belts of the Park. We wondered whether this could perhaps have been due to the fact that so many of the units had lost their old leaders during the drought, and also because the unit structure of the population had collapsed during that period of extreme hardship. Indeed, had one not known that some 5,000 elephants had recently died, one would probably have suspected that there had been an astonishing increase in numbers, so conspicuous were the elephants in these huge mobs. From the elevated situation of our house on the slopes of Mazinga Hill, we could watch the progress of some of the enormous herds in the Voi River valley below us, crawling like terracotta beetles across the green blanket of the low landscape, disappearing briefly into thickets to emerge again beyond.

There seemed to be a preponderance of bulls in evidence, and a definite sense of intense excitement among the herds. Very few adult bulls had died during the drought, and we now speculated as to how Nature would set about correcting any imbalance in the sexes. Certainly, serious fighting seemed to be a lot more prevalent than usual, and there were a number of monumental confrontations that had a fatal end for one of the contestants. There was a good deal of mating also, and chasing of reluctant cows. One was left with the impression that the heightened activity amongst the elephant population this year was something rather significant and out of the ordinary; part of what one scientist termed 'the most dramatic mammalian event ever to have been witnessed and recorded by man'.

What happens from now on to Tsavo's red elephants will be of the utmost importance and significance to conservationists throughout Africa.

Elephants at a waterhole

Rhino with a small calf beside her