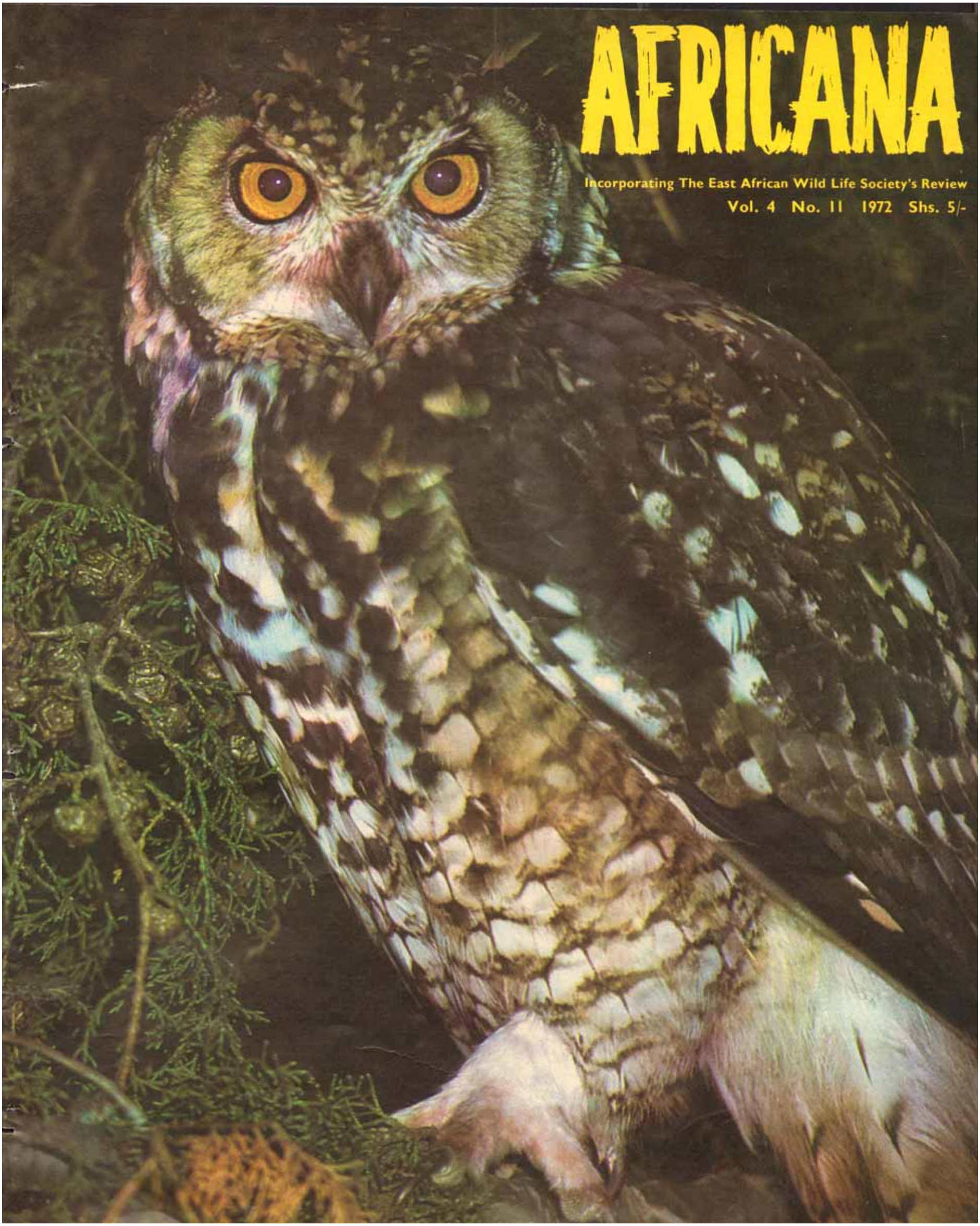
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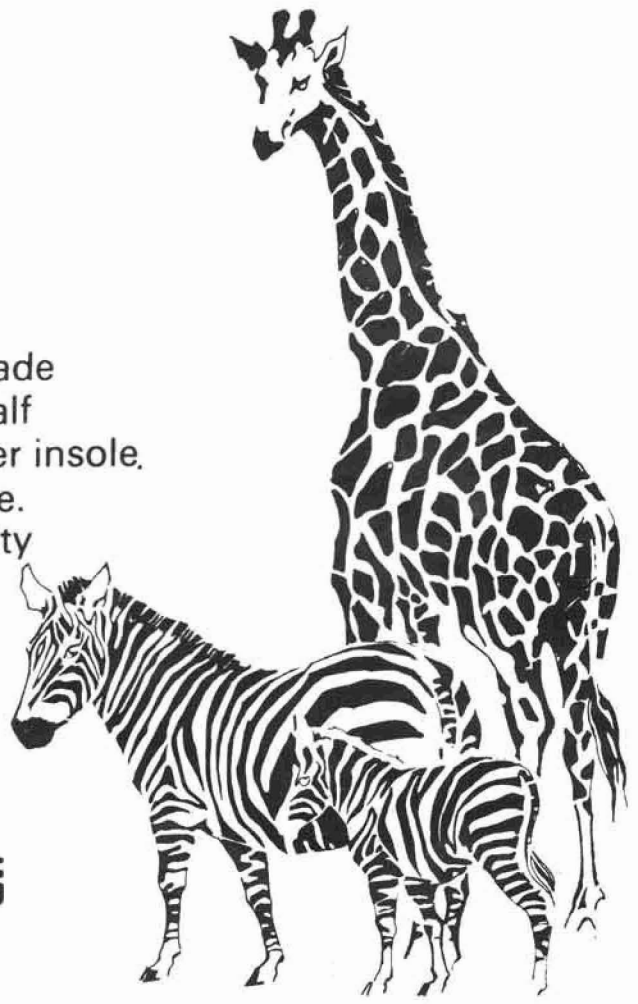




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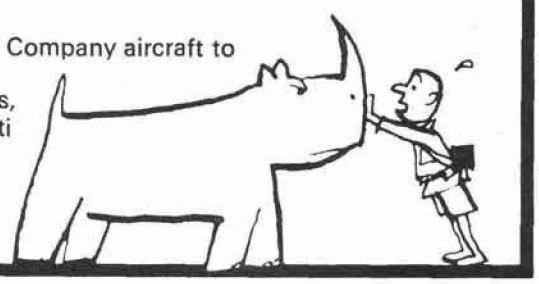
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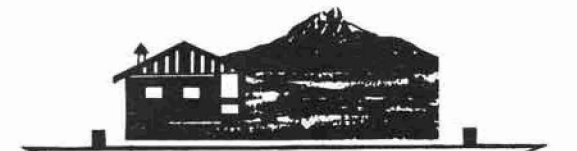
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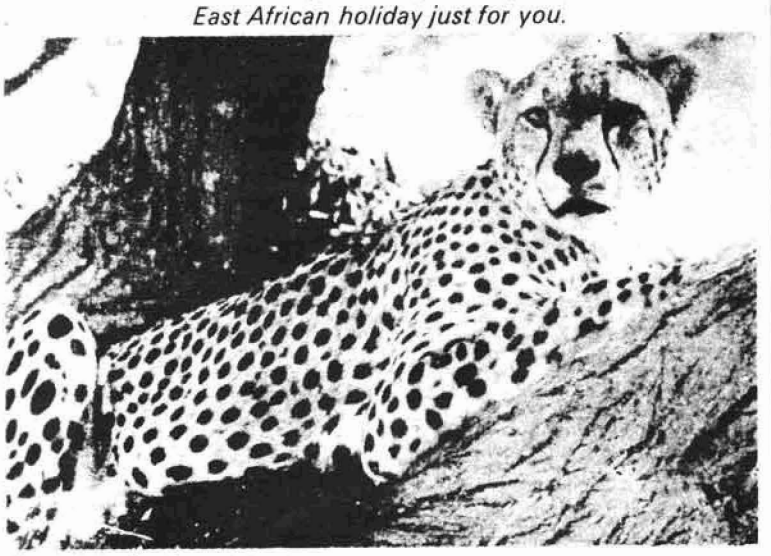
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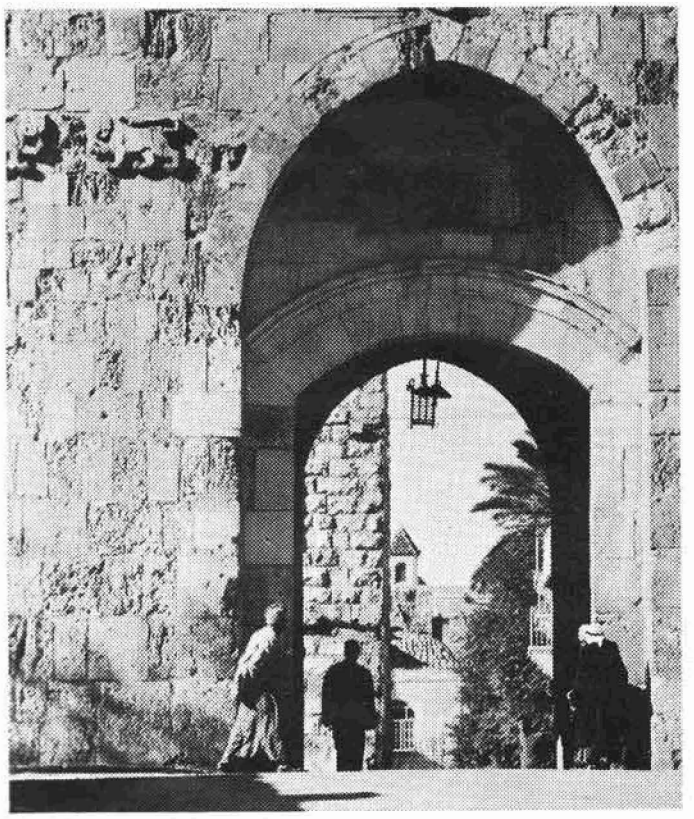


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East African Wild Life Society's Representative:
MICHAEL SAWYER

OCTOBER, 1972 **Vol. 4, No. 11**

TANZANIA has a new Director of National Parks. He is Mr. Derek Bryceson, who started in East Africa as a farmer and who became the only European in President Nyerere's Cabinet, as Minister for Agriculture.

The obvious first question was: "What's a man of agriculture doing in national parks?" There is often conflict, of course, between local demands for agricultural expansion and universal persuasion that Parks should remain "unpolluted" by man and his progress.

Derek Bryceson seems aware that his appointment may be viewed with certain skepticism by some people; that for instance, official sanction of cattle grazing in the Lemai area of the Serengeti may be the shape of things to come. . . "The thin edge of the Lemai Wedge," as he says himself.

But, he is about to confound the doubters.

First of all he is eminently well-qualified for the job. Parks was in his Portfolio until it was transferred to Tourism in 1968; and he retained the brief for game, forestry and fisheries until 1970. So he knows all the battlegrounds very well.

Secondly, far from any question of eroding the present Tanzania Parks' system, he is busy expanding it considerably.

An announcement is expected soon of a brand new Park at Katavi, approximately 850 square miles of sable and kudu lands in the south-west of the country. This is an interesting development in that the initiative came from the local people themselves. They said they were not so much interested in tourist receipts, but genuinely wanted to make a contribution of a conservation/recreation area for the country as a whole.

There was also a hope that Mr. Bryceson would be able to announce the gazetting of the snows (and moorlands) of Kilimanjaro in time for the Second World Conference on National Parks at Yellowstone this month (September). Full Parks' status will stop further degradation of the landscape above the forest line, and substantial improvements are planned on general touring and climbing facilities.

Mr. Bryceson has a personal interest in the coastal reefs; he has a boat and spends what time he can exploring the coral. The establishment of a Marine Reserve is provided for in the Fisheries Act, and he expects the requisite regulations to be gazetted soon. The intention will not be to ban all human activity in the Reserve, but to curb destructive practices such as the dynamiting of the coral heads, excessive spear-fishing, shell collecting and so on.

The new Director has already decided his priorities: one, conservation; two, maximising the economic return from the Parks; and three, helping to educate the people about Parks so that they take a practical interest.

Under the conservation heading are poaching, habitat damage and peripheral human activity.

- **Commercial poaching will be attacked vigorously, and it is hoped that a new anti-stock theft helicopter squadron will be occasionally diverted to the Serengeti and other Parks. Mr. Bryceson stresses that it is the "really nasty" commercial killers that Parks will be after principally; any individual caught poaching will be made aware that what he has done is illegal, but further action will be tempered through consideration of the man's motives and needs.**
- **Habitat damage is mainly from elephant compression in Ruaha Park and elsewhere. The problem, as we all know from the Tsavo East saga, is delicate —but the Director has decided "to re-open the question of sending in experts to examine very carefully if there is a need for control, and if so what form that control should take".**
- **Human competition for Park lands in Tanzania is nothing like as severe as it is in Kenya. In fact there are plenty of alternatives for cultivation and stock-rearing other than lands bordering the Parks.**

There has been some international concern expressed about human incursions in the Serengeti and around the Ngorongoro Crater. But, as Mr. Bryceson will explain, there are long-standing precedents and promises involving the people of both areas that fully justify the present compromise between human rights and the national commitment to preserve these world-famous sanctuaries.

The Director will pursue an active policy of encouraging usage of the Parks, and thereby increase the economic return. He is aware that some tour operators consider Exchange Control and other regulations as "irritants" to the development of Tanzania tourism and is studying these contentions.

All in all, Mr. Bryceson presents a bright picture. And we have the impression generally that recent soul-searching about the impact of mass tourism on local culture is all over and that there will be increasing evidence of the Tanzania Government's commitment to consolidating and developing its matchless wildlife preserves.



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PROUD OF WHAT WE HAVE

Mr. Ngugi Ng'ang'a, former Deputy Chief Game Warden, Kenya, writes in response to an article in the July issue of Africana *describing plans for game utilisation in Kenya Masailand and expressing the concern of a minority of conservationists for some aspects of these plans, including cropping for protein, sport hunting etc.*

Sir—The Kenya Government's stated policy on wildlife is to conserve to the greatest extent possible.

Further, the Government has set up the machinery to implement the policy—the Game Department and National Parks Organization. The Government remains unchanged on its policy and any discussions on the fate of wildlife should take cognizance of this fact.

There is now a success story on conservation in Kenya. We can be proud of what we have—very sure that we shall always have somewhere for our less fortunate friends, from wherever they might come, to view the wildlife.

Areas have been set apart for specific purpose of wildlife conservation and for the animals' biological requirements. In loose terms, human interests in these areas are said to be secondary to those of the animals; in the strict sense these areas are fundamentally reserved for *human* enjoyment.

In the areas outside our parks and reserves, human interests come first and animals second. It is in these areas that conflict between man and beast has increased in recent years.

The fate of the wildlife outside the Parks and Reserves is the subject of hot debate both outside and inside wildlife circles. However, the determination of the Government to continue having these animals wherever they are has been misunderstood—as subordinating human interests to those of game. At the same time, Government programmes aimed at ensuring continued existence of wildlife have been termed "mass slaughter."

The two schools of thought represent a fundamental misunderstanding of the good intentions of the Government. The landowners and the conservationist must try to understand the Government plans—there is to be no mass slaughter, nor is there disregard for human interests.

The many aspects of developing a country like Kenya so as to uplift the standard of living of her 11 million inhabitants must surely have something to do with land use. The great number of Kenyans depend on the land to subsist and these are the people our developments are aimed at.

Proper land use practices have yielded more and the pressure is mounting on underutilized land. These are the areas that support the wildlife species of Kenya and any contemplated activity on the land must recognize its use by wildlife.

It has been stated that the greatest danger to the continued abundance of wildlife outside Parks and Reserves is not poaching but destruction of habitat. With increase in population more demands are being made on the land; areas that had been a wildlife paradise are now dotted with cultivation.

The traditional pastoralists have entered the money economy with demands to produce more beef for home and overseas markets. Consequently the improvement of livestock and expansion of cultivated areas is not only slowly forcing wildlife to retreat into the sanctuaries, but it promotes hitherto unknown conflicts between land uses.

The landownership pattern is drastically changing from communal ownership by a clan or a tribe to the status of private lands and the use of these lands becomes, constitutionally, the prerogative of the owner.

The law provides that a landowner cannot kill wildlife on his land except when it is causing material damage. An extreme interpretation of this could be elimination of wildlife on private lands because of its eating grass.

Crop production on a given land is thus an obvious way to exclude game and it becomes imperative, therefore, to adopt new measures that will perpetuate wildlife on these private lands.

The landowner's main interest is to maximise returns from the land in conformity with the wishes of the State and whatever does not fit with this objective, he will oppose and attempt to eliminate. While trying to tighten the arm of the law, the Government has addressed itself to this new situation.

Without losing sight of the farmer's or wildlife interest, programmes have been designed to reconcile the two for the benefit of the landowner and in the cause of wildlife conservation.

Fundamental to Government plans is the desire to maintain wildlife in these areas as well as uplift subsistence farming to economic undertaking.

Several of our Parks and Reserves are contiguous with areas that are subjected to these changes. Animals from these sanctuaries routinely disperse into these areas and will become burdens to the owners of the lands and more so after improvements on pasture, water distribution and disease protection measures.

Carnivores continue to prey on domestic stock and the loss to the farmer is increasingly painful when the victims are of an exotic breed or improved stocks.

Without losing ultimate ownership, the Government has plans to enable the landowner to use wildlife on his land for his own financial benefit—but so long as no depletion takes place.

It is the aim of the Government to have the landowner value his wildlife on his land as he values his stock—hence perpetuating wildlife presence on the land.

The technology required to launch such a programme is lacking. The Government has, therefore, sought to avail itself of this technology with the help of the United Nations Development Programme through the Food and Agriculture Organisation.

A project has been designed and agreed upon to study management of wildlife together with domestic stock, and means of utilizing the wildlife. It is important to note that the Kenya Wildlife Management Project is geared to:-

(a) providing data for better management of wildlife on private lands with the consequent relationships with domestic stock and . . .

(b) providing the best means of utilizing Wildlife in these lands to enable farmers to keep these animals.

It will be seen from the above that the conservationists' or the land-owner's fears are based on lack of understanding of Government Plans.

What is needed is support for this worthy cause. Consequent to the success of this programme, for instance, is minimization of poaching as each farmer begins to look after his stock. The loss to the farmer in grazing is no longer a loss but proper use of his grazing and Wildlife is perpetuated.

Ngugi Ng'ang'a,
P.O. Box 40241,
Nairobi.

TWO BAD EXPERIENCES

Sir—My wife and I as members of National Wildlife Federation a conservation-oriented organization, have recently returned with other members from a visit to East Africa, encompassing travel to many game parks and reserves in Kenya, Uganda, and Tanzania.

We were more than delighted to have this opportunity to view the many numbers and varieties of animals and the astounding panoply of birds. This fortunate natural resource is being managed in an apparently ever-increasingly intelligent and forceful manner.

Unfortunately, we were witness to two distressing episodes. One, the slaughter of a rhino by a poacher, who removed the horns, leaving the entire remainder of the carcass, to sell his trophy on the black market to rejuvenate some lecherous Chinese.

It was pointed out in the local press that rhinos are being slaughtered at a 20 per cent annual rate and restocking by only 5 per cent annually. How long before they are extinct?

Here we are confronted with avarice, ignorance, and superstition, a difficult combination to beat!

The second was the near-fatal mauling of a guide by a leopard, wounded by two brave German hunters, names and residences regrettably unknown.

I assume these men had intelligence and aggressiveness or they would be unable to afford such a trip. Why African nations sell permits to hunt rare species I cannot fathom, except for unawareness of the urgency of close seasons, and/or simple desire to get the permit fee, which is a short-sighted policy considering the present sightseeing tourist influx.

But how can we explain the psychotic motivation of such men(?) as these hunters? What skill does it require to murder a relatively defenceless animal with a cannon that would rupture a tank, at telescopic sight, and back-up firepower?

Many of these creatures could be hit on the head with a tennis racquet! What purpose does it serve? To supply his neanderthalic lady with a hide for a coat—which is becoming more gauche in intelligent fashion circles?

To satisfy a demoniac urge to kill and acquire a trophy for a moth apartment project? Does it really make any sense?

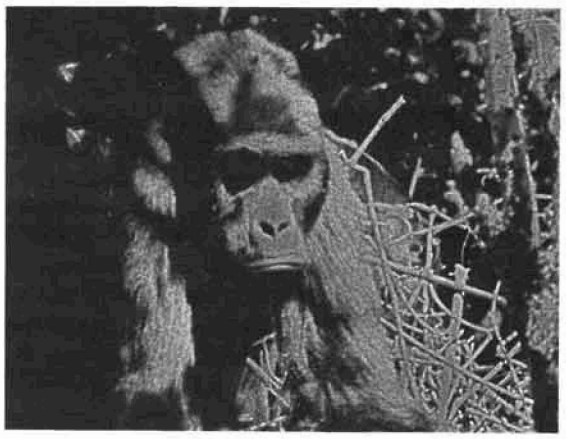
How much more difficult and satisfying to view these animals, photograph them in various moods, and pass them peacefully by for others to enjoy. That takes a real man, a contented man who does not have to brag about his prowess and virility, a God-fearing man, in short, a human MAN who has grown up.

Dr. Henry R. Junemann,
Columbia University.

FOR THE 'FAST BUCK!'

Sir—We are worried about the treatment of wildlife in the Serengeti and the Ngorongoro Crater parks.

Mrs. Baldwin and I love East Africa and its wildlife. I am a life member of the E.A. Wild Life Society having joined in 1956. I remember giving a talk at the Nairobi Rotary Club in favour of the Wild Life Society and several Rotarians joined following my presentation. We have been to Nairobi and the surrounding parks several times then. We usually



GORILLA—by John Heminway

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hired a car and sometimes a driver and went on our own. Recently, however, because we are getting older we thought it might be easier for us to join a tour.

We flew from Chicago, Illinois, to Nairobi. From Nairobi our tour operator flew us to the various parks where we were met by Minibuses or Landrovers, given a game tour and then flown usually the same day, back to Nairobi. We did cover a lot of parks, but not very satisfactorily.

In the Serengeti and Ngorongoro Crater parks, in particular, the drivers chased the animals including the cubs of both a cheetah and lion until they gave up exhausted with their mouths open, panting. Another time a baby zebra, not over 24 hrs. old (it could hardly stand) was separated from the herd and its mother who wandered completely out of sight and we feel sure the waiting hyenas got it as soon as we moved on.

The animals in these two parks seem much more apprehensive and wilder than they did on previous trips. I guess it is because *some* tour operators are disregarding the animals and even their own future in favour of a "fast buck" as we say in America.

I wrote to our tour people and the only answer I received was how successful they had been in showing over 5,000 Americans the animals of Afiica! ! !

We hope you can bring this story before your readers in the hope of helping the situation and at least the newcomers to Africa. We know from your editorials and comments that you will be sympathetic to our cause of preserving the wild animals of Africa.

Dr. S. Glidden Baldwin,
R. R. 1 Buckhorn Rd.,
Gatlinburg, Tennessee.

UNVEILED NOMADS

Sir—In her very interesting article *"Letters across Africa"* in your July issue, Mrs. Martin states that the Tuareg are the only muslims who have never veiled their women. This is quite incorrect. Somalis, whom I have known for the last 58 years, most Bedouin Arabs, the mountain Berbers of Morocco, have never veiled their women, and I am sure there are others e.g. the Kurds.

The veil was instituted by sedentary and town bred Muslims, never by nomads.

Incidentally to diverge to another subject, my old friend and Oxford contemporary Archie Ritchie, the late Game Warden, consulted me in 1938 about his desire for a Game Park and I, having been D.C. Taita in 1929-30, suggested the present Tsavo region as suitable having no human inhabitants except for a few Waliangulu. However the war stopped any action being taken until much later.

John Llewellin,
Blue Lodge,
Nanyuki.

THIS IS THE REAL DANGER . . .

Sir—After reading your editorial on the value of poaching and the subsequent letters in this column in opposition to your stand, I am only more convinced than ever that a recent American political slogan applies to the East African Wild Life Society: "If you're not part of the *solution, you're part* of the problem".

Africa can only support a limited amount of life, and depending on what type of life that is, there are several levels of trade-offs. As the human population increases both in numbers and in affluence, *that trade-off will become* more difficult for the wildlife.

While no affluent man can conscionably argue against the new affluence, every man must recognize that the growing population of Africa is the harbinger of even greater disaster.

If the Society is to "do right" *by African wildlife*, it MUST develop the political guts to take a stand in favour of human population growth limitation. This is the single greatest danger to the animals. How long can the national parks stand while more and more people crowd in from all *angles?*

Daniel Turov,
73-12 35 Avenue,
Jackson Heights,
New York.

WELL DONE!

Sir—Having been Founder Editor of *Africana* from its inception in March 1962 until the autumn of 1964, may I add my congratulations to the many hundreds that must, or should, have come your way in recent months, *for introducing the* breath of fresh air, or was it a gale, needed to blow away a decade of cobwebs.

Tony Irwin,
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Nairobi.

UNDERSTANDING ECOLOGY

Sir—I have just received my April copy of *Africana* in which you include articles by Dr. P. Glover and Mr. I. S. C. Parker on the "Tsavo Problem".

One is somewhat hesitant to add to the large literature both scientific and journalese that has already been written on this subject, but in the circumstances I feel it is necessary for someone to try to put an ecological viewpoint.

The lady who came crying to your office and made the April editorial of *Africana* is, I fear, symptomatic of the atmosphere that surrounds so many wildlife problems.

Indeed one is sometimes horrified that it is easier to arouse consternation over the plight of elephants than it is over the malnutrition suffered by well over half the earth's population.

This does not mean to say that I as a professional ecologist do not have an emotional attitude and attachment to animals myself. Nor do I lose sight of the fact that the work of conservation organisations all over the world is almost entirely reliant on money collected from members of the public who give what they can afford because they are emotionally motivated; and care about the plight of animals in danger of either suffering or extinction.

What is so urgently needed however, is to educate the supporters of conservation programmes so that they begin to understand what the ecology of animal populations is all about.

To underline the fact that although it may seem our human duty to alleviate suffering, we must also appreciate the fact that many of nature's cycles which in our eyes may seem cruel must be allowed to run their natural course.

Biological systems are a complex web of cause and effect in which one apparently simple humanitarian action may in the long term make things worse rather than better.

It is not, I think, necessary to repeat in detail the arguments that have now been raised for ten years as to what is happening in Tsavo. Suffice it to say that they have involved human encroachment, food, fire and climate. What has begun to emerge, however, is that the Tsavo situation is as complex as any other ecological problem *and cannot be explained* by reference to any one biotic (living) or abiotic (non-living) variable.

At the root of the whole problem there is the obvious fact that the elephant population has increased to a point where they have been responsible, as they have in other areas of East Africa, for drastic vegetation changes. Savannah woodland has given way to grassland and to an ecosystem which is now apparently more diverse than it was 20 years ago.

These changes have rendered *many areas* of Tsavo (East) more suitable for other game species which now show signs of increasing. In this context it is important to point out that the so-called "balance of nature" is really a dynamic process of change in which at each stage of change the bal*ance may* be achieved in a different and modified manner.

Indeed it is my own belief that the vegetation changes that have taken place in Tsavo may be quasi natural, comprising a long-term cycle of vegetation change from woodland to grassland and back *again which is brought* about by long-term climatic changes and attendant fluctuations in animal numbers.

Indeed it may well be shown that such a long-term reversible vegetation cycle may be related to nutrient cycles. The establishment of woody as *distinct from grassland* savannah may progressively lock up essential nutrients in woody material until the available primary production is deficient to an extent that the large mammal populations initiate a stage of vegetation damage and destruction which results in a *return to grassland*. Such problems can only be answered by long-term research programmes.

At the present time, however, what we are faced with is the death of several thousand elephants; the problem of explaining their death and then to justify the action of the Tsavo Park authorities in allowing this crash to take place.

Continued overleaf

FOR LUXURY SAFARIS IN AFRICA

JOHN ALEXANDER SAFARIS

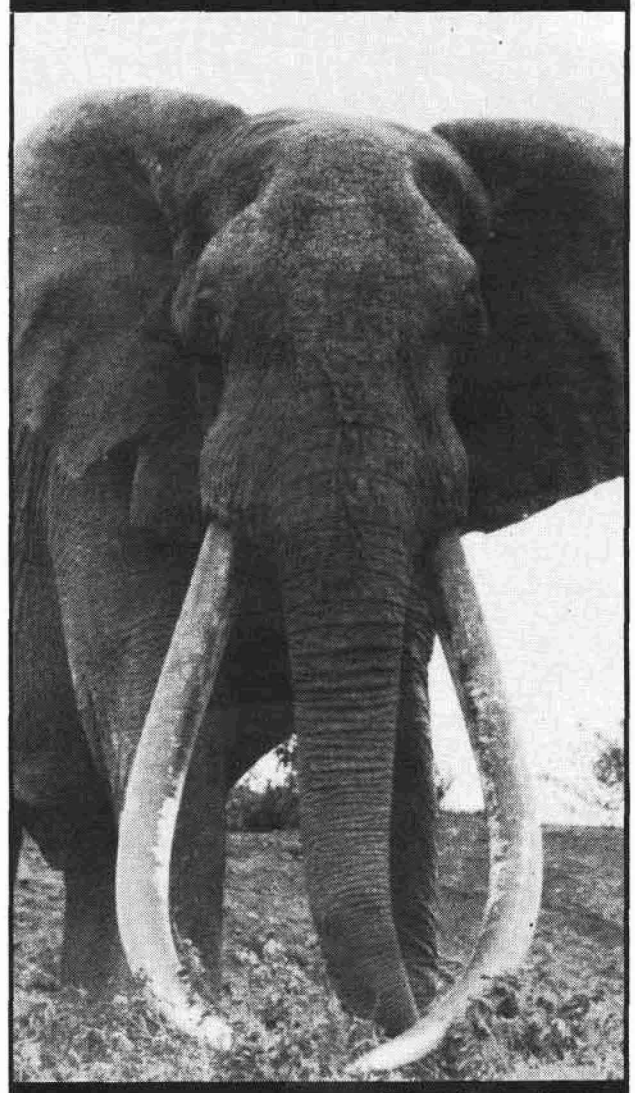


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LETTERS

In the recent past it has been demonstrated that elephant populations respond to increasing population density by increasing the interval between the births of successive calves and delaying adult maturity; a form of natural birth control.

Since of course, the elephant has a generation time very similar to our own this takes some time to become effective, and in cases where the population explosion is accelerated by extraneous factors, such forms of population correction may not occur in time to avert a crash in their numbers when large numbers of elephants die.

It was suggested, as Mr. Parker has pointed out, that up to 3000 animals should be shot in the Tsavo ecological unit. The problem here, however, was that if the population was reduced the lowered density would probably tend to prevent the reproductive correction observed in other populations and the rate of increase would continue as we find here in the United Kingdom when we attempt to reduce the numbers of grey squirrels and wood pigeons.

Another difficulty was to decide which age group of the population should be culled, for without detailed information on the population dynamics of elephants in the Tsavo situation, the effect of a cull might still not produce the whole family groups and not selected age classes.

In the circumstances this problem has solved itself for we have now witnessed what must be the most dramatic mammalian event ever to have been witnessed and recorded by man.

Since the crash began in 1971 members of the Tsavo Research Unit (with whom I worked from November 1971 to January 1972) have collected the lower jaws and tusks from a large percentage of the animals that died. As these jaws are aged it has become possible for the first time to determine which age groups are culled naturally when a large population is faced with famine conditions.

This fact is of vital importance, for it produces a base line from which future operations can continue, for if as I suspect, the numbers have been reduced to something close to a moderate carrying capacity for the Park under prevailing conditions (such as happened to antelope populations in the Nairobi National Park in 1961-62), the problems of shooting a large number of animals has been averted.

This does not mean to say that such a culling operation will never be necessary, but that should this problem recur in the future a precedent has been established from which future management policies can be established.

The question of the value of the animals that died in terms of cash has been raised by Mr. Parker, who was responsible for the earlier culling operation in Tsavo.

Clearly this is a question of policy that has to be decided within the Parks service, but for my own part I would doubt the wisdom of such logic from two points of view.

Firstly, once an operation of this type were conducted within a National Park it would negate the whole principle of what these areas are set aside for, which is for the conservation of animals within its bounds. While in addition there is always the slim chance that an economically or commercially minded administrator might seize the chance of running a large National Park as a giant ranch from which meat could regularly be obtained.

Secondly we must remember a simple ecological fact and that is that these large primary consumers (herbivores) are responsible for removing large quantities of vegetable material from the Park and incorporating part of its energy in their bodies. When these creatures die naturally it is important that the nutrients they contain should return to the soil from whence they came, especially in semi-arid areas of low nutrient status.

This last contention is underlined by my own study of the decomposition of many of these corpses when I found that the material from a newly dead elephant had been removed and dispersed by insects in little more than five weeks.

In summarising, one should perhaps return to the vexed question of the ethics of allowing such a population crash to take place.

The answer to this is quite simple, for our attitude must be the same as it is towards the small carnivore hunting rodents or the lion antelopes.

Until we fully understand what makes these habitats tick in detailed ecological terms it is far better to err on the side of caution than to be bulldozed into precipitate action.

Members of the National Parks and the Tsavo Research Unit need the support of all conservationists to carry out their work on the basis of ecological common sense.

Perhaps they make mistakes, indeed which of us doesn't but at the present time in my view the recent events in Tsavo (East) have vindicated Park's policy, not crucified it.

Dr. Malcolm Coe,
Department of
Zoology, Oxford.



Sir—Last November I had four clients with me in a Kombi at Serengeti. Whilst searching for game we spotted a herd of bull buffalo quite close to a pride of lions. The pride consisted of one male, seven females and about 20 cubs in various stages of development. As we watched, the buffalo drew up in a straight line and advanced on the lions who then formed their own line and, at a distance of probably 25 paces, they stopped and glared at one another. One bull decided to test the lion's courage and walked up to within six feet of one of the lionesses who snarled and took a swipe at him with her paw. About this time a Tanzanian Warden came along and drove his car between the two herds of contestants who decided to leave the battle to another day. The lions seeing all the cubs they had with them were not looking for trouble but the buffalo most definitely were.

P. S. Bennett, P.O. Box 14157, Nairobi.

● Picture: Charles Schneider of Bayside, N.Y.

TOO MUCH RESEARCH

Sir—Too much of anything can be bad, and this includes research on animals. Far too much conservation money is being spent, of all things, on speculative, curiosity research when there are far more pressing needs for the funds.

There comes a time when we must re-evaluate our priorities as to how funds are spent and that time is now! We must decide if it is more important to study an elephant's digestive system, his brain waves or his body heat at high noon or is it more important to acquire more land upon which the animals may browse, or build dams and sink wells to keep them from dying in drought.

Is it more important to dart thousands of animals in every park and fit them with a radio collar to study their movements or would it be more practical to erect fences in areas where the animals may leave the park boundaries to be eventually slaughtered?

At the present time, we are spending the lion's share of all funds on pure research and precious little on the things that will *really* save the animals. Instead of shooting the excess elephants in Tsavo and other parks because of their alleged destruction of trees, why not spend funds to allow for the purchase of additional lands to accommodate the pachyderms?

After all, there has been a fantastic increase in the number of tourists visiting Africa. New lands should be purchased immediately to accommodate them so that the present parks will not be crowded with tour buses which would take away the charm of the "wild bush".

Why not irrigate and spray areas of devastated lands with high-pressure water pumps which could be moved from one well and location to the next as needed? These are in use in all agricultural areas and are very practical.

A thousand of them would have saved all of the elephant and rhino that perished from the recent drought in Tsavo. They would also re-forest the land with trees and shrubs, keep down the dust, and enrich the area for wildlife a thousandfold.

In talking briefly with Mr. Roger Wheater, former Director of National Parks in Uganda, (while he was here on tour in the U.S.) I asked him if it was practical to re-forest the areas which elephants had stripped of trees. He said that re-forestation wasn't even necessary and that the trees and brush would grow back by itself, if just given a chance.

This indicates that perhaps bulldozers and irrigation equipment with over-head water sprayers could do far more for the animals of Africa than studying them. Bulldozers could dig a trench around choice areas of baobab and other trees to keep elephants from destroying them and water soaked areas of less attractive foliage would attract the animals to feed there, at the same time, increasing the growth during the dry seasons. It would appear to me that such things should take priority over scientific study.

PROTECTING

As a scientist myself, I *do see* the necessity for a certain amount of research and no one can doubt that some of it is certainly needed. But I feel that we have too much of it and that the funds used for this could be better spent actually *protecting* the animals.

Wholesale drug darting of animals is a total waste of money. Every zoo in the world is studying animals and I doubt if the continued darting and tagging of additional animals in the national parks will uncover sufficient new knowledge to justify the darting of any more animals. The money for such drugging and radio collars could better be spent in acquiring lands *and this is a fact!*

Not that darting isn't necessary sometimes to relocate or treat an animal for we all realize its value here. But just to measure or weigh an animal, to look into his mouth, pull a tooth for research (this is done with polar bears) is a waste of public funds. *It has been grossly abused.*

I would like to see 10 per cent of all the funds taken in, used for scientific study and the other *ninety per cent* used for the acquisition of new lands, the boring of wells, the creation of small permanent waterholes, the hiring of rangers for patrol and for the protection and re-location of animals.

Instead of shooting animals, because we force them into an area where the food is practically non-existent, we should buy new land for them and increase the foliage by irrigation and fertilization if necessary so that even their present land will sustain them.

If we are to manage the animals there are many alternatives to shooting them. It simply becomes a matter of game ranching and this is not too much different from raising cattle. You can keep one cow on ten acres of barren land and he could starve to death or you could plant and irrigate that same area of land and keep a hundred cows on it in good health.

GHASTLY

The same applies for elephants. Instead of shooting the poor beasts, (a ghastly solution why not protect them, which is the whole purpose of conservation. How in hell can you expect the poachers or rural Africans who kill game for food to understand or believe in so-called conservation of animals when the authorities themselves kill the animals in wholesale lots in the name of "control" or game management?

This doesn't make much sense to them nor does it make sense to the millions of animal lovers throughout the world who send in their dollars to PROTECT, not kill the dwindling wildlife.

Instead, the big portion of their money is spent on pure research and more and more animals must die to have their stomachs analyzed.

A good animal researcher should be able to tell which foods an animal eats and prefers by simply observing that animal with binoculars or a telescope. He doesn't need to shoot the animal and rip open its stomach *and this is a fact!*

Nor will the temperature of a gnu's anus really help to preserve the species as much as would a total protection of the animals in the reserves which were founded to *protect* the animals, not *kill* them.

As a scientist vitally concerned with the protection and survival of our wildlife on a world-wide level, I urge others to join me in requiring that the bulk of all monies collected be used to create a Garden of Eden for wild animals and not a research center where every animal can expect to get shot in the ass with a huge needle full of dope.

Just once I would like to see a researcher get shot

LETTERS

with a needle in his backside and let a chimp pry open his mouth to look at his teeth or clamp a steel tag in his ear. He may find the experience unpleasant.

There has been enough darting of animals to last a million lifetimes and the accumulated notes of dartings, radio collars and stomach tests, would probably reach clear around the world if the papers were put end to end.

Let's save a little knowledge about animals for future animal observers. But let's save the animals first by protecting, not shooting them and by increasing the carrying capacity of their range by irrigation and extension of the range.

When a forest fire is raging, it makes more sense to put out the fire, not do a detailed study of it. We must protect the habitat of animals as well as the animals themselves. We must protect virgin wilderness before man arrives to turn it into corn fields or housing projects or cattle ranches.

Ten years from now it will be too late. We will see beautiful wild areas denuded of their trees, not by elephants, but man will do it, with the slash and burn method, so common in the tropics.

The precious funds donated to the preservation of wildlife should be used for JUST THAT. Certainly we need some scientific study and this can still be done, but at a much reduced level. Instead, use the monies for more land, more wells and waterholes, high capacity water sprayers which are mobile and can be moved about as needed, restocking of areas devoid of game and the trapping and relocation of animals in areas where they cannot live.

Isn't this a good alternative to shooting them. Let scientists OBSERVE animals with binoculars to study them. If they must look inside a stomach, let them accompany a hunter and examine his kill. They will get just as much scientific knowledge from this animal without disturbing or killing an animal in a game reserve.

Let the game reserves and national parks become the haven for wildlife for which they were originally established. Let's spend our conservation money wisely.

Robert P. L. Straughan,
Publisher, Salt Water
Aquarium Magazine,
P. O. Box 1000,
Belleview,
Florida.

MYTHS ABOUT RHINO

Sir—The Rhinoceros holds a strange fascination for many visitors to Africa; and perhaps your readers might like to know something more about them.

But for its horns, of course, the Rhino (both Black and White) would survive in far greater numbers. Poaching is still heavy, though fierce regulations and the existence of reserves and National Parks have at least ensured the survival of both these species for the time being.

Throughout history, rhino horn has been coveted, especially in the Far East, for its supposed aphrodisiac quality when taken by mouth, after being ground to a powder and mixed with coconut oil or water. (Scientific opinion holds that this belief is entirely fallacious.)

Various Far Eastern peoples have also believed that this mixture would protect the user against poisoning, ease pain in childbirth, destroy infections, speed the healing of broken bones, help to remove thorns and splinters and cause lumps to shrink.

As well as being used for medicine, rhino horn has for centuries been used in the making of small, carved objects. The Chinese used to make buttons and buckles, and the libation cups they used in religious ceremonies. In Africa itself, the Masai and the Wachagga used to make 'knobkerries' (hunting sticks with knobs on one end, used for throwing) and in Ethiopia rhino-horn sword hilts were greatly prized.

Today it is still the most highly-priced animal commodity in the world, and as the rhino population decreases it becomes steadily more valuable.

In 1933 Lee Talbot noted in Sumatra that a horn fetched nearly £500; an American tourists was once offered a new car for the rhino he had just shot! China is still by far the main market, Singapore being the major collection centre.

Contrary to popular myth, the rhino's horn does not consist of "matted hair", but rather of true horn—a hardening of the epidermis, closely related in growth and composition to hair (composed of about 50% carbon, with hydrogen, oxygen, nitrogen and sulphur) but in fact a solid, keratinized mass of skin, like the fingernails of man, horses' hoofs and tortoises' shells, porcupine-quills and the outer covering of the "horns" of antelopes such as Wildebeest and Thomson's Gazelle.

The difference between the horns of antelopes and those of rhino are that the rhino's grow from the skin, with no inner core of bone, and are attached to the skull only by the skin.

Horns were removed simply by cutting through the skin around the base and lifting them away, revealing a spongy, pink circle of tissue.

They grow throughout the rhino's lifetime, at an estimated rate of about three inches per year. In the earlier literature, there are records of rhinos with three horns, the third being little more than a bump; but nowadays two are the rule, the front almost invariably longer than the back. They are ideally placed and shaped for a vicious "uppercut", which is the rhino's favourite means of attack and which is capable of piercing the bodywork of a stationary car, or of overturning a moving one.

Males are usually more aggressive than females, and their horns thus get worn down and are characteristically shorter. Both sexes can sometimes be seen sharpening their horns (especially during the rains) on stones, anthills or fallen trees. Sometimes the long, thin horns of the females break, and are then gradually sharpened to a point again.

The longest horn ever recorded was that of the famous female, "Gertie" of Amboseli, which was estimated from photographs as about 39 inches.

Rhinos also use their horns to scatter their freshly-dropped dung, and to dig out salt for eating. On Marsabit Mountain, there is a whole cave dug out by them, the roof covered with indentations, for that valuable addition to their diet—proof of both their strength and their tenacity!

Rhinos are certainly among the most dangerous wild animals left in the world today. But without them the world would surely be poorer, not least because of the legends and myths that have grown up around those ferocious weapons: their horns.

Clare Duncan,
Serengeti Research
Institute,
P.O. Box 3134,
Arusha.

OBITUARY: IAN PRITCHARD



Sir—Perhaps you would publish the following tribute to Ian Pritchard who was for many years a member of the East African Wildlife Society and—among all else—a dedicated, practical conservationist. . .

Ian Pritchard loved the sea with an invincible love, and it was fitting that when he died, aged 45, on July 30th, it was in the Indian Ocean that they buried him.

For those to whom his name means nothing, spare a moment or two to hear about him, for they don't make people like Ian very often.

When I first met him, he was tall and very slender, very sunburned, a big Van Gogh hat on his head, his square jaw fringed with a reddish beard—always an active man, one of the finest underwater swimmers ever seen on East Africa's coast, with an unique knowledge of the Watamu area where he lived, some miles South of Malindi: he seemed to know every stone and piece of coral under those blue-green waters.

A gentle man, quiet and shy, but with a sharp, dry humour, Ian had served in the Royal Navy in many parts of the world, but now had settled at Watamu where he ran a small water-sports business, goggling, skiing and so on.

It was while water-skiing that he broke his neck and was instantly paralysed from the neck down: this was about ten years ago.

As we all knew, Ian was a courageous man; he had been awarded the George Medal for his exceptional bravery in the forests of Kenya during the grim years of the Emergency. Not that you could ever get the story from Ian himself, for he was perhaps the most modest as well as the bravest man we knew.

Anyway, here he was without a glimmer of feeling or movement in 90 per cent of his body: what would he do now? Operations and months in hospital came first; a fund was set up to help pay for a spell at Stoke Mandeville, and the Duke of Edinburgh stepped in to seek RAF assistance in flying him over to Britain.

And then, back to his beloved Watamu, and life in a wheelchair.

Of one thing we were all certain; Ian wouldn't stay idle for long. Sure enough, he was soon at work, a paint-brush clamped in his teeth, painstakingly pushing dabs of oil-paint onto a canvas propped up in front of him. We almost took it for granted that he would be good—and he was, very good.

He had a magnet strapped to his left wrist and little metal bands fixed to his brushes: then, with a flop of his arm he would somehow jerk the brush from its stand into his mouth, and off he would go again, slowly, imaginatively, creating pictures of his greatest love—the sea.

They sold rapidly, often to people who had no idea that they had been painted by mouth, nor of the immense effort that each brush-stroke had cost the artist.

Ian didn't just love the sea; he did something practical about it. He led a campaign to have "his" stretch of Kenya's coast made into a National Marine Park before its beautiful coral gardens were wrecked by souvenir-hunters, and overfishing deprived it of its greatest spectacle. He fought for it before his accident, and after it; and he won that battle too. Today there is a National Marine Park at Watamu.

Uncannily, he never forgot a single detail of this underwater world, and remained by far the finest oracle to consult before setting off on a goggling expedition. Being the sort of man he was, he actually managed a few journeys down there himself; he would be taken from his wheelchair, strapped onto a sort of underwater sledge, the mouth-piece of an aqualung held tight in his jaws—and, incredibly, down he would go to glimpse for just a few brief moments the world in which formerly he had reigned supreme.

Kind, compassionate, delightfully humorous, dedicated, unbelievably brave—such was Ian Pritchard.

In St. Paul's Cathedral one can read something like this of its architect, Sir Christopher Wren; "If you would seek his epitaph, look around you".

Next time we go goggling at Watamu, we should remember those words, and remember Ian Pritchard.

—name and address withheld by request.

THE SMALL PRINT

Sir—Since my trip to Africa, I have been a member of the East African Wild Life Society and hence a subscriber to AFRICANA. I love the magazine, but I do find the print is becoming increasingly difficult to read— it is too small!

I'm sure there are many like me who would like to have shorter articles but larger print. I'm having to sacrifice reading most of this last issue. It is too

Continued overleaf

LETTERS

difficult and we turn to other reading.

Is there anything that can be done about this?

(Miss) Eugenia Ong,
637 Alameda Street,
ALTADENA, California.

● *We are planning a new look for the magazine next year—and we promise larger print. Hopefully, we will be able to increase the number of pages per issue so that we don't have to cut either the features themselves or the present volume of Contributions—Ed.*

TRAVESTY OF FACT . . .

Sir—Owing to postal delays *Africana*, Vol. 4 (8), December 1971, was not received till 21st May 1972, hence this tardy reply to Dr. Mary Aerni's criticism of Dr. E. B. Worthington, who by implication she suggests prepared "A development Plan for Uganda", published in 1947, after—her words—"The author had toured Uganda for four months in 1946."

Factually, Barton Worthington first visited Uganda in 1927 when for many months he participated in a comprehensive survey of the fisheries potential and fish of Lake Victoria under the guidance of Dr. Michael Graham of the British Ministry of Agriculture and Fisheries.

Subsequently in 1928 he undertook a similar piscatory survey of Lake Albert at the request of the Uganda Government. The valuable results of both these surveys were published at length in detailed official reports in book form.

Worthington returned to Uganda in 1930-31 to undertake investigation into the fisheries potential of the lavishly stocked waters of Lakes Edward and George and their 20-mile connecting link, the broad Kazinga Channel, as well as investigating conditions in several of Uganda's shallow, minor lakes.

Further visits were made in ensuing years and he always kept in close touch with the fisheries and the wildlife situation, and with the then Protectorate's economy.

During the war years, 1939-1945, he held an important post in an advisory capacity concerned with Supplies for the Allied Forces based on and directed from Cairo, in which period more visits were made to Uganda.

So much for Worthington's qualifications for the exacting demands of Uganda's Development Plan—he had been closely concerned for twenty years with Uganda's economy.

Further there is an implied insinuation by Dr. Aerni that, as part of the Development Plan, having advocated a policy of local game extermination in order to combat the deadly—to domestic stock—tsetse-fly in the interests of the cattle industry, Worthington then in Britain, became an ardent protagonist of wildlife conservation.

Such a deliberate travesty of fact is entirely unjustified.

I have been closely associated with Worthington since I first met him in Uganda in 1927 and I can categorically state that in matters pertaining to wildlife (or game) conservation specifically in Uganda and in East Africa he has always been a dedicated conservationist, but when undertaking a task of such magnitude and complexity as "A Development Plan for Uganda", inevitably and unfortunately his first consideration and paramount had to be the welfare of the country's economy.

Uganda, in extent, is only some 93,000 square miles, one third of which is either open water or swamp and "The Development Plan" after the lean wartime years and in view of the funds available demanded quick results.

I was still in Uganda, as Chief Game Warden, in 1947 and I know how repugnant any recommendation of indiscriminate game slaughter, even though strictly local, was to Worthington, but his assignment was to advise on economic development and not on wildlife conservation.

He honestly recommended, in view of what was then known about tsetse control, what he considered to be in Uganda's best interests and for this he cannot be condemned.

Naturally, game slaughter in several well-stocked localities was strenuously opposed, without avail, by the Uganda Game Department and others, but we did not blame Worthington for his endeavour to find a solution to a problem of extreme import to a little country with an ever-increasing indigenous population and its concomitant essential expansion of agriculture and animal husbandry.

Barton Worthington has deservedly long been considered one of Britain's and Europe's leading wildlife conservationists, while his association with East Africa's wildlife situation is closer than ever.

C. R. S. Pitman,
41 Queen's Gate Gardens,
London S.W. 7. 5NB.

THAT COVER PICTURE?

Sir—We thoroughly enjoy reading *Africana*— and sharing it with our friends—especially the schoolchildren.

A recent issue, *Vol 4, No 8 1971* has a most unusual cover and we wonder what it is. Recent issues do not seem to have an Index—nor an indication of the Coverpic.

Picking up a former issue. *Vol. 3, No. 10, 1969*, I notice that what I would like to see currently was included then---- but with another editor.

We are happy to be Life Members and look forward to future visits to Africa. Thus far, I have been seven times, and my husband 32 times. We can heartily recommend East Africa as a vacation spot. And we feel proud in knowing that we own a bit of Africa through last years contribution to the Kitengela Project.

Mrs. Everett E. Wynkoop,
Elm Ave.,
Churchville,
Pa. 18966.

● *Contents list restored—see page six. The cover mentioned (mine incidentally) is an unusual aerial shot of Mt. Kilimanjaro with Mawenzi appearing to loom over Kibo.*
—Ed.



Sir—The other day, just after I left my house in Langata on my way into Nairobi, I saw a creature sitting on a neighbour's fence.

I immediately stopped the car, jumped out and walked towards it. The creature leapt off the fence and came running to me with his arms outstretched, so I opened my arms, too, and he jumped right into them and gave me a great hug.

He was none other than a baby gorilla dressed in a blue jacket and when I found his keeper close by I begged him to let me take the gorilla back to the house to show my husband, he agreed and came with me, but I'm afraid Esmond lacks the fatherly instinct!

Chryssee MacCasler,
Perry Martin,
Villa Langata, Nairobi.

MR. PARKER IN PURSUIT . . . ?

Sir—Never having read *Africana* until the last few delightful months, I'm absolutely fascinated by the fascination Dr. Aerni has for Mr. Parker.

She is not able to write one word without it attracting the attentions of this man.

Maybe he gives the answer himself—to quote: "Surely it is most unusual for one [female] to enter the male lists? Isn't this where the old primate Eve got us into eternal trouble . . . ."

Yes she did and she was much followed by a man called Adam and has been ever since.

Mrs. James Oliver,
Gordon Road,
London.

WERE THESE 'SUNU . . . ?'

Sir—During the early part of 1953 I was leading a patrol in the bamboo forest. We were about four miles in from the South Kinangop farming area and from the farms then occupied by Hugh Nightingale and Jim Hughes.

We were proceeding along a broad elephant track through a tall mature stand of bamboos, beneath which was a thick mat of bleached bamboo leaves but no undergrowth.

It was about midday and there was a clear sky. Occasional shafts of sunlight penetrated the canopy, and light reflected from the whitish leaf strewn ground made visibility good.

Suddenly to my right I heard the pattering of feet on the dry leaves and I halted the patrol.

Directly across our front, at about fifteen yards distance, there moved a sounder of small red pig at a steady trot, tails held erect exactly like wart hog. In fact my immediate thought was that they were juvenile wart hog.

It was only when I noticed that one of these small pigs was a boar, carrying long upward curved tusks, that I realised the full significance of what I was seeing.

There were possibly ten pigs in the sounder, one of which was a boar, another a sow with a number of youngsters running in single file behind her, tails erect in typical wart hog fashion.

Their general conformation was that of wart hog, except for the colour which was a coppery rufous, and their size. The boar I estimated to be about 18 inches at the shoulder.

The period over which these pigs were clearly visible was possibly one minute, but visibility was excellent and although the bamboo was a mature stand it was not dense; in fact it could be described as fairly open and had begun to die back with age. The pigs had obviously been disturbed but not by us, for they took no notice of us, but continued across our path at a steady determined trot, wart hog fashion!

One of my trackers, Gichimu Kimemia, who had a life-long experience of the Aberdare forests, said that these pigs were called "Sunu", and that he knew of their existence from tales told to him by WaN' dorobo hunters, but that this was the first time that he had personally seen them. He was quite excited about it.

I interrogated a number of other Africans who had a knowledge of the forests, but got much the same inconclusive information, except from one very ancient N'dorobo hunter friend of mine who claimed to have hunted that particular area of the bamboo forest before the advent of white settlement.

He said that sometimes these pigs were caught in pit traps. He described three species of pigs in the forest: Firstly, "Numera" the Giant Forest hog; secondly, "N'guruwe" the Bush Pig, and thirdly, "Sunu" the pig here described.

The events at the time were such that a follow up on this possible discovery of a new species was out of the question.

A few years later I discussed it with Major Grimwood who was then the chief Game Warden of Kenya. He suggested that I had seen Red River hog.

I then described what I had seen to Bob Carcasson and John Williams at the Coryndon Museum, who discounted all possibility of Red River hog being in the Aberdares and adjacent forests. Besides which the pigs I had seen resembled wart hog, whereas Red River hog resemble their close cousins the bush pigs.

Unfortunately the unsettled political state that prevailed before Independence pushed the whole question into obscurity.

It is my belief that if an area of the bamboo forest still remains undisturbed, and large enough to afford an adequate habitat, these red pigs are still there awaiting scientific recognition.

Some ten years ago there were a few of the old N'dorobo hunters settled near Lari, and if any of these people can be located they should be able to throw some light on the matter. Gichimu Kimemia is still living on the North Kinangop on land that once belonged to Mervyn Ray and his family.

Venn Fey,
Donnybrook,
Natal.

WILD DOGS OBSERVED

Sir—I recently watched a pack of hunting dogs at work and was amazed how interdependent and closely knit a group of these animals is.

One afternoon at about 4.00 p.m., three of our African Assistants and I went out to look for sick animals—a routine we do often.

We had just passed the Seronera Airstrip area when we saw a pack of four hunting dogs resting under the shade of an Acacia. It was still rather hot but I knew, and hoped, that they would start hunting when it became cooler.

Ahead of them stood mixed herds of Thomson's and Grant's gazelles, keenly and nervously watching these carnivores constantly. We decided to continue looking for sick animals while waiting for the temperature to lower.

An hour later we returned to the same area just in time to see the dogs get up from their resting place and begin surveying around. They were all males of approximately the same age. One of them was limping. The other three would walk faster and frequently stop to wait for their sick comrade who perhaps was their former leader but now depended on someone else to hold the rank.

His right hind leg was so severely injured that he could not put weight on it.

After carefully surveying the numerous herds, the dogs headed for the one in front of them. It was obvious that they were looking for a worthwhile individual to chase, but seemed to find none in this herd and proceeded to the next, ¼ kilometer away.

Once again the pack did not seem to find an appropriate

Continued: page 12

Not that we had been talking but that we had been talking loudly without fear of disturbing our quarry was what surprised me most. Our guide, the conservateur *of Zaire's Kahuzi-Biega Park, Adrien Deschryver admittedly contributed little to the noise; he sat with the pygmies away from the cool shade of the giant newtonia tree and stared into a toneless tangle of fern and liana. Sometimes he would acknowledge our not so drole remarks about the Democratic Convention, the private ambitions of all "boffins," and "Mad Mike" Hoare's reputation in Bukavu, with a private smile. He never stopped us from raising our voices, nor Rob from smoking his Upman Cigar. The heat soon withered the talk and as my eyes began to close I remembered with a jolt where I was: forty feet away was a family of twenty-two mountain gorilla.*

A WALK WITH THE GORILLAS



ADRIEN DESCHRYVER

STORY AND PICTURES by JOHN HEMINWAY

WHILE others may worry about the extinction of game in Africa, I am bothered by a far more ambiguous problem—the fear that the rareties of Africa are in imminent danger of becoming pedestrian.

Not being a scientist, there is little that I can do for the future of let us say, the cheetah, besides parrot the findings of experts. My chief fear is that in the case of the cheetah it will be taken for granted if it is made to look too accessible to the casual visitor.

Now, as it is no mystery where to find "habituated" cheetah in East Africa in the comfort of a mini-bus, I fear their accessibility will lead to a subtle *ennui,* totally out of keeping with the cheetah's overall scarcity throughout Africa. These days, in East Africa, so much has been plotted for the tourist in advance. Who can blame him for being bored if he is told: "The elephants will be watering at 6:15"; "We give you a money-back guarantee of seeing leopard tonight", "Ahamed will be feeding on the left of the main road"?

ELITISM

I admit that my feelings are inspired by elitism. I remember searching for Ahamed in the days when his habits were not well known, when the road from Isiolo to Marsabit was appalling and when the mountain offered no tourist facilities. After two days of scouring the mountain on foot, I still had not seen him, yet I was ecstatic that I had made my first sighting of a Tiny Sunbird and, with the help of a naturalist friend, had begun to learn a little of the personality of the great mist forest of Marsabit.

Terence Adamson, Billy Woodley, Peter Beard and Peter Jenkins had known Ahamed long before I, yet there was still a feeling on the mountain of being amongst the first. Ahamed in those days was still a great adventure and my enchantment was heightened by not having to compete with anyone else to see him and his ivory.

Today I fear Ahamed has lost much of his uncommonness. Part of the blame rests with me for I had gone to Marsabit at that time to work on a television documentary special. All in all, our film was one of four produced about the legendary elephant. Although it was neither the finest nor the most extensively viewed, I know that since one film begat another and as all this attention begat an article in *Life Magazine,* I had been in part responsible for destroying some of Ahamed's mystique and the magic of the mountain.

I fear that someday some tourist, recounting his trip to East Africa, will incant the word "Ahamed" merely as an abbreviation between "Treetops" and "The Mount Kenya Safari Club"; for him it will be but one small item on his travelling shopping list.

It will be accorded no distinction because as a sight it required no more than an unconscious reflex of the camera hand and a mental note to clean the mini-bus window next time back at the lodge. I will wonder who perpetrated this injustice on him; was it his courier, was it self-inflected or was it I?

THREATENED

For the last eleven years I have refused to believe that the mountain gorilla will ever be threatened by such commonness. In late August of 1961 I climbed with schoolboy friends from Kisoro in Southwestern Uganda up Mount Muhavura to catch a fleeting glimpse of one. Walter Baumgartel, the loquacious proprietor of Traveller's Rest Hotel had confidently predicted our search would be in vain as a black leopard had driven most of the gorilla population back into the Congo. This same black leopard had reputedly killed three of them.

We climbed with seven porters and a guide called Reuben who was then 52. He was barefoot most of the time and never had to catch his breath as we did, trudging from 7,000 feet up to 12,000 feet, slipping on vines and the taproots of podocarpus trees. This was his twenty-fourth year showing visitors the mountain gorillas and with us he never once lost his enthusiasm for pointing out every item of the gorilla's diet.

On the afternoon of the first day we expended an hour at 12,000 feet stalking the sound of what we assumed was a gorilla feeding. As we made good our final approach through the heavy mist, the source of the sound suddenly charged off down the mountain and from the spoor we discovered it to be three small mountain elephants.

HISTRIONICS

We camped in a tiny hut on the saddle between Muhavura and M'gahinga, and in the morning long before the mist had cleared, two porters set off to see if they could find any traces of gorilla. Within minutes they had returned with news that gorillas had nested a short distance from camp.

We set off immediately and as soon as we had come upon the nests Reuben, unable to describe the gorilla's habits in Swahili, curled himself up in one and gave a visual demonstration of the gorilla's mode of sleeping. (I noticed that he had been careful to perform his histrionics in the one nest that was not fouled.)

A short distance away, on the far side of a donga, the porters spotted the gorillas feeding. All that was visible was the bullet head of one gorilla, a massive slab of a dark scowling face eating wild celery.

With Reuben I approached the gorilla on foot, clenching my teeth against the sting of the nettles which covered the ravine, stabbing my bare arms and ankles. Since the secondary growth was well over our heads we were unable to see our quarry as we stalked.

I was convinced there was still a good two hundred feet separating us from the gorillas, but suddenly there was an electrifying burst of sound immediately ahead of us. Glaring at us was a great tightly-coiled body, fifteen feet away. It barked again, a hoarse throaty shriek of outrage, and then it rushed into the black greenery of mist.

None of us said anything for many minutes. I shook my head and wondered why it never occurred to me to take a photograph.

For years I had guarded that stopwatch moment as my most exalted encounter in the world of nature. As it was also perhaps one of my shortest, having lasted no more than fifteen seconds, I decided three years later to return for a further gorilla encounter with a friend from University.

SILENCE

Walter Baumgartel had now lapsed from loquaciousness into silence, listening every night on his wireless to the nightmare tales being enacted a handful of miles away in the Congo. He seemed nearly to have lost interest in his gorillas, high on the volcanoes behind the hotel. What became of them had been sublimated to what was becoming of humanity in the Congo and ultimately what might become of him.

The hotel was flooded with Belgian refugees and with homeless missionaries. At the dinner table on our first night the conversation halted as soon as the rain began to fall. Torrents plunged onto the corrugated iron roof of the

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LETTERS

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quarry, and thus turned to still another herd to the left. With my binoculars I could see that in this last herd a big male grant's gazelle stood out among the rest, size-wise. It would be surprising, I thought, if the dogs ignore this one.

We were tense . . . waiting for an exciting moment! and then the chase began. The big buck had been singled out, and he knew it.

Following the chase in a Land Rover at 70 kph proved to be difficult since the terrain was interrupted by termite mounds and ant-eaters' holes, both of which were abundant in the area.

The gazelle ran at its best but the leading dog began to draw closer and closer. When the distance between the two had narrowed to about 20 meters the leading dog doubled his speed

In no time at all the gazelle was brought to a stand-still as the leading dog lunged and got a secure hold in his flank.

The other two dogs were close behind and in a few seconds the gazelle was felled and mercilessly disemboweled —a method more fruitful and practical for the dogs than that of breaking the neck as commonly used by other carnivores.

Meanwhile, the limping fellow had not arrived. Suddenly two hyenas appeared from nowhere, as if they had been released from a subterranean prison nearby, chasing the three dogs from their kill. However, our arrival at the scene frightened the hyenas away. We stopped close by to watch the dogs enjoy the reward of their hard labour and to take close-up photographs.

We had forgotten all about the limping dog when we suddenly heard his whining from behind us. He was now about 50 meters away, and then one of the dogs at the kill heard him and immediately rushed past us, whining also, to meet his lame comrade.

On meeting him he regurgitated onto the ground the meat he had already eaten, and the limping one gobbled it up at once. Together they proceeded quickly to join the other two at the kill.

The limping fellow began eating voraciously while the others seemed to be taking their time. Whether the three dogs let him eat the most first (i.e. a gesture of sympathy for his condition, or out of sheer respect) was hard to determine since the kill was big enough for all of them.

After a short while he was full and laid down to rest while the other three continued struggling for the meat.

Dr. Tumaini Mcharo,
Senior Research Officer,
Serengeti Research
Institute, Tanzania.

ENVIABLE ELOQUENCE

Sir—For all her enviable eloquence, Daphne Sheldrick — in my opinion—presented a number of inaccuracies and half truths in her article in your last issue.

To give only one example: She presents Galla graves as evidence of former grassland. However, does she forget that the Galla were finally evicted from Tsavo by the then Parks' authority at a time when the Park was mainly Commiphora woodland? In the main the distribution of Galla graves coincide with the distribution of the Galla when the Park was established.

Thus of their own knowledge Daphne and David Sheldrick are aware that Galla graves do not necessarily indicate former absence of woodland.

I shall not comment further on other misconceptions presented as this is unlikely to resolve any issues. However, the avoiding of fundamental principles cannot be allowed to pass.

While appreciating Mrs Sheldrick's aversion to rendering elephant into coins, how is the principle of this equated with that of running a commercial fishery within the Park? Here, a form of life in a National Park is treated as a source of protein for humans and money thereby generated. What are the criteria whereby a species can be judged suitable or unsuitable for such treatment?

In Tsavo's change from woodland to grassland some species are likely to disappear. Even if they are unspectacular plants or invertebrates, is this permissable in view of the professed desire to preserve all life forms?

The outstanding feature of Daphne Sheldrick's article is her obvious deep feeling on the Tsavo issue. However, the crux of the controversy is the dichotomy between emotional feeling and the process of reason. It is apparent in many human affairs; those whose position is based on one usually deride those based on the other. Daphne Sheldrick reasons with the best, but ultimately takes her stand principally on feelings and intuition.

Others, of whom I try to be one, have strong feelings (very similar to the Sheldricks') but endeavour to subordinate these to the rather lifeless process of reason.

It is instructive to observe that our civilisation places a premium on the latter and we are conditioned to pursue its course. Nevertheless our history is a succession of unreasoned acts initiated by our feelings. Therein, perhaps, lies the lesson.

While disagreeing with a policy of *laissez-faire* in Tsavo (which is not strictly followed), I compliment Daphne Sheldrick sincerely for a clear exposition of how she arrives at her position. What a pity that Tsavo's scientists are unable to explain their strong emotions as clearly (ref. the mewlings of Leuthold & Glover in your last issue).

This leads me to conclude with a general observation on the contribution of biologists to conservation in East Africa.

The running of National Parks and Game Departments today shows little change from the systems established decades ago. The past decade has seen considerable activity in the field of wildlife research which, with some notable exceptions, has had little application in management—its alleged goal.

In many instances it seems as though biologists avoid any suggestion of their responsibility toward management. Under guise of sanctity they promise answers tomorrow—always tomorrow.

After ten years, tomorrow seems further away than at the outset. The catch phrase is: "Do nothing until we have the answer." But Pythagoras and Plato were seeking "the answer" and we still do not have it.

It is about time these vestal boys of science left their academic shrines for the sordid fields of application.

I.S.C. Parker,
P.O. Box 30678,
Nairobi.

MORE SCIENCE

Sir—I feel that many other members of our Society would join with Mr. Gerrard of Surrey in welcoming more articles of a scientific nature, rather than mere tourist-descriptive types. Dr. Lamprey's highly informative yet readable report on scientists' research programmes at the Serengeti Research Institute provides an excellent example.

It would be most interesting to have a continuing series of profiles on the work of these and other scientists working for conservation in East Africa. For instance there is D. Vesey-FitzGerald, who is an ecologist with Tanzania National Parks undertaking, with a team of Tanzanian assistants, research and management programmes on habitat rehabilitation, pasture utilization and fire control in the Arusha, Manyara, Tarangire and Ruaha National Parks.

I am sure that illustrated articles about such work would interest not only your many readers who are keen naturalists in their own countries, but also the ordinary package tourist whose enjoyment would be enhanced by a greater knowledge of how the environment and the animals may exist harmoniously together.

In closing, I must associate myself very strongly with Mr. Brown's and Mr. Downey's condemnation of your Editorial of December 1971. If this is indeed the opinion of the Executive of the Society, I feel you will lose many members. The problem of protein-hunger amongst rural Africans would be far better solved by persuading the cattle-herding tribes to provide meat for their hungry brothers before their pastures become a vast dust-bowl through overstocking.

Mrs. David Hobson,
Castle Hill,
Buckland Newton,
Dorset.

— D. Vesey-FitzGerald's article on "Hospitalisation of the Environment" appears on page 19.

REEDBUCK

Sir—Some of your readers may be interested to know that there are two species of Reedbuck in the Nairobi National Park. My wife and I identified a pair of Mountain Reedbuck on the slopes of the Sosian Valley.

This beautifully camouflaged and timid antelope is easily identified from the Park's more common Bohor Reedbuck. The latter, which prefers a lush terrain, is a uniform yellowish-fawn colour, whilst the shaggier-coated Mountain Reedbuck is greyish above with a chestnut coloured head and neck, and whitish below.

During our two-and-a-half hour visit to the Park we observed, apart from these two Reedbuck species, sixteen other types of mammals, i.e. Lions, Buffalo, Eland, Waterbuck, Bushbuck, Thomson's and Grant's Gazelles, Coke's Hartebeest, Wildebeest, Impala, Zebra, Giraffe, Wart-hog, Baboon, Vervet Monkeys, and even mating Hippos!

I doubt that any other place in the world can boast that such varieties of wild animals can be viewed in such a short space of time in such a small area.

D. G. Hutchinson,
P.O. Box 30075,
Nairobi.

● *There is also a small population Chandler's Reedbuck* (Redunca fulvorufula) *at the edges of the Sosian Gorge—Ed.*

ON PROMOTION OF TOURISM

Sir—I became a life member of the East African Wild Life Society principally to support the conservation of wildlife. Such an attitude is of course not restricted towards wildlife in East Africa but to anywhere on the globe.

I regret that apart from Africa there exist only a few spots where wild life is protected on a global scale so that its continued thriving is assured.

After my remark on the missing tigers in South-east Asia I received a number of letters assuring me of the existence of tigers at several spots. I know that many magnificent and competent people strive to preserve wildlife in these countries as well—but is there any risk of not seeing lions or even a leopard on a longer safari in Africa?

That is the point—South-east Asia would also need global reserves comparable to the Serengeti in size. In principle it may not yet be too late to create them. The idea may seem crazy in overpopulated countries, but Africa has proved that it is possible and can even be lucrative.

South-east Asia, where wildlife is equally magnificent could then collect a comparable share of tourists, not only from America and Europe where distance is a certain handicap, but even from Japan and Australia.

There would doubtlessly also be financial support from all over the world available, apart from investment. The awesome expenses of such a project may nevertheless compare in worth most favourably with some of the apparently more urgent activities such as waging wars.

Now coming back to my motives for joining the E.A.W.L.S. I do not consider the tourist in East Africa a species threatened with extinction—the tourist in Kenya even less so than that in Tanzania and Uganda.

I therefore don't see what *Africana*, which is an organ of the Wild Life Society should have to do with the promotion of tourism in Kenya.

One must agree that tourism is a strong—perhaps the strongest—support to conservation; this is however not only true for Kenya alone.

The Society may promote tourism indirectly by protecting wildlife and stimulating interest in wildlife and its protection by detailed information which may finally attract the tourist.

I feel, however, that it is below the dignity of the Society to attempt a direct promotion of tourism besides being dangerous in cases where the interests of the conservationist and of the tourist industry clash, as for example in the case of hotel construction in conservation areas.

The tourist in East Africa we agree, is a necessity for conservation, but fast and too extensive swellings of the tourist industry can paradoxically be a threat to the country in spite of the economic advantages.

I have seen already too many of the loveliest beaches and scenery, in Europe (especially Spain, Yugoslavia and Italy) spoilt unbearably by concrete structures of mass accommodation which once started, continue growing like a cancer; the local population torn out of a balanced and happy life to career opportunism and perpetual dissatisfaction.

I am worried about how East Africa has already changed since my last visit there due to the development of mass tourism.

The average tourist in East Africa was hitherto generally a consciously "good tourist" and I found that the population of East Africa (all its different groups included) could hardly have been more helpful to the visitor.

I am, however, worried that both these pleasant features may change with mass tourism.

My experience is limited, nevertheless I have witnessed scenes like that of tourists (even educated persons) who knew no better than to teach Masai village children to smoke (fruits or sweets would have been available as a choice).

I had also occasion to watch a tourist in a rented Mercedes car insulting African rangers who tried politely to prevent him from driving down the descent to Ngorongoro crater (closed to such cars) and finally having his way.

I am afraid that with excessive increase of tourism the bad tourist will necessarily start to dominate the scene and with him the bad tourist industry from which only a minority will truly benefit.

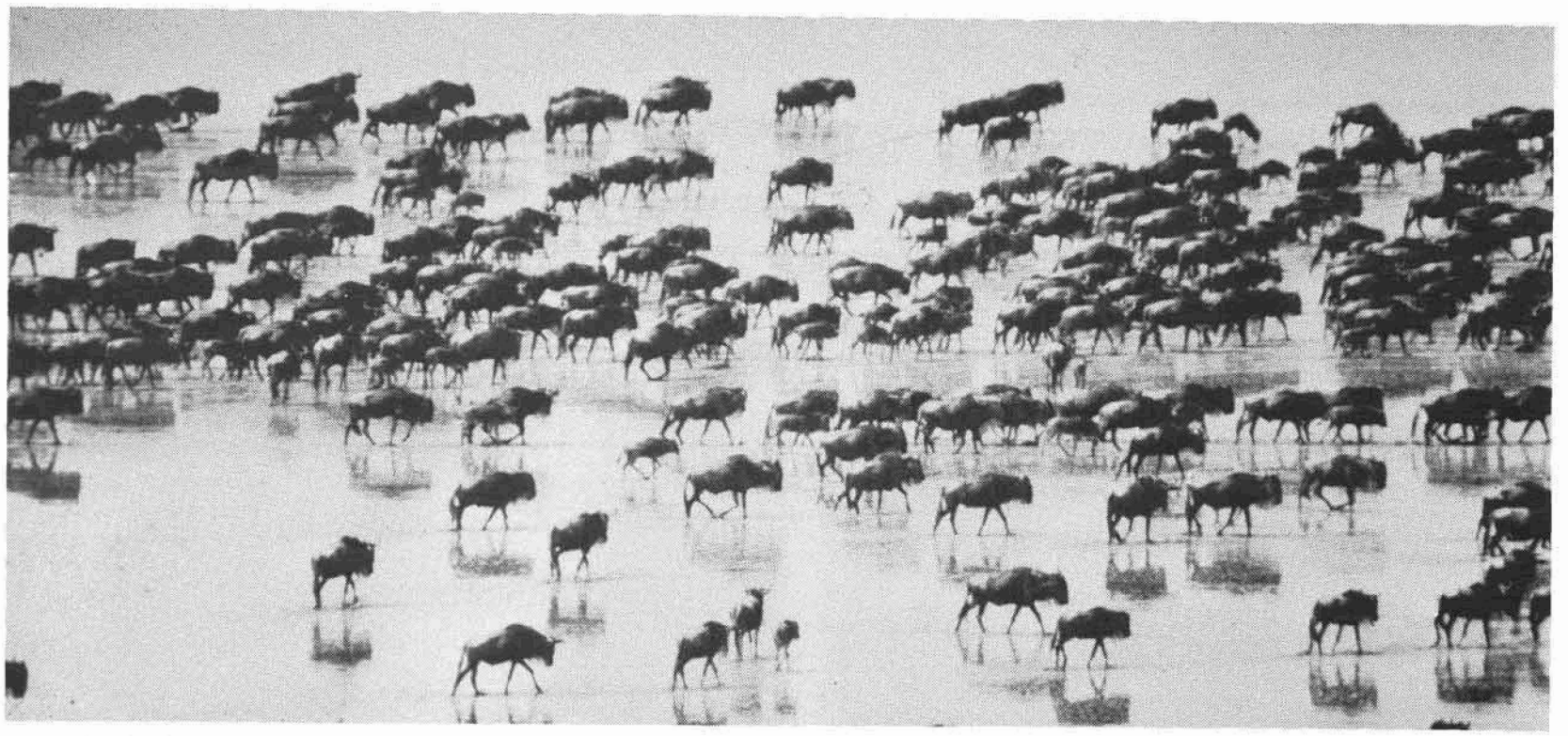
I feel, on the other hand, not convinced that the Wild Life Society approaches tourists effectively enough.

I received a letter from a Mrs. Jonker-Bonsma, of Ede, Holland telling about hair-raising personal experiences of the spread of poaching, particularly in Rwanda, and suggesting the printing of leaflets to be handed to tourists through travel agencies or at the airports.

Every tourist should thus learn basic facts about poaching and be asked to refrain from buying certain articles.

Although mass media in some countries are doing this already, I believe the leaflets method could be especially effective and may serve to make more tourists aquainted

Continued on page 34



Wildebeeste—when they calve, cattle must move out through its threat of malignant catarrh.

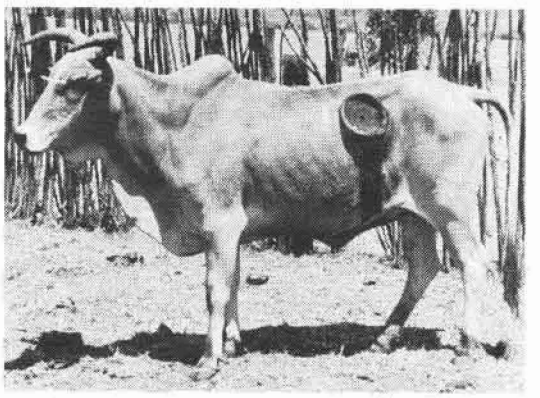
Picture—Tanzania National Parks

WILDLIFE VERSUS CATTLE

by

SVEND A. QVORTRUP

Biologist, UNDP/FAO Kenya Wildlife Management Project



DOMESTIC LIVESTOCK and wildlife have co-existed on the grassy plains of East Africa for about eight hundred years.

The cattle-culture pastoralists, sweeping south-west out of the Nile Basin and what is now Ethiopia, occupied all of the savanna grasslands south to what is now Central Tanzania. They now form the major pastoralist East African tribes; the Masai, Samburu, Turkana, Karamajong, Acholi and others.

Some of these people, like the Masai, shunned wildlife, using their domestic animals for food, and taking up their spears only when marauding lions threatened their beloved cattle. Others like the Acholi, used wildlife for food, but developed a strict hunting code which assured continuance of good stocks of wild animals.

This more or less harmonious condition existed until very recently. Early European explorers and hunters passed through the savanna grasslands, but for the most part the white man was interested in occupying only that part of the land that would grow crops. The social structure and way of life for the pastoralists continued as it had in the past, but this is now changing rapidly particularly in Kenya.

The Kenya Government, well aware of its booming population, and anxious for all its people to contribute to the national economy, and to share in the rewards, have called upon the pastoral tribes to modernize their ranching methods. Instead of keeping cattle merely for subsistence, these people are now called upon to come into the modern world and grow a surplus of domestic livestock for local consumption and export. The former trust lands are being divided and adjudicated as private land to individuals and family groups, and now the wild animals are coming under scrutiny to see whether they compete with livestock, if so to what degree, and how wildlife can be managed and utilized to pay its way for use of the forage and water.

In order to determine the degree of competition between domestic livestock and wildlife, I joined forces with a wildlife research team from Texas A & M University carrying on studies on Kekopey Ranch, about 50 miles west of Nairobi in the Rift Valley.

There Thomson's gazelle and impala were being collected periodically to determine productivity, disease and parasite levels, and other data necessary for management purposes. In order to compare foods eaten by the above two species and grazed cattle with rumen and throat fistulas grazing in the same areas as the impala and the Tommies. Fistulas are tubes installed in the cattle which permits samples of the foods eaten by the animal to be removed and identified.

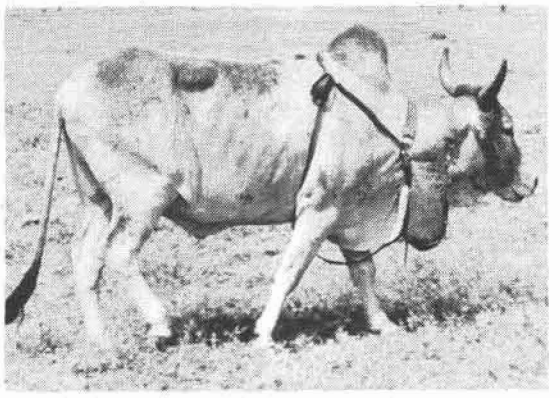
Contrary to the impression that some people have, our study shows that competition for food between cattle, Thomson's gazelle and impala is very great indeed.

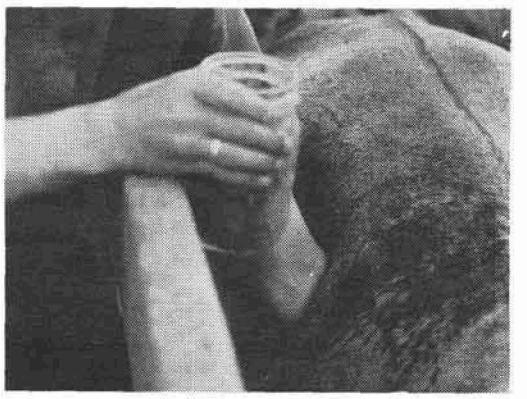
Food samples from 70 of each of the two wildlife species and 55 samples from cattle demonstrate that both species of game animals and the cattle prefer grass and take only a small amount of herbs and the leaves from bushes and trees.

Both the antelopes and the cattle preferred a grass commonly known as star grass (*Cynodon aethiopicus*) —*See Tables 1 and 2*). All of the common plants were taken by both livestock and wildlife. Only the fruits of a small shrub, sodom apple (*Solanam incanum*) were taken by the game animals and not eaten by the cattle. This fruit made up less than one per cent of the diet throughout the year.

The results of this study confirm what an ecologist would assume when studying the animals at Kekopey Ranch.

The ranch is made up of open grassland surrounded on three sides by bushy hills covered with leleshwa (*Tarchonanthus camphoratus*). The entire ranch is divided into large paddocks where the cattle are allowed to forage both day and night. Thomson's gazelle occur





ABOVE: Rumen fistulated cow at Kekopey Ranch . . . samples of food eaten is taken through the rubber plug in the side of the animal, put into glass jars (bottom, right) and taken to the laboratory for analysis.
BOTTOM LEFT: Sample being taken from aesophagus fistulated cow

Table I: *Foods eaten by Thomson's gazelle and fistulated cattle kept in an open grassland paddock at Kekopey Ranch.*

Plant species	*Thomson's gazelle* %	*Cattle* %
Cynodon aethiopicus	46.5	46.3
Digitaria scalarum	14.6	23.3
Eragrostis spp.+		
Harpachne schimperi	12.8	9.6
Sporobolus spp.	2.5	2.7
Themeda triandra	4.5	2.2
Other grass species	7.6	9.1
Total Grasses	88.5	93.2
Commelina spp.+		
Cyperus spp.	5.2	4.0
Dicotyledons	6.3	2.8
Total	100.0	100.0

DESERT SURVIVAL

Research report
by Dr. G. M. O. MALOIY, Department of Animal Physiology, University of Nairobi

FROM experience gained from early desert travels, it soon became apparent that in these hot dry areas, man without drinking water can only withstand the desiccating desert heat for a day or two before he dies. At the same time, many species of mammals, birds and reptiles seem to abound and thrive in a similar environment.

But why should desert survival without water be impossible? What enables some animals to live and reproduce successfuly in hot arid regions while some cannot withstand the excessive heat and scarcity of water, a situation prevalent in most deserts and arid lands of the world?

Since 1964, Dr. C. R. Taylor and myself have carried out laboratory and field studies on the Comparative Physiology of some East African wild and domestic animals. The animals studied included the camel, eland, donkey, oryx, wildebeest, hartebeest, impala, buffalo, Zebu cattle, Grant's gazelle, Thomson's gazelle, African goats and haired-sheep. During the last 12 months we have, with Drs. J. B. Sale and M. D. Gwynne, started to look at the physiology of the rock-hyrax, a small rodent-like mammal.

The laboratory studies were carried out at the Physiological Laboratory of the East African Veterinary Research Organization, Muguga, Kenya (E.A.V.R.O.) and the field studies were conducted in areas near Maralal, Baragoi, Kowop, Isiolo and Lodwar all located in the hot, arid Northern parts of Kenya.

At E.A.V.R.O., Muguga, we built a Climatic Laboratory where temperatures between 0 and 50 degrees centigrade could be obtained. Thus, in this laboratory, where most of our controlled experiments on animals were made, we were able to simulate the hot dry desert conditions if we so desired.

Metabolism cages were also built inside these temperature controlled rooms or chambers. During experimental periods, therefore, the animals were held in the metabolism cages, which enabled us to monitor water consumption, food intake, the amount of urine and faeces voided daily by each animal when it was either exposed to a simulated desert environment in the presence or absence of water.

In the laboratory, we were also able to study such physiological mechanisms as sweating rate, panting, metabolic rate, regulation of body temperature, water and salt re-absorption from the large intestine, digestion of food in the stomach, kidney function and electrolyte metabolism during conditions of hydration and dehydration.

At E.A.V.R.O., my colleague, Dr. C. R. Taylor, also studied heat storage and the regulation of brain and body temperature in exercising or running eland antelopes and gazelles.

In essence, the aim of our comparative Physiology research was to find out more about the life of desert animals, the difficulties which confront these animals in their hostile environment, and finally to try to answer the question as to why man can only live one or two days in the desert while the camel, oryx, and addax antelopes can live there for days on end without drinking water.

It was shown by our study that some desert mammals such as the camel, the donkey and some East African antelopes, notably the eland, oryx, dik-dik and Grant's gazelle, to mention only a few, have gradually evolved special mechanisms for dealing with problems of heat and lack of water.

Since these studies were carried out in a Veterinary Research Institute, part of the budget of which comes from the East African taxpayer's pocket, one is bound to ask why even study the physiology of such desert animals as the donkey, camel or gerenuk?

Would the money not be better spent on research on such important cattle diseases as Rinderpest, East Coast Fever, Contagious Bovine Pleuro Pneumonia and the like?

I doubt it!

It is estimated that in Africa 23 per cent (35 per cent in East Africa) of the land mass is composed of either semi-desert or desert areas. Wild desert animals might be used as a means of ranching these arid lands. A clear understanding of the physiology of wild and domestic ruminants might be of value to the agricultural economy and in formulating developmental plans for these regions and while admitting that physiology is a basic science, it is a pity that East African Governments are, in fact, not giving much monetary and moral support to this aspect of animal Physiology.

Once we have a clear understanding of the mechanism which enable some desert mammals to live and reproduce in the arid lands, then a new field of research should be initiated whereby the physiologist and the animal breeder will co-operate in an attempt to breed heat adapted domestic animals.

Most of the Animal Physiology research which has been carried out in E.A.V.R.O., Muguga, has been published in other learned Scientific Journals, and certainly this is no place to report all our physiological findings. Instead I will discuss our results to date as they pertain to:

a) Thermo-regulation and evaporative heat loss mechanisms;
b) Water and energy metabolism;
c) Renal function and electrolyte balance;
d) water absorption from the gut;
e) Future lines of research in East Africa of some wild and domestic ruminants we have studied.

WATER ECONOMY OF DESERT ANIMALS:

Desert animals must expend some water for urine and faeces formation and for evaporative cooling by sweating or breathing. Yet we are already aware of the fact that water is a very rare and precious commodity in the hot desert environment. Thus a conflict is immediately apparent between the necessity to conserve water for vital physiological processes and to expend water for temperature regulation.

In carrying out research on different East African mammals, it was our aim to see how these opposing needs are brought into equilibrium in different species of mammals we studied.

We asked ourselves a few simple questions: a) do these animals possess any unusual water conserving mechanisms; b) how long can they survive in the desert without drinking water; c) and finally, how much water do desert animals require and how is this water expended?

As depicted for the camel in the Figure below, desert animals lose water through its faeces, urine and through evaporation either by sweating or panting.

From our studies on the water balance, it soon became apparent that some of the animals we have studied do indeed possess unusual physiological and behavioural mechanisms for conserving water when exposed to heat and dehydrated in the laboratory desert environment. They did this by reducing faecal, urinary and

WILDLIFE vs. CATTLE

from page 13

Table 2: *Foods eaten by impala and fistulated cattle kept in a paddock with half bush and half open grassland*

Plant Species	*Impala* %	*Cattle* %
Cymbopogon spp.+		
Hyparrhenia spp.	11.9	7.8
Cynodon aethiopicus	20.4	28.8
Digitaria scalarum	16.6	22.3
Eragrostis spp. +		
Harpachne schimperi	7.3	7.1
Sporobolus spp.	2.5	3.0
Themeda triandra	17.3	12.2
Other grass species	12.5	12.5
Total Grasses	88.5	93.7
Commelina spp. +		
Cyperus spp.	4.1	3.0
Dicotyledons	7.4	3.3
Total	100.0	100.0

in large numbers and are always in the open pasture-lands. Impala prefer the edges of bushy areas, moving out into the openings at dusk to graze during the night.

Thus the food taken by Tommies was compared with cattle feeding in the open, and food taken by impala was compared with cattle feeding in mixed grassland and bushland.

Mr. Arthur Cole, the manager of the ranch, realized a few years ago that grazing pressure could not be increased without damaging his range. He wanted to increase his cattle so he started a range improvement programme by clearing the bush. His purpose was to increase grass production.

This was followed by a heavy increase in game on the land, in fact data from census begun in March 1970 indicate both impala and Tommies just about doubled in two years. It was also in early 1970 that Mr. Cole decided on a research programme to determine the degree of competition between wildlife and cattle. It was on the basis of these findings that the decision was made to stabilize the wildlife population at the population level they were at in 1970.

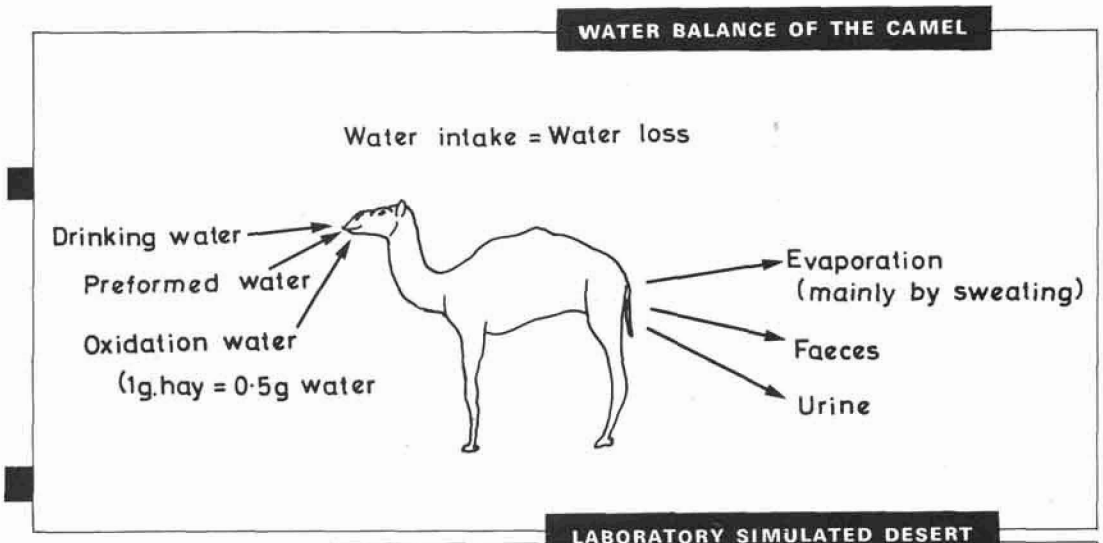
The findings of this study on Kekopey Ranch will have application to various degrees in the large area of Masailand where the Kenya Wildlife Management Project will be operating. Certainly, there will be competition for forage between the Masai cattle and the wildlife, and it is only right that the Masai landowners should be compensated for forage consumed by the wild animals.

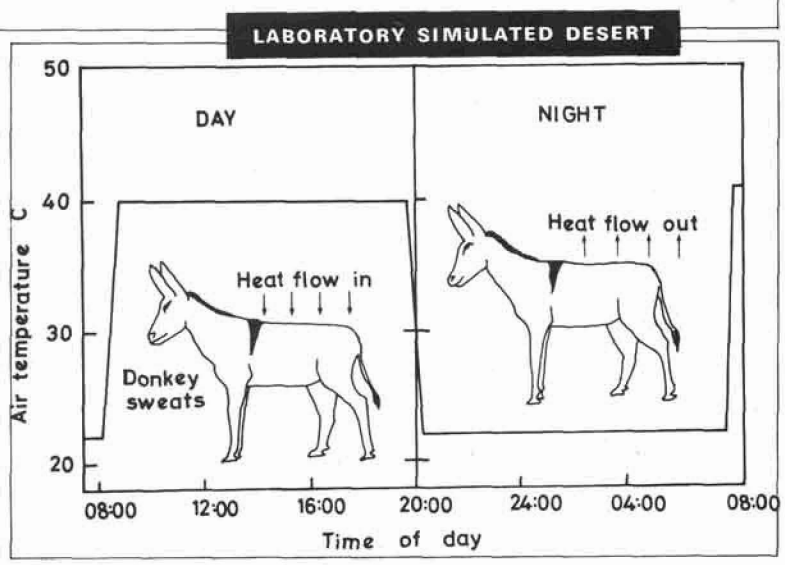
It is known that certain wildlife species like giraffe and eland actually improve areas for cattle. They are assisting in control of the brush, thus allowing more grass to grow. In Masailand, however, the greater proportion of the biomass of wild animals consists of wildebeeste and zebra, both grazers.

Studies by Gwynne & Bell 1968*, show that zebra utilize a greater portion of grass stem than the ruminants particularly during the dry season. I found that the smaller antelope species selected a higher portion of grass leaves in their diet, thus food selected had a higher nutritional value than that of cattle.

It has been postulated that since the mouths of antelopes are small and pointed, they are better adapted to select the more delicate and nutritional parts of the plant than are cattle.

There is probably less competition between wildlife and domestic livestock in the more arid areas of Kenya than is indicated by the data from Kekopey Ranch.





evaporative water losses once they were confronted with an intense heat load and a scarcity of drinking water.

This reduction in faecal, urinary and evaporative water losses resulted in substantial decreases in the amount of total water required by different species.

In June, July and August, 1969, Professor W. V. Macfarlane, an internationally known Animal Physiologist from the University of Adelaide in Australia, worked with me in E.A.V.R.O. Together then, we employed tritiated water to measure water turnover in several East African mammals grazing together in the field of various ecological zones in Kenya.

We were amazed to see that in all these mammals we studied, water turnover showed a close consistent relationship to the oxgygen consumption or heat production of the animals (metabolic rate). Thus, these studies showed that water turnover is also correlated with the aridity of the natural habitats of these mammals.

KIDNEY FUNCTION AND ELECTROLYTE BALANCE:

During an examination of the kidney function of several desert animals, we soon discovered that the ability of the mammalian kidney to excrete a concentrated urine seems to be correlated with the aridity of the habitat.

The maximum urinary concentration observed for the different arid dwelling mammals such as the camel, rock-hyrax was found to be three times as concentrated compared to that of man or that for animals living in non-arid regions like the buffalo or water buck. Thus in desert mammals, the kidney plays an important role in water conservation during dehydration.

WATER ABSORPTION FROM THE LARGE INTESTINE OF DESERT MAMMALS:

Does the large intestine play any role in water conservation during dehydration? In a recent study which I completed at E.A.V.R.O., I tried to answer this question by examining the osmolality, water and electrolyte changes which occurred in the caecum and the colon of severely dehydrated camel, Zebu cattle, donkey, African goats and haired- sheep.

These studies demonstrated that in all these mammals, during dehydration, water was reabsorbed all along the digestive tract, but the final water conservation mechanism is, however, in the colon. Here sodium reabsorption results in the return of water to blood. Thus, during dehydration, the colon plays a supplementary role to the mammalian kidney in conserving water.

THERMOREGULATION AND EVAPORATIVE HEAT LOSS MECHANISMS:

Here, I would like to discuss the problems of temperature regulation in desert animals, metabolic rate and evaporative heat loss and especially sweating and panting mechanisms amongst desert animals.

In man as most of us know, a rise of two degrees centigrade in body temperature above normal range (37 degrees C.) will be cause for alarm and the advice of the doctor might even be sought. Studies carried out in early 1950's by Dr. Knut Schmidt-Nielsen and his associates it was found that Saharan camels allowed their body temperature to rise by as much as 6 or 7 degrees C.

Our studies in Muguga have shown that other desert adapted mammals also have a variable rather than a constant body temperature. It thus appears that most desert animals used this increased body temperature as a stratagem which helps to decrease the amount of water which is expended for heat regulation.

The camel, the eland and the donkey to a lesser extent employ this phenomenon to combat heat and aridity. Heat is stored as a result of allowing body temperature to increase and water is therefore conserved which would have otherwise been used for temperature regulation.

Secondly, this increase in body temperature also helps the animal to reduce heat gain from the environment. This is achieved by reducing the temperature gradients between the animal and its environment, thus reducing evaporation as well. I should, however, point out that heat storage is only an effective means of saving water for large mammals.

Another interesting aspect of temperature regulation of East African ungulates was found by my friend, Dr. C. R. Taylor, when he examined the temperature regulation and heat storage of antelopes that have been made to run at various speeds.

He observed that these antelopes, notably the eland and gazelles, have very high blood temperatures (up to 46 degrees C in the case of gazelles). These high temperatures could be tolerated by desert mammals because they manage to maintain the temperature of the brain several degrees lower than the central arterial blood temperature. Thus, the arterial blood supplying the brain is pre-cooled by cooler blood coming back from the nose.

METABOLIC RATE OF DESERT ANIMALS:

When we examined the oxygen consumption of several antelopes, donkey and domestic ruminants over a wide range of environmental temperatures (5 to 45 degrees C) we soon discovered that desert adapted animals, on the whole, have lower metabolic rates than closely related species from less arid environments.

Apart from prolonging the time animals can live on a given amount of food, a low metabolic rate also results in reducing the amounts of urinary, faecal and evaporative water loss and indeed in the overall water balance of animals.

In the camel, donkey, eland and several other mammals we have studied, we found out that metabolic rate decreases when the animals are dehydrated.

SWEATING AND PANTING IN DESERT MAMMALS:

The sweat glands function of several East African mammals have been studied. Recently, Mr. C. Boarer and myself studied the electrolyte, protein and *pH* composition of sweat of camel, buffalo, donkey and Zebu cattle when these animals were exposed to thermal stress.

Most of the animals studied keep cool in the heat either by sweating or panting. This is no place to consider the relative merit of sweating over panting; I would, however, like to comment on the interesting studies of Dr. C. R. Taylor on the wildebeest antelope.

Interesting changes were observed in respiratory frequency, tidal volume and also large changes in the functional dead space. It is a remarkable observation that this animal seems able to increase functional dead space by including the large nasal sinuses in the ventilated volume.

David Hopcraft and myself also observed in 1970 that the hartebeest, another antelope which is closely related to the wildebeest, also employs panting as a means of heat dissipation in a simulated desert environment.

In the camel, donkey and most ungulates studied in the laboratory, we found out that the increased respiratory frequency that takes place at high temperatures is influenced by the state of hydration of the animal. In dehydrated individuals, the increase in respiratory frequency and sweating rate occurs at a higher body temperature. Hence dehydration seems to delay the onset of sweating or panting.

FUTURE RESEARCH PLANS:

A body of information is now available on the water metabolism and thermo-regulation of animals at rest. Research is needed on the water metabolism of animals that have to do muscular work such as running or walking. We also need to study the effect of dehydration on water metabolism during lactation or pregnancy in domestic farm animals.

I believe that as research funds become available, East African physiologists will find it rewarding to tackle several of these projects.

Some wild animals can go indefinitely without free water, whereas cattle must drink about every three days.

One of the major aspects of developing the Masai ranches is increasing water points, which will make areas available to cattle year around that are now only usable during the rainy season. This will, of course, intensify the competition between the Masai cattle and the wild herbivores.

The data from Kekopey ranch indicates that the trade-off between wildlife and livestock is 1 steer = 7 impala = 18 Thomson's gazelle. This means for every 7 impala or 18 Thomson's gazelle removed, a rancher could put on his range an additional steer without increasing the forage consumption.

Thus to a rancher on private land, which will be the situation in the near future over much of Kenya where wildlife is now abundant, it will be essential to find ways which will permit wildlife to pay its way for the use of the land.

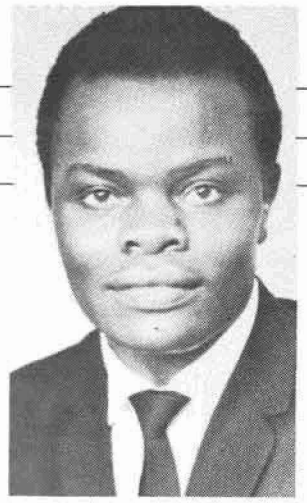
If not, there will be no incentive for keeping wild animals on private lands and they will disappear.

*Gwynne, M. D. & Bell, R. H. V. (1968). Selection of vegetation components by grazing ungulates in the Serengeti National Park. Nature, Lond. 220 (5165), 390–393.

Extracts from a Paper by PEREZ OLINDO,

Director of Kenya National Parks presented at the Second

World Conference of National Parks, Yellowstone.



While considering the subject of Park values, changes and problems in developing countries, I discovered that I had accepted a mammoth responsibility and my paper stood a good chance of being rejected by a number of developing countries as not being representative of their values, considerations, aspirations, problems or even change.

However, I wish to take full responsibility for the paper, and in particular, any direct statements that might stand the chance of being sensitive. If the paper serves a useful purpose, I can only share in a small way, the credit of compiling it.

PARK VALUES, CHANGES AND PROBLEMS IN DEVELOPING COUNTRIES

THE unanimous view in the developing countries is made up of a firm agreement that there cannot be a different "standard" for National Parks in "developing" countries and "developed" or industrialized countries.

It seems to be agreed basically that developing countries have a better opportunity of establishing national parks than the nations in Europe, or even now in the United States. This view is also consistent with the U.N. effort to standardize terminology of national parks and equivalent reserves.

When the National Parks concept was developed more than a century ago, environment in most developing countries was relatively unaffected by the impact of industry.

The animal resources, skins and by-products did not feature as important commodities in world commerce, or if they did, most of the attention and discussion still centered on the slave trade and its disrespect for human dignity.

Today, however, public awareness and concern about the quality of the environment is so high that one feels confident of the existence of a basis for a co-ordinated international effort that will become fruitful, giving answers to a very wide range of problems we are facing, and better still, maintaining the universe in a condition "habitable" on a continuing basis.

Human population was (also then) quite low, and many peoples of the world lived by hunting, fishing, or simply collecting honey, fruits, roots and vegetables. Wild animals moved far and wide along their traditional migration routes without many obstacles.

The tools which were used for hunting were of a crude nature and could not therefore be dangerously used to a point where any species was threatened or endangered through hunting . . . but the discovery of the gun meant the beginning of a new era for wild game and man. Nothing has remained the same since.

Commercial exploitation today threatens the very existence of many fur and trophy-valuable species at the national and on a world-wide scale. The effects of industry on the way of life, the pressure for more land to be occupied for human use, have gradually but definitely reduced and indeed disrupted eco-systems for migratory and non-migratory wildlife to a point where it has become increasingly necessary to set aside for posterity, representative areas as sanctuaries for birds, plants and animals. Today, this same pressure is prevalent in developing countries only to a lesser degree to the situation being experienced in the "developed" countries.

In many parts of Africa, the national parks concept was greatly influenced by the London Convention of 1933 which tended to stress that as far as possible the total exclusion of all human activity would keep such parks intact and substantially unchanged.

This approach, to preserve natural areas, has not stood the test of time. It is a biological fact that healthy populations of plants and animals increase to a climax and all along natural changes in vegetation and fauna ensure that after a few years, no area actually remains the same.

It is on the basis of this continuous change in nature, and the few mistakes that have been made by the developed countries, that has led the developing countries in many parts of the world to emphasise "resource management and research" as a relevant aspect of the National Park concept.

This happens to be the unfortunate point at which many "experts" and "advisors", who go from developed to developing countries, arrive with a rather confused concept about National Parks and try to develop the Parks with facilities or along lines which really destroy the values for which the Parks were established or intended to be established.

In their enthusiastic spirit, the experts often disregard the existing authorities and viewpoints and make some rather unsound recommendations.

Sometimes they are "so nice" that the best they do is to repeat what the local people have told them.

We feel that we must appeal for a professional and realistic approach to problems even to the point of introducing new methods or the confirmation of existing ones to achieve desired results—but not predetermined ones.

Many developing countries have learned early that conservation at times permits the management of habitats and eventually of the eco-system to achieve and maintain predetermined plant and animal communities.

The foregoing idea permeates the basic policies that guide the management and research activities in our parks to the point where Africa is now recognised internationally as having one of the best National Parks systems in the world.

We have established functional Marine National Parks and Reserves as well, and in this respect we entertain the idea that taking a lead internationally, or being considered as doing so, is one of the most difficult positions to uphold—yet we continue to do our best and count on the support of others.

It is recognised that to embark on a sound programme of conservation of wildlife and other renewable natural resources, scientific research and knowledge must constitute the basis of reference.

Any National Park system, existing or intended, can only be provided with this information if it has a research service which generally operates so as:

(a) to keep a continuous record and check on the changes taking place within given eco-systems and animal populations in the Park(s).

(b) to direct research on specific problems related to the fauna and flora of the park(s) such as food preferences of the important animal species, population dynamics, reproductive behaviour, digestive physiology, pathology and the parasites of different species" (Leopold).

On the basis of knowledge acquired through research and general observations, guidelines should be formulated to constitute a Management Plan. Such a plan should never be considered as a "blue print" because no natural situation is static long enough to have a blue print.

It should be noted that plant succession is a continuous process and as vegetation communities change, so do animal communities.

A case in point is the Tsavo National Park in Kenya which is the largest Park covering some 8,024 sq. miles, which, for many years was a dense woodland area. It is the home of some of the largest land mammals existing today—the elephant, rhinoceros, giraffe, buffalo, hippo etc.

What is generally referred to as the "elephant problem" has caused grave concern to the Trustees of the Kenya National Parks for over 13 years. To the rest of the world, it is a controversy full of confusion and sentiment. Many discussions have been held and much has been written on this subject.

Studies of elephant population dynamics and reproductive rates have been made; 300 elephants were shot as a research sample in 1966 and this shooting exercise was called off, when it was recommended that 2700 elephants should be killed in the course of further studies.

This recommendation was not accepted because a profit motive was detected in the proposals.

It therefore becomes extremely important that each research project be carefully studied before authorization is given. It is further considered *mandatory* that a depository exist in every country where copies of all research carried out within its boundaries are submitted before any one research job, project etc. can be considered as complete.

Research policies must always remain the responsibility of each sovereign state. This same principle applies to the utilization of resources including wildlife.

The most obvious and urgent problem in Tsavo Park is to discover just what effect elephants are having on their habitat and what long-term results are likely to be established, both on the elephants themselves and upon the other important herbivores within the Park.

One effect has been that sections of the once dense woodland have become grassland. It is only fair to introduce a further factor, fire which it is thought, has also played a significant role in the habitat changes in Tsavo

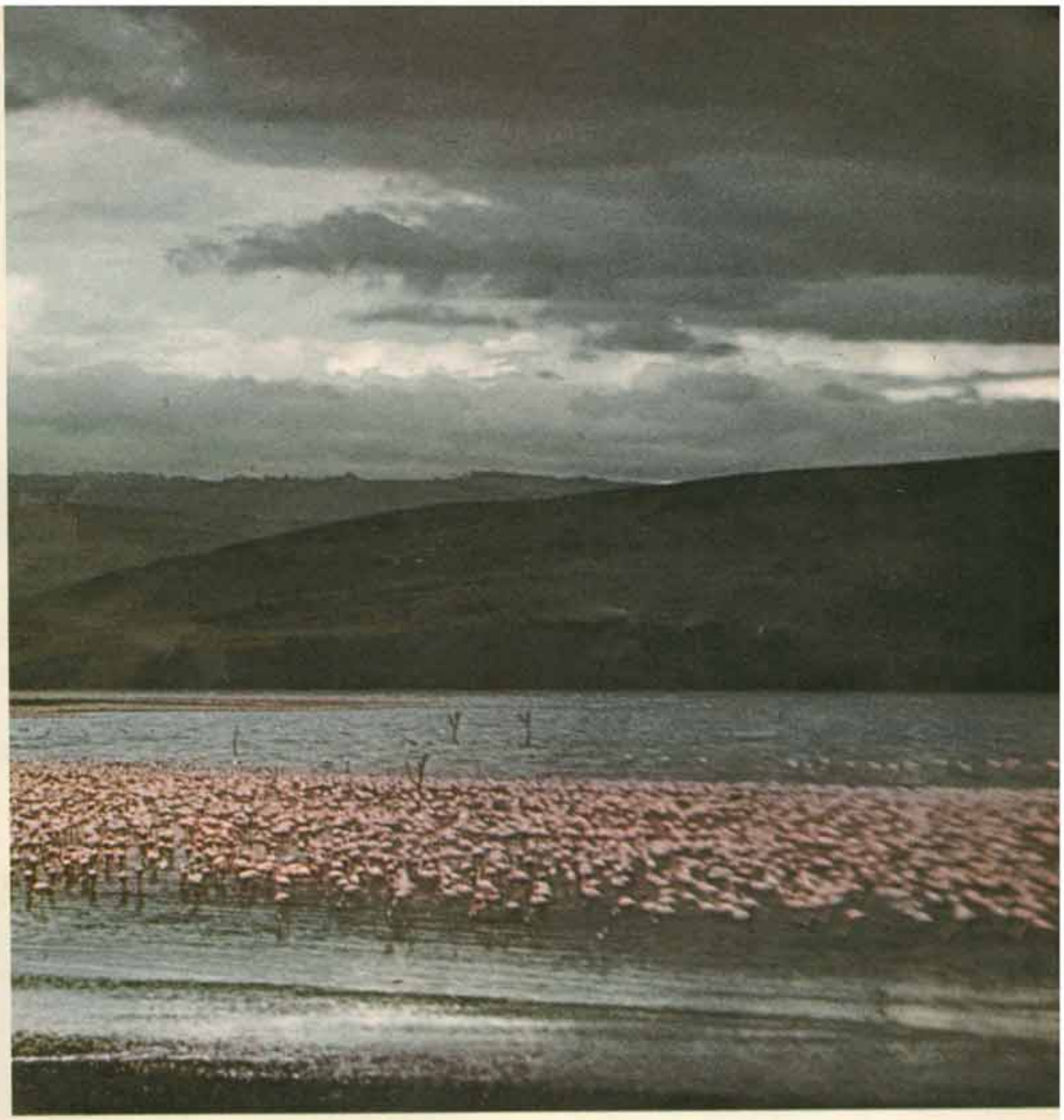
Thus far it has not been possible to quantify and assign any accurate amount of responsibility either to the elephant, fire or the normal plant successional changes.

We continue to monitor the changes taking place, but when a solution is found to assure the continued existence of elephants in a world beset by human pressurers, it will go down in history as a significant contribution to science and man.

In the meantime, it has been said that as a result of the effects of elephants on the vegetation, the Tsavo National Park is well on the way to becoming a desert, unless immediate action is taken to reduce the elephant population.

It is true that during the severe drought of 1961 which hit all of Kenya, it appeared as if the Park and other areas in the country outside the Parks were becoming deserts, but the situation is very different now. Because of an upward trend in annual rainfall and the destruction of *commiphora* and other trees by elephant and fire, a new vegetation pattern is emerging with a higher carrying capacity in spite of a very large elephant population—larger than has existed there since 1948 when the area was gazetted a National Park.

In addition, "more plains animals are appearing such as oryx, zebra, eland, kongoni, etc. and the variety of species seems to be increasing". (Glover).



Flamingo . . . by Anthony Deane. This picture is taken from an official guide to Lake Nakuru National Park, just published on behalf of the Trustees of Kenya National Parks by *Africana*. Overseas readers can obtain copies of this full colour, 48-page guide price, U.S: $1.40, plus $2.50 (airmail) or 45 cents (sea mail). U.K: 55np plus 45np (airmail) or 20np (sea mail) from the Editor, *Africana*, P.O. Box 49010, Nairobi.

It is hoped that as a result of the ecological studies underway, enough information will become available to formulate a workable management plan for Tsavo National Park within the next three years. However because of the inherent variability of natural processes, biological problems are seldom easily or quickly solved and long-term studies are necessary.

This is the basis on which I would very strongly recommend that research projects into the various aspects of National Parks and the total environment should continue for many years to come.

It is also necessary that the scientific efforts of developing countries be strengthened and diversified. I have dwelt on this problem because it is a common feature in the Management of Parks in Africa.

It is only after extensive information is available to the park authorities that they can make responsible decisions leading to good conservation practices.

In Kenya, the parks have been in existence for 25 years while the National Park concept has been developing over the last 35 years, or more. The effort now is to involve the public through conservation education to generate widespread support for future policies in this field of conservation.

Economic circumstances have demanded that wildlife conservation and the setting apart of reasonably large tracts of land should be justified in a manner that can be understood, appreciated and if possible, accepted by the common man.

We have been very fortunate in East Africa to have basic wildlife attractions protected by law and over the past few years, a deliberate effort has been made by our respective Governments and by travel organisations to build up an industry surrounding this basic resource. It is gratifying to note that this effort has proved very successful in Kenya where the tourist industry constitutes the largest single source of foreign exchange for the country.

The present degree of success and the prospect of a very bright future would seem to more than justify the requests received by the Parks authority for more areas to be set aside and be fully protected as national parks to meet the demands of the future.

PARK PROBLEMS

It is not until ecological problems are detected that definite knowledge becomes a pre-requisite to achieve needed solutions.

The tourist boom is not an unmixed blessing. While it brings foreign exchange into the country, visitor pressures increase and definite problems begin to emerge. The most far reaching, perhaps, is the visitor impact to the eco-system.

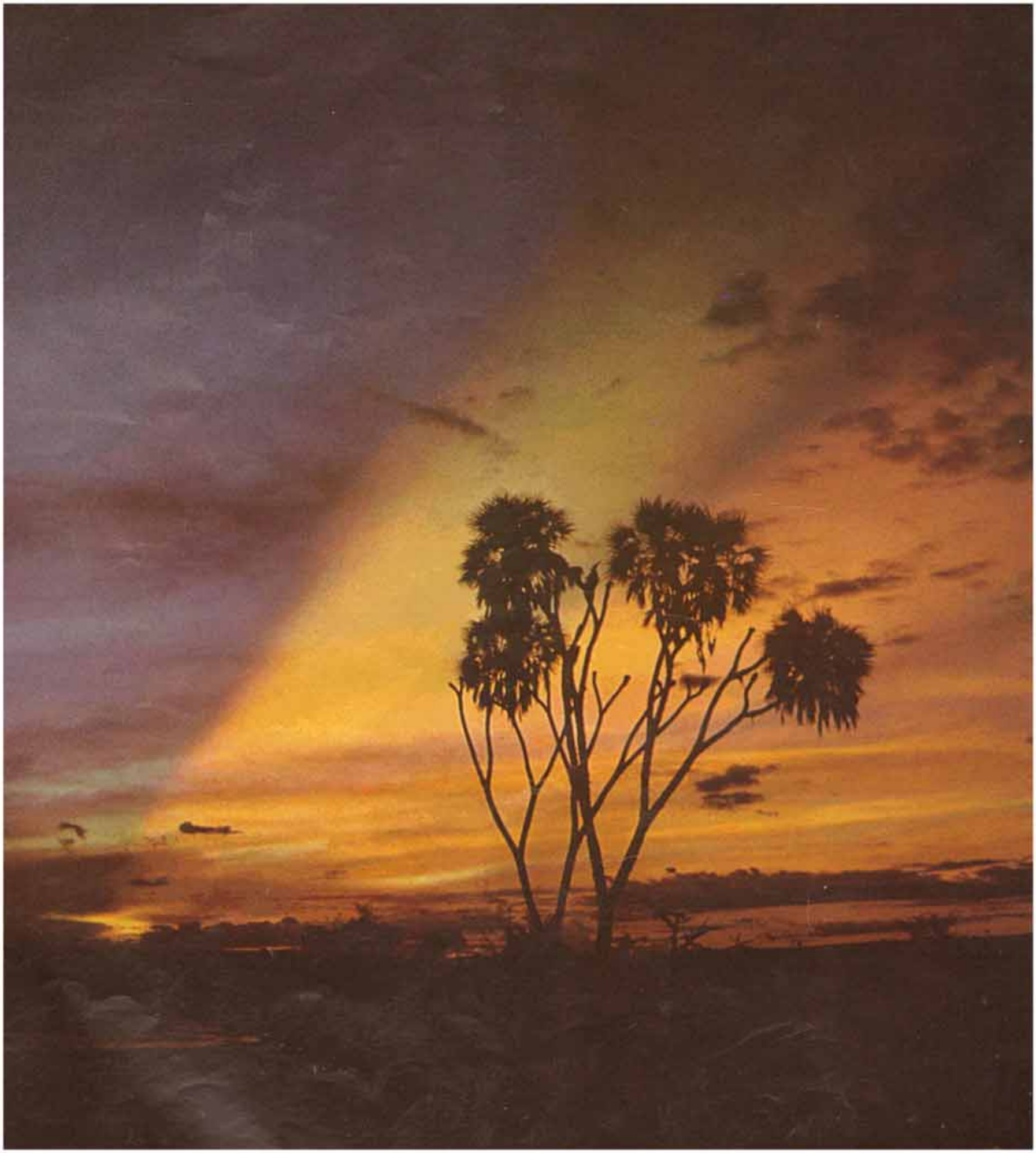
Good examples are: the Amboseli Game Reserve and the Nairobi National Park in Kenya where the destruction of delicate habitats and eco-systems by visitors driving all over the parks in search of the different species of animals like lion, cheetah, leopard and rhino has reached a stage where definite action has had to be taken to safeguard these areas.

Reserves and Parks are established in perpetuity for the enjoyment of the present and coming generations, but in the very effort to popularize these same areas for the public to utilize and enjoy, the increasing tendency to congregate around a lion or some other captivating animal has the effect of temporarily urbanising these wilderness areas to the extent that a conflict of objectives seems to arise: one of protecting wilderness areas and the other of converting these same areas into economic entities that must justify their continued existence as wildlife areas in a manner that is seen to be practical. Problems such as this one must be tackled as they are identified.

The first duty of Park's authorities is clearly to conserve and safeguard all objects within a national park, whether animate or inanimate, and as far as possible to ensure that the places forming this trust will remain unimpaired for the benefit of man.

There are many supporters of the national parks concept who express strong sentiments to the effect that the trust lands

Continued on page 29



FOR THE HEALTH OF THE ENVIRONMENT

by

D. VESEY-FITZGERALD

Scientific Officer
Tanzania National Parks

MUCH has been written about the conflict between Man and his environment to the extent that modern usage seems to have changed the meaning of the word.

Environment seems to refer, nowadays, either to artifacts or pollution. In terms of natural history the word must therefore be qualified to read *natural environment.*

Willy-nilly we are all concerned with our natural environment, whether farmer, forester, stockman or wildlife warden. Even industrialists and townsfolk are involved both for their living and their leisure.

Wildlife wardens often seem to be regarded as quacks. *But the application of modern practice and research, and* methods for monitoring results, should enable them to be elevated to the status of physician. By trial and error, and experience, their achievements have frequently worked better than the philosophies of short-term phoney doctors.

Physicians of the natural environment are in great demand. And the supply is short. There is a great need to inaugurate a health service and get it started. Then the opportunity for research will have increasing scope and careers for local specialists and practitioners will be assured.

It would be naive to suggest that man-induced disturbances and deteriorations did not exist; defeatist to suppose nothing can be done about them. And absurd to say that only the wilderness would be benefited by restoring the natural environment to a state of health and productivity.

Comprehension of the processes of healing in the environment is as important to farmers as to conservationists. Both are in effect practitioners of nature's *therapy. Diagnosis of complaints, treatment of* imbalances and general sanitation all need attention in running a health service for the environment.

The National Parks in East Africa could well be considered as the hospitals of the environment. In them what is wrong can be put right, but it is likely to be difficult to know where to start the cure.

In a recently published report, for example, it is stated that, *"the tools of management for altering biological conditions are few and crude. The two most obvious ones are the rifle, for reducing the population of any particular wild animal, and the use of fire for controlling vegetation'.*

This reads to me more like a prescription for creating a desert than running a health service. But, fortunately the report is undated, and also out-dated, so no reference need be given to it here.

True enough, the rifle has been used for a long time in East Africa on game control and for other purposes, and I will leave it to the wielders of this weapon to say whether they are crude or not. I will concern myself in this *article with the management of fire as a process of* environmental sanitation.

Discussions on the pros and cons of burning are often inconclusive because neither the purpose nor the prospects of fire control are clearly stated.

If one is to progress beyond the bald statement that prescribed burning may be necessary as a management practice but that wild fires should be prevented, it is essential to consider fire in conjunction with other ecological factors. In the present instance fire is considered in conjunction with the course of plant succession and the animal impact on grassy types of vegetation.

Dry season fires in grasslands are generally believed to be inevitable, the implication being that grasslands are in any case a fire sub-climax type of vegetation. However, many investigators, including myself, have shown that some grasslands are under *edaphic* control, that is to say grow in harmony with soil and drainage conditions, while others are *seral,* that is to say they represent a phase in the course of plant succession from a fallow field to forest. At any stage, the course of succes*sion may be truncated by burning.*

There are, in fact, many examples of grasslands changing in character when fire is excluded and *vice versa.* The role of grazing animals in modifying or maintaining *pastures must also be considered,* particularly in connection with the fact that optimum utilization tends to lower the fire hazard.

It has been established that natural fires, such as those caused by lightning strikes, occurred long before man started burning. But the effect of fire, however caused, varies very much according to the type and state of the vegetation that is set alight.

In East Africa at the present time, there is a much greater probability of fire incidence being higher, and the effect of burning more severe, in vegetation that has been secondarily disturbed, than there was formerly in primary vegetation.

It will be readily understood, therefore, that it is the human impact that is the prime cause of the existing fire hazard.

In general, this risk is caused by a reduction of over*head canopy cover and an increase in the grassy field* layer. In effect there has been an inversion of cover. Overhead shade afforded by trees has been replaced by a closed grass sward. This simply means that grassy *types of vegetation have expanded and woody types* retracted largely as a result of man-induced fires.

In the normal course of events, the growth of trees would restore the natural condition of the vegetation. *But seasonal fires have aggravated the situation by* retarding, or even reversing, the course of plant succession.

Clearly then, more favourable conditions for rehabilitating the state of naturalness can be obtained by lowering the fire hazard. This then is the first treatment needed in order to restore health to the environment.

Fire prevention in grassy formations under East African climatic conditions, is difficult, expensive and unsatisfactory. Apart from the fact that a dense growth of unburnt grass has been shown to retard, or even inhibit, the growth of woody plants, the fire hazard is so increased that a disastrous burn becomes inevitable. It is considered, therefore, that constructing conventional fire-breaks can never be a satisfactory way of controlling fires. Apart from anything else, we never have enough funds for our environmental hospitals to give such an expensive form of treatment.

Alternative action is to establish fuel-breaks. This is achieved by prescribed burning out of season, which is designed to prevent a fire hazard from ever building up. *This is a perfectly feasible practice provided attention* is paid to environmental conditions, including the course of plant succession and utilization by animals, and the requirements and purposes of management.

Burning fuel-breaks is, moreover, a relatively inexpensive exercise. The object is to reduce the accumulation of dry grass by inducing a mosaic of burnt and unburnt grassland, and thereby progressively to lower the risk of wild fires developing into fire-storms.

To this end, occupancy by grazing animals is advantageous because it lowers the fire-hazard. It is well known that in some circumstances, burning improves pasture. Thus there are in this method, possibilities of benefits accruing both to the fire control and grazing programmes.

But caution is needed. At a time when prescribed burning can be safely carried out, there is not likely to be a demand for increased pasture, and *vice versa.*

Many controlled fires, which are set so as to improve a pasture, in fact get out of control and then cause more harm than good to grazing, browse and the regeneration *of trees. Burning too big an area for the current require*ments of the existing stock of grazing animals does not help either in reducing the fire hazard or in increasing the quality or quantity of the pasture.

Controlled fires that get out of control are usually just as devastating as wild fires to the health of the environment.

The proper procedure, both for the purpose of maintaining a low fire hazard, as well as for improving grazing is, therefore, to integrate the fire mosaic into the grazing mosaic. That is to say, make use of the fact that in most grasslands there are patches of different species, in different stages of growth and in different states of dryness, which burn with different degrees of intensity, or are grazed with a different amount of avidity.

This state of diversity can be enhanced by patch-burning during different periods of growth or at different seasons of the year. Patch-burning is particularly applicable to the management of ungrazed tussock-grasses and to renovating rough pastures.

A reduction of the fire hazard automatically increases the regeneration potential of trees and shrubs, that is to say provided such a potential exists in the first place.

In most natural grasslands, such as the valley and flood plain grasslands, and the grasslands of open plains, soil conditions may be unsuitable for trees. But in most of the secondary grasslands trees will grow provided that saplings are not destroyed by fire. The regeneration potential has to be assessed as part of the burning programme.

Many seedlings and saplings are so fire tender that even a light burn will damage them while their subaerial parts remain in the flame zone. *The establishment* of a fire-mosaic, especially when superimposed on a grazing mosaic, increases the chances of survival for young trees during this critical period of their life.

This is simply because the chances of a fire missing them are better during a patch-burn than in a fire-storm. It will be understood, therefore, that so long as a state of diversity is maintained, the expected trend will be for *the fire-hazard* to be kept low, the pasture and browse to be improved, and the course of succession to be advanced.

Moreover the chances of a favourable balance becoming established between the fire and animal impact, and the course of plant succession, will be increased as the work proceeds. This, then, is the next stage in the improvement of environmental health.

Edaphic wooded-grasslands and the whole range of secondarily induced wooded-grasslands presently existing in East Africa, the 'savannahs' of the literature, are all liable to be modified by both fire and utilization by animals.

Evidently, therefore, browsing and grazing are alternatives to burning as 'tools' with which to manipulate the course of plant succession. Elephants are instrumental in opening up the tree canopy, and thereby *letting in grass and shrubs.* Being both grazers and browsers, elephants are favoured by the resulting increased availability of both browse and pasture.

Grazing, by all kinds of animals, reduces the fire hazard and thus favours regeneration of both browse-shrubs and young trees. Browsing obviously restricts the growth of shrubs and trees and so by implication, favours grass which would otherwise become shaded out under a closed canopy. The grass growing around young trees produces a funeral pyre which enhances the risk of damage by fire.

Grazing reduces this risk and so gives the young tree a chance of survival. Hence both browsing and grazing, as well as burning, are likely to maintain vegetation in a growing and changing state.

The resulting areas of mixed vegetation, comprising grass shrubs and trees, are generally good game areas; closed canopy forest *is usually not. Therefore healthy seral* vegetation can be looked up on as an indication of recouperation in a national park or wilderness area.

Diversity resulting from utilization and controlled burning, contrasts favourably with the effects produced by both over-burning and over-grazing. The fire dominated scene is one of expansive fire sub-climax grassland with widely spaced, mature, fire resistant, trees and a low incidence of shrubs and young trees.

The dominating field layer of perennial grasses grows vigorously during the rains. The mature grasses become unpalatable and inflammable during the following dry season. Fire storms are inevitable and as a result the situation is aggravated.

In contrast, the animal dominated scene is one of too little fodder and pasture, too much erosion and increased aridity. In both fire and animal dominated situations imbalances exist. In one, there are too few animals and too much grass, and too intense burning. In the other, too many animals for too little grass, and consequently excessive erosion. It is the correction of these imbalances, by managing the grass cover, that this programme sets out to achieve.

Essentially and ecologically, much of the underdeveloped land in East Africa is overgrazed, or alter*natively under-used and consequently over-burnt.* All such imbalances lead to deterioration from the pristine state of harmony with the over-ruling climatic, topographical, soil and drainage features which are immutable.

We know there have been changes in the past, and that in every natural environment changes are going on all the time. The flora and fauna, and the indigenous plant and animal associations have adapted themselves

Continued on page 21

MEN AND ELEPHANT

Precis of a Paper by R. M. Watson, R. H. V. Bell and I. S. C. Parker

THE most significant ecological event of our times and one that underlies virtually all of our problems, is the human population explosion.

Few thinking people are unaware of the magnitude of the issues that face us and many, if not most, find little cause for optimism. Clearly a co-ordinated strategy is required to discover the potentials open to us and how we may realise them.

A great deal has been said about the quality of our environment, but most of this concerns the northern temperate zone. Here, where man has removed many forms of life, he turns upon himself and in the recriminations by men of men, the fundamental issues are obscured.

The character of the problem facing us is perhaps better illustrated by an African case study—the relationship between men and elephants—than by any temperate zone instance.

The object of what follows (it is a synopsis of a more detailed report) is not to provide solutions, but to point out relevant questions, to suggest the kind and scale of approach that can provide answers to these questions and to emphasise that it is impossible for us to decide what to do about a single factor of our environment—elephants—until clear about what our own needs might be.

The relationship between men and elephants is of exceptional interest because it involves Africa's most controversial and economically important wildlife species.

In addition men and elephant have two characteristics in common which are shared by no other land mammals.

The first is their almost absolute incompatibility. Not only does each pose a real threat to the other, but they have a predeliction for each other's by-products: cultivated crops and meat and ivory.

Secondly both species are capable of massive and complex modification of their habitats. This ability is exaggerated by their slow response to changes in their environments. In fact the bulk of available evidence gives no reason to believe that either men (except primitive subsistence hunters) or elephants are capable of maintaining a stable equilibrium with their surroundings.

The present ascendency of men over elephants is new. It is the result of the introduction to Africa of temperate zone technology and the related human population increase, particularly over the past 200 years.

Previously, when human density was low and dependent on nomadic hunting, pastoralism and shifting agriculture, elephant were widespread. Today this is not so and an instance illustrative of their decline is that as recently as 1929 elephant occurred over 70 per cent of Uganda's land area. Today they occupy about 11 per cent.

In earlier times, before the advent of white men the major interaction between men and elephant centred around the latter's crop raiding and its prevention.

It is still difficult to appreciate without seeing it, that crop raiding by elephants can seriously threaten the existence of a small human community. However, many accounts describe the abandonment of villages in the face of this activity.

Sir Apolo Kagwa, Katikiro of Buganda, pointed out in 1923 that:

"In other times the intensity of elephant trouble varied with the density of the (human) population. Before the Europeans came, elephants were far less trouble because the population was concentrated."

He also indicated that when concentrated communities were decimated by war, famine and pestilence, the small surviving settlements were unable to protect themselves from elephant and were forced to re-group.

From such evidence, together with anthropological records, it is apparent that in the pre-Colonial period elephant were a major influence on the actual pattern of human settlement.

At low densities, cultivators were at a disadvantage and were forced to concentrate. The overall picture was of cultivation as a series of islands in a sea of elephant. Such interaction as there was occurred only around the immediate shores of the islands. Pastoralists, however, were not directly affected by elephant and could exist alongside them.

So much for the direct interactions between men and elephant; but a much more complex situation arose from their indirect influences on each other through modifying vegetation.

These affected all human activities including pastoralism and hunting, elephant, a host of other grazing and browsing ungulates, tsetse fly, soil fertility, the burning regimes and the availability of water. Basic features of this highly complex system are:-

1) Cultivators required a minimum of soil fertility which was traditionally maintained by shifting cultivation. In this they felled mature woodland and forest, created grassland which was highly advantageous to pastoralists and grazing animals, and also created areas, of regenerating bush and woodland which was very attractive to elephants and other browsing animals.

2) Elephant require a substantial amount of woody material in their diet; further it appears that they prefer immature and regenerating trees and shrubs to mature woodland and forest. In the past, therefore, elephant were scarce in areas of developed forest and old woodland, open grassland and very dense human settlement.

   They were present in areas of regenerating woodland on abandoned cultivation and thus attracted to the vicinity of the cultivators. In turn elephant themselves reduce woody cover, and, in sufficient numbers, can remove it completely and prevent regeneration.

   Their influence, therefore, is essentially the same as the human cultivators. It is important to establish whether elephants did in fact have this effect in the absence of humans. Available evidence suggests that they do. the best example being the Luangwa valley in Zambia

   The effect of opening woodlands benefits pastoral humans and grazing animals.

3) Pastoralism requires a short medium grass cover free of tsetse fly. These conditions as stated, can be provided by either cultivators or elephants. Pastoralism tends to maintain areas of short grass that are unsuitable for cultivation and elephants, but enhances an area for plains game. This situation can only be broken by the reduction of pastoralist stock numbers through the advent of an outside influence such as rinderpest, or through overgrazing, both of which would permit the return of woody growth, the return of tsetse fly, elephant or, at a much later date, cultivators.

It thus seems that in pre-Colonial times men and elephants lived in a dynamic mosaic in which they both facilitated each other's use of land in the long term, and competed intensely in certain circumstances in the short term.

While this picture is speculative, nevertheless, on the basis of the available data, it is difficult to imagine another system operating.

In summary it seems likely that men or elephants moved into an initially favourable area, increased in number and at the same time progressively modified the vegetation until, as a result of soil exhaustion, overgrazing or removal of woody cover, they forced themselves into either a population decline or moved to new lands.

The picture is one of ebb and flow, with a rise of one species in an area being counter-balanced by decline in the other.

The introduction of temperate zone technology froze the drifting of humans and elephants between habitats of their choice. With the growing human numbers the islands in the sea of elephant commenced expanding. Their shorelines became longer and continue to grow and the measure of their growth is an ever increasing rate of conflict with elephant.

In Uganda the situation has been reached when the original position has been reversed and there are now a few islands of elephant in a sea of humans. These islands get smaller and smaller.

The conflict between men and elephants is, at least ostensibly, under the control of Game Departments and National Park Authorities. The term ostensibly is used because the Authorities have no control over the fundamental issue—human increase. The conflict has two primary effects.

1) Direct killing of elephant along the shorelines of the expanding and coalescing human islands, referred to euphemistically as "control" work and conducted in the main by Game Departments. The East African Custom & Excise records reveal the outcome of this activity through the amount of ivory exported annually. From these it may be seen that more elephant are being killed annually in East Africa today than at any time before, with annual increases in the ivory exported over the past decade being Kenya 4 per cent, Uganda 6 per cent and Tanzania 8 per cent approximately.

2) Compression of elephant into the diminishing space that once was their "sea", away from the expanding shores of humanity. This process is thought to have far reaching effects on the elephants social and population structures and even more so on their habitats. In these circumstances the intrinsic ability of elephant to modify their habitats has ramified in a way that has never happened before. This is the subject of considerable controversy (witness Tsavo) but is only one aspect of the man/elephant interaction.

The future for elephant depends on the rate of attrition along the "shorelines" and the ecological significance of compression where it occurs. Their future as a species is clearly tied to man's increase.

Theoretically, if we continue to increase there will come a point at which the last elephant will go. By constructing a mathematical model to account for the interaction of men and elephants it is possible to predict the increase in human numbers that will bring about elephant extinction, and when this will take place. It is based on extensive aerial surveys over the past four years, particularly-in Kenya. The model was constructed as follows:

1) An estimate was made of elephant densities for each of the administrative districts and National Parks of Kenya. These were divided into "disturbed" and "undisturbed" districts. Criteria for these categories being human population densities more or less than 6.8 people to the square kilometre respectively.

2) Taking the undisturbed districts a logistic relationship was found to exist between elephant densities and rainfall. Using this curve and the large assumption that the relationship holds good for different soil and vegetation types, it seems that elephant densities normally do not exceed 2.4 to the square kilometre, which they reach in areas averaging more than 40 inches of rainfall annually.

   A steeper logistic curve was found to exist between human density and rainfall. Rural human densities at the present state of development do not exceed 400 to the square kilometre, which they reach in areas averaging over 70 inches of rainfall annually. At present human densities have not reached their potential in all districts but have been increasing at about 3.3 per cent per year since the early 1930s.

3) Taking the disturbed districts, the elephant densities are depressed below the expected density for their rainfall value by an amount related to the human density.

Details of the complex relationship between men, elephant and rainfall have no place here. However, by using the model and bearing in mind that a number of assumptions are involved several important points emerge :-

1) Elephant become extinct in areas where human densities exceed 100/km^2, regardless of rainfall, unless an artificial barrier is created between them and humans (i.e. National Park).

2) In view of the present rates of human increase, elephant will become extinct throughout their range except in artificial reserves.

3) In East Africa this process is furthest advanced in Uganda where there are about 37,000 elephant in 11 per cent of the land area.

4) The position is intermediate in Kenya which has about 165,000 elephants. A large proportion of these live in the drier pastoral areas of the country where the human rate of increase is very much lower than the national average. A large elephant population can be expected to survive in these lands for some time to come.

5) Negligible survey data are available on elephant numbers and distribution in Tanzania. Using the known human densities and rainfall patterns in the Kenya-derived mathematical model, it is estimated that the population of Tanzania elephants numbers 945,000.

   This is much higher than has hitherto been expected. It is of course possible that the Kenya model does not apply to the relatively unproductive "Miombo" wood-lands which cover about half of Tanzania. Nevertheless it is clear from the Customs Department records of ivory exports that the country has many elephant—in 1969 16,000 pairs of tusks were exported.

   Again it is possible to use this figure as a basis for estimating the total population. If one third of the ivory from elephant dying naturally and killed on control from a population of 945,000 elephants was found annually, the yield would be 12,500 pairs of tusks.
   Thus Tanzania's ivory exports alone, indicate a possible population of c. 1,000,000.

6) Finally the model throws some light on the controversial subject of elephant compression into Parks and sanctuaries. From the Kenya data the mathematical model indicates that some 100,000 elephant should have died through interaction with humans since 1931. However, the export figures record only 49,000 pairs of tusks having left the country in this period, most of them the result of control shooting and sport hunting along the shores of the expanding human islands.

   It can also be shown by comparing elephant densities in the Parks with the expected densities for their rainfall regimes just how great a degree of compression they have undergone. (Tsavo = x 1.3, Murchison Uganda = x 1.2).

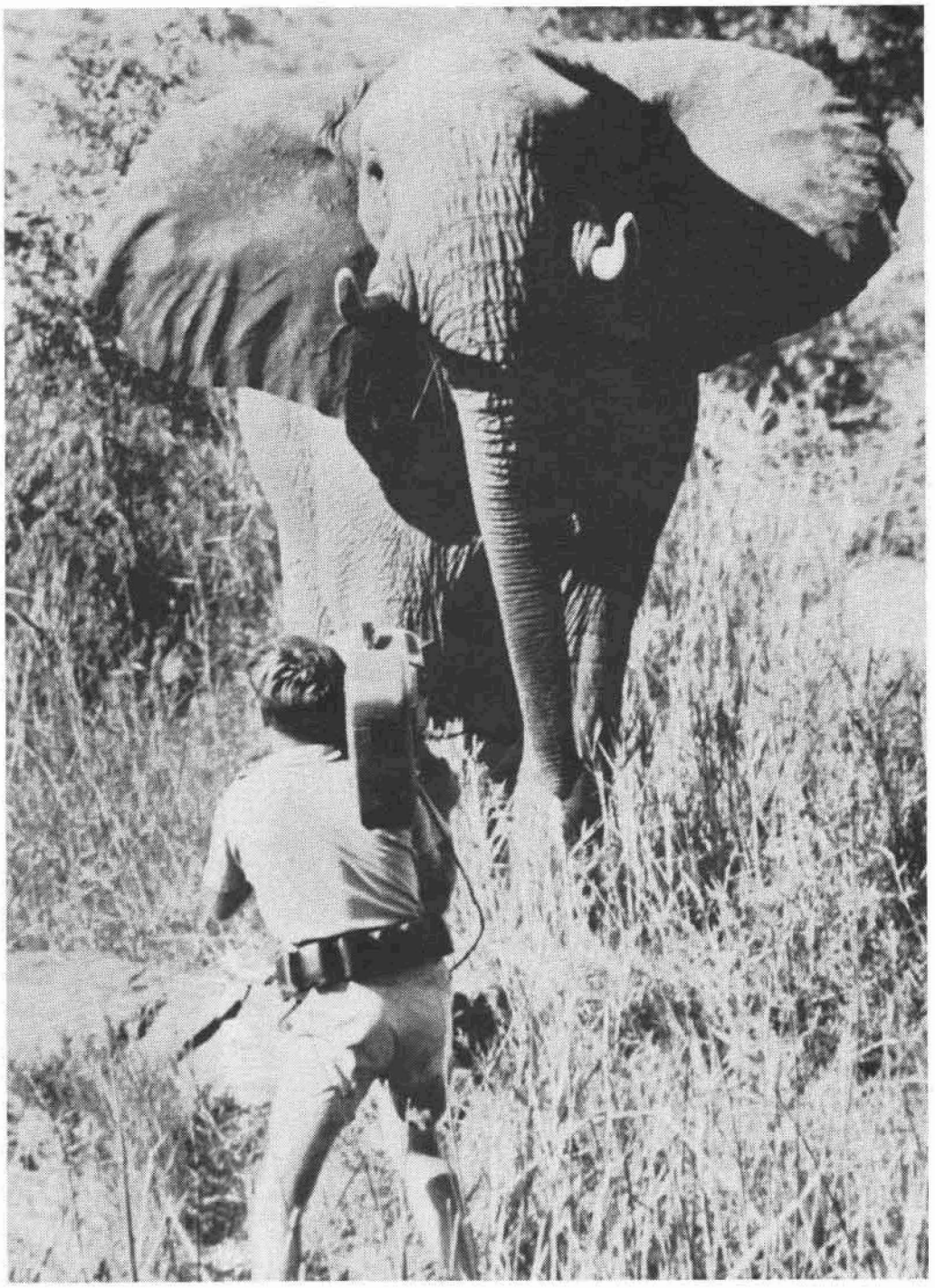
   The degree of compression does not answer for all of the missing 51,000 elephant, indicating that the balance did indeed die at the scene of 'conflict' along the shorelines, but their tusks were either never recovered or left the country through illicit channels.

   It is clear from this picture that reduction of elephants ranges takes place largely through the death of elephants along the expanding fronts of human settlement, while only a minority are displaced into the yet unoccupied (by men) lands and sanctuaries. Nevertheless it is these displaced and compressed minorities that wreak the devastation in areas such as Murchison and Tsavo.

The report of which this article is a synopsis qualifies and quantifies what any layman intuitively knows—that in the face of continued human increase, elephants (and other animals) will go. It supports and adds to the detailed descriptions of elephant biology made by Dr. R. M. Laws and others and agrees with his predictions. Where it breaks new ground is in providing a means whereby the point in time at which a species will become extinct in the face of human competition can be predicted.

The message from this is clear. It is time that we defined the optimum size for the planet's human population. The extinction we force upon species is of no consequence in itself. Each case is merely a milestone on the road to our own predictable end.

The formula propounded here will work equally well for the prophesy of our own demise. Conservation is of consequence only in the conservation of humans. If we keep increasing we will shortly have to decide "WHICH HUMANS?" Perhaps we have reached this point already.



SIMON TREVOR filming his brilliant "African Elephant" film—now on general release as "King Elephant" and premiered recently to a delighted Kenyan audience. The full colour, big screen film has a basic story spanning the life of an elephant, but many other unique animal sequences are interposed together with David Lean-style panoramas of East African landscapes. The film was shot and directed by Simon Trevor, and produced by another local man, Monty Ruben. *—Photograph: John Reader*

ENVIRONMENT from page 19

to these fluctuations. Evolution would be invalid without such stresses and the healing process of plant succession would have no meaning. It is therefore the relatively short term imbalances that can be manipulated to best advantage.

Treatment can be prescribed that is appropriate to the goals in view, be they forestry, tillage or stock raising. In a wildlife area regeneration, soil and water conservation, and both grazing browsing animals, all have to be catered for. It is therefore possible in a National Park to proceed further along the path of rehabilitation towards a state of natural productivity.

The significance of the browse impact on woody plants is, it seems, less well understood than the grazing impact on pasture. The value of the pruning effect in improving the browse potential has hardly been written about at all.

The use of fire as a means of reducing bushy growth and so improving and expanding pasture is, however, widely practised. Yet prescribed burning, as a means to protect browse-shrubs and young trees from wild fires, is seldom applied.

The beneficial effect of grazing in reducing the fire hazard is hardly appreciated. Indeed optimum utilization is frequently confused with overgrazing. Evidently some clear thinking is needed so as to sort out this tangle of opinions, although the principles of managing a wildlife area are not so very different in the long run from those used on a ranch or farm.

The impact of animals, both browsers and grazers, and the impact of fire, both wild fires and prescribed burning, on the course of plant succession and rehabilitation of the natural environment, are clearly in need of further study.

Burning and utilization are largely supplementary impacts. Both might be considered to cause undesirable disturbances to the vegetation, and so be in need of control. Or they might both be considered as tools with which the vegetation might be advantageously manipulated.

During the long period of convalescence that lies ahead, much more thought must be given to the animal impact, the fire hazard and the course of plant succession. The future health of the natural environment in East Africa to a large extent depends upon the wise use of these delicate instruments.

GORILLA

from page 11

hotel, thundering over our heads like gunfire. Walter remained silent and even when the rain had dimmed to just an occasional splash, and our conversation never resumed.

The next morning in the rain we picked Reuben up in front of the same hut where I had left him three years before. He was wearing boots now, and as soon as we began the ascent, this time of the volcano M'gahinga, I noticed he was limping. The higher we climbed the worse his limp became until, finally, I suggested he go no further and wait on the path for our return.

He refused, as I knew he would, and for the rest of the day we made slow progress, slithering in the mud and at every step feeling the rain dripping off ferns down our backs.

We followed uncompromising elephant trails that pointed straight up the mountain, and at 10,000 feet we came upon an ancient nest of a gorilla. In the rain it was difficult even for Reuben to tell how old it was. We searched some more and finally when it was late we retraced our steps down the mountain in the dark.

POACHERS

Reuben explained, in his own way, that this time the culprits were poachers; he repeated once again what he had been telling us all day—that the gorillas had gone for good.

In my opinion, however callous, the Congo revolution and the lawlessness that followed on its skirt-tails, served one good purpose—it protected the gorilla from being taken for granted. Some 23 heroic game guards, many of them protecting the gorilla, gave up their lives in the Congo during the revolution to the knives, spears and guns of the rebels. For years now no one has known the status of the gorilla in the Congo, his main stronghold. The heroic battle to save him, orchestrated in part by the legendary Dr. Jacques Verschuren, was considered by war correspondents as just a minor skirmish.

Today, the only gorillas that remain permanently in Uganda are an estimated 70 in the Impenetrable Forest. Even the great naturalist George Schaller failed to encounter any of them during a week's search, because of the dense cover.

In Rwanda more than 200 gorilla inhabit the northern volcanoes, but they are nearly impossible to view for they have a protectress—the towering Diane Fossey who is as unremitting in her campaign against idle "rubber-neckers" as she is against the Watutsi cattle grazers who continually fail to observe the boundaries of her sanctuary.

EXPERIENCE

Eleven years after my sole encounter with a gorilla the urge to repeat and broaden the original experience had grown. Moreover, now I even considered the practicality of making a film about them. In May of this year I addressed the executive of a documentary series on a large American television network with a proposal for a film about the gorillas.

The location I confidently explained would be in Zaire (formerly the Congo), near Bukavu at the south end of Lake Kivu. I might just as well have been talking about the Sea of Tranquility on the Moon; they had no idea where Bukavu was and I had not even the vaguest clue how to get there.

Nonetheless the idea was enthusiastically accepted in principal, conditional to a reconnaissance. Overjoyed, I conveniently set aside my private sense of morals regarding the desecration of the rare, and by July I was once again in Africa.

From Nairobi we drove for four days: one night Entebbe, the next Gabiro in Rwanda's *Park Nationale de Kagera*, the next Butare, in the south of Rwanda, and finally across the frontier to Bukavu. Towards the end of the trip, the roads were like no roads we had ever seen before, shaking loose even the welding from the vehicles.

In the hotel room in Bukavu I lay down on my bed and after carefully scrutinizing the ancient bulletholes in the walls I began to ponder what Adrien Deschryver, our guide here, had promised us—that within two days we will have seen gorilla at close quarters.

Certainly there was no reason to doubt he was not very level-headed, a man unblemished by compromise, a gambler, but no cliff-walker. I was delighted by his promise for in it I saw the certainty of fulfilling an eleven-year dream.

It was also convenient because his two promised days of gorilla stalking dovetailed with our tight globe-trotting schedule. Suddenly, lying on my bed with my eyes closed, I jolted. Maybe, I said to myself, the gorillas here are too easy; after all, he told us only ten minutes were spent in locating them today, and he had insisted that there would be no need for us to camp in the park since it was a mere forty minutes from the hotel in Bukavu on a comfortable paved road.

I shuddered to myself and prayed that like Ahamed the gorillas were not destined to be leached of their mystery by hordes of sedentary tourists.

For two hours Adrien has not uttered a word and has only appeared interested in our conversation when it revolved around the habits of his gorillas. He sits in the sun staring fixedly ahead, motivated only by the one branch that waved two hours ago. His hair is cut short for purposes of practicality and not one button of his uniform is left unbuttoned.

He does not understand words such as "hardship" and "endurance". His face is serious, his eyes the eyes of a man passively driven by a private simple devil. He does not accept expediency; he will use words only when he has to, and then mincingly.

HORRIFIED

He is horrified by human waste and greed, and wishes to have nothing to do with the Europeans in Bukavu: "They have no interest in the gorillas; their world is all money."

Adrien had encouraged us to talk. When tracking gorillas, he had said, never surprise them, always let them know where you are. Here in Kahuzi-Biega there are two groups of gorillas which he has "habituated," over a period of four years of constant vigilance. One group consists of eighteen ("Not good for film-making, because the silverback is timid"); the other, the one we are stalking, numbers twenty-two.

These "habituated" groups can be approached by Adrien leading parties of visitors, with little danger and with great certainty of seeing them. Nonetheless Adrien always carries a gun; all the time I was with him he never once even reached for it. He carries it for he recognizes the probability of accidents.

Although his life for the past four years has been devoted to the gorillas, and the hours he has devoted to their well-being far exceeds his responsibility as park *conservateur,* he has not assumed an all-encompassing proprietary bond over them. He has given them no endearing names and he is not reluctant to share them with others. Moreover, he has welcomed scientists to participate in his unique association with the gorillas, particularly if their research promises to ensure the gorilla's survival.

I can see he has become impatient. He guaranteed us gorillas and now the long wait has made him impatient. He can wait no longer. He slips his arm through the shoulder strap of the rifle, beckons the pygmies to cut him a path and within fifteen feet of us he is engulfed by the undergrowth. We follow his course by the sound of the pangas. Suddenly after some seconds of silence I see his head in my field glasses, and he is waving his arms at us excitedly.

"I almost tripped over a sleeping female," he exclaims when he has returned. "Very bad country for viewing them," he warns, shaking his head. "They have begun to move, so will try to see them in better country when they are feeding."

We overtake them within fifteen minutes. Adrien indicates for us to be seated while the pygmies clear the underbrush. He has consistently been using the word "contact" to describe our imminent encounter. For him the word obviously has a special meaning, since a "contact" may be either good or bad. We are now within thirty feet of the feeding gorilla and I am still totally ignorant of what he means. Is a bad contact dangerous or is it merely unsuccessful? And what are the requisites for a good contact?

None of us feel like sitting or even talking as we should. Each of us silently peers ahead, hoping to catch the first glimpse. Branches sway and from time to time, there is a methodical thud as the silverback pounds the ground with his fist.

'BAD CONTACT'

Adrien, his arms crossed, stands closest to the group at the very edge of the clearing. For the first time today, he is smiling. "Come, come, come, come," he murmurs into the thicket.

Somehow I sense that we are about to have a "bad contact"—whatever that means. The waiting is dragging on too long. Dark lianas seem to become black arms and subterranean oiled faces metamorphose out of the barks of trees. I smell the silverback long before he ever makes his charge—a smell I might not have noticed had it not been decidedly human—the musty-magnified smell of sweat.

Suddenly his pounding fist stops and he barks, and as the sound bears down upon us it becomes a shriek. Adrien nods his head appreciatively and steps to the very edge of the clearing. The shrieking is almost on top of us and yet we still cannot see the silverback. He runs right by and comes to halt fifteen feet away.

Once more he is silent. Each of us looks at the other and smiles, our hearts pounding in our necks. No wonder the first Europeans to encounter gorilla greeted them with a blaze of bullets, in supposed self-defence.

"No description can exceed the horror of its appearance, the ferocity of its attack, or the impish malignity of its nature," Paul Du Chaillu had written in the last century, following the first recorded contact.

I slump to the ground in search of a better view, crane my neck to the left, and then to the right. Nothing. Just intriguing pin-holes of light, and row upon row of tangle. The sudden quiet is horrifying. We all know the four-hundred pound gorilla is studiously examining us; that we are unable to see him is the supreme frustration.

SHUDDERS

At dinner that night in the hotel restaurant Adrien shudders at the sound of the discotheque and says not a word. He delicately eats the tiny fresh strawberries and patiently acknowledges our talk with eyes that fleet from one speaker to the next.

When coffee arrives he begins to talk to me quietly. I notice that he demonstrates many of his points with a bizarre slap of his hands. It seems to imply a fatalistic acceptance of rapid and violent death. When he talks of poaching, for instance, he uses this gesture after a dramatic pause and a shrug of the shoulders.

"Read the official powers I have been given by the Presidency. Mobutu has given me absolute authority. If I should apprehend a poacher, I do not need to establish his guilt. I must merely challenge him with the word 'stop' three times and if he continues to run I open fire, shooting to kill. (Here he slaps his hand).

"No one will ask me questions and I need not necessarily identify the victim. Recently one of the guards took a prisoner. During the night in his tent there was a scuffle and the poacher was knifed to death (here he slaps again). Well, my guard was sentenced to one month in prison as a formality and when he was released he was given a promotion and a decoration."

Adrien might well understand the attitude of Pompey, the Roman General when he addressed his crew of sailors after they threatened mutiny in order to avoid a dangerous storm up ahead: *"Navigare necesse est vivere non necesse"* ("It is more essential to sail than to live"). For Adrien, it is more essential to protect gorillas than to live. It is not that Adrien is especially callous of human life but that for him, echoing Pompey's sentiments, conservation is more necessary than life itself.

In Zaire where the sound of sniper fire has only just been silenced, there is no half-way house for the protection of game. Palliatives, admonitions, and warnings are whistles in the wind. The only threat that yields results is ready execution; in Adrien's 600 square kilometers of park where there are over 250 gorilla, he can confidently say there is an almost total absence of poaching.

Next year he intends to hand the administration of Kahuzi-Biega over to an African friend he has trained for the job. "He will be a first-class administrator," he says. Adrien hopes to continue conducting visitors to see the gorillas, while at the same time establishing two quite different parks in other parts of the country.

Adrien is no innocent when faced with the challenge of frustrating the day by day march of mediocrity in Africa. In that struggle he will undoubtedly remain a winner. What worries me is that he may have no idea that the unyielding forces of tourism have marked him, his park and the gorillas for an even more ignominious fate.

FOOT-TREK

He mentions a large tourist firm that is planning to build a lodge near the park and to clear tracks at set intervals into the park so that foot-trekking may be reduced to a bare minimum. Whether an idle threat or not, I wonder if Adrien knows the misery that such tourism, spiralling year after year, may one day bring him.

The tragedy of these gorillas is that they are too accessible. Some day when there is easy access between Bukavu and East Africa the gorillas here will become a part of the "milk run" and will attract those people who, in my elitist opinion, do not deserve to be in their great company.

"Keep the price as high as you can," I said to Adrien, not in jest, before retiring for the night.

In the morning the pygmies are awaiting on the side of the road for us. His face deformed by leprosy, the one who takes the lead as soon as we begin cutting our way into the forest is wearing a girl's pair of high fringed suede boots obviously bought by some glamorous creature on Madison Avenue and given to him in a surge of gratitude.

Our path today takes us along the edge of a tea plantation which the gorillas skirted late yesterday afternoon, and into a narrow strip of climax forest which juts into the cultivated areas.

The daily progress of the gorilla family is relatively easy to predict for it leads a reasonably regimented and supremely leisurely routine. The gorillas generally leave their nests at about eight in the morning, feed and travel until mid-day when they sleep again, this time for a two-hour siesta. They feed and travel until dusk when they start building nests once again. The males usually sleep on the ground and the females and young characteristically build their nests at some elevation in the trees.

We are accompanied today by Allan

turn to page 26



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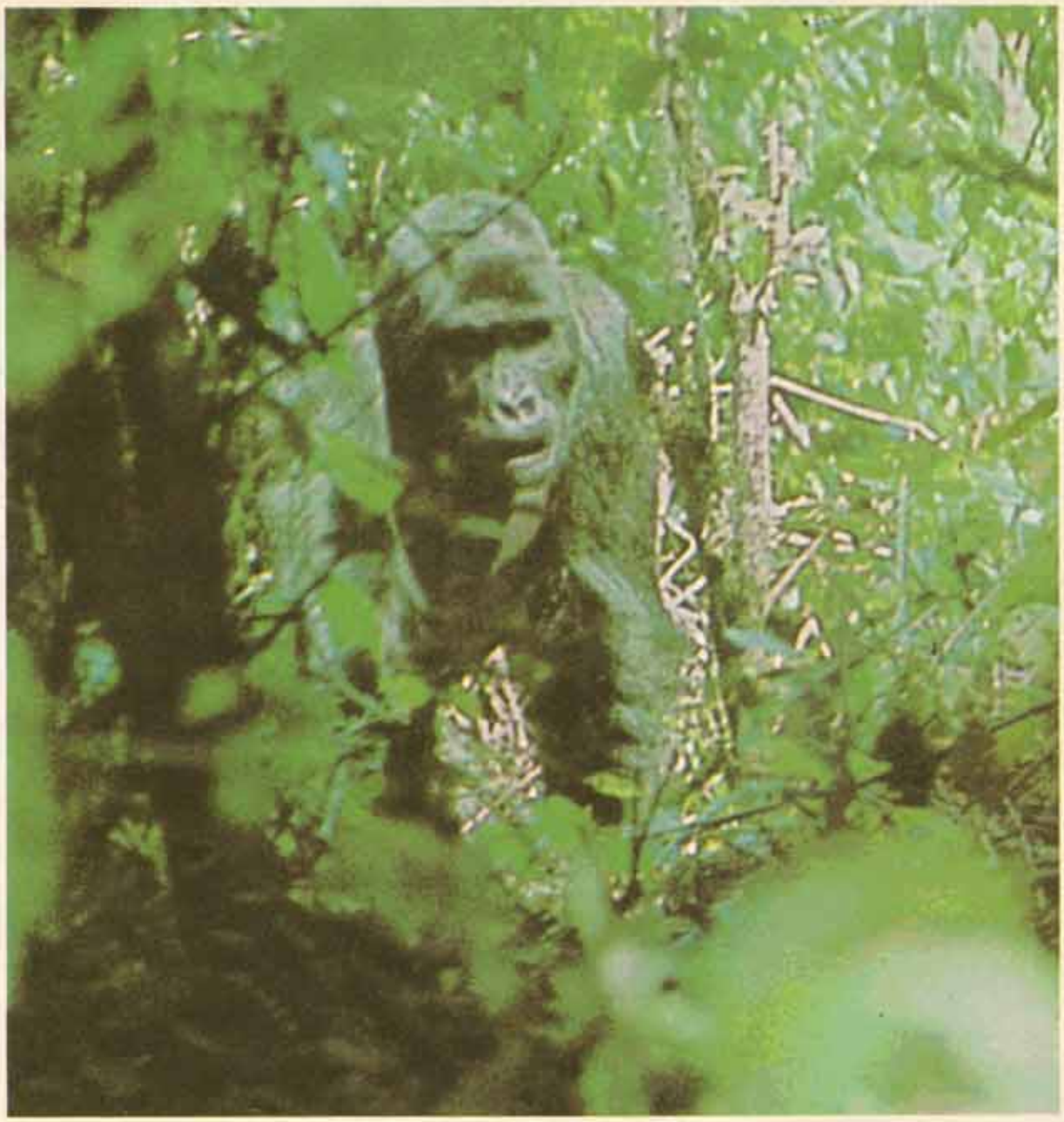
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GORILLA

from page 22

Goodall, a young English scientist who had previously studied with Diane Fossey. One of his projects is to determine the daily range of this gorilla group and to attempt to draw parallels between their dietary preferences and their circular migration routes.

He tells me of the many significant differences he has observed between the gorillas of the high volcanoes and the gorillas here in these forests of 7,000 feet.

Out of earshot of Allan, Adrien is quick to say how much he admires the scientist. "He works very hard. When he first arrived here I wasn't so sure of him so I sent him off into the far reaches of the park and told him to study the unhabituated gorillas to see how he would do. After four months, following them everyday, he had been able to see only glimpses of the gorillas—just as I had foreseen. He had heard them, but that was all. I liked his determination so I then finally permitted him to study the only habituated. With these he can now make his study".

Sometimes the trail the pygmies cut for us is only two feet high, so we scuttle like crabs, our field glasses and binoculars banging against one another on the ground. Other times we must balance like aerialists on the moss-covered bark of fallen logs.

"*Siafu*", someone yells far ahead and we run gawkishly along the trail, lifting our feet high to miss the safari ants. The light streams into the forest on flute-thin beams, blinding one eye at a time. The forest is a continual exercise of perspective: I strain to focus on a cobweb an inch away and then dissolve to a butterfly flitting across our path three feet distant. If I was to live in this forest I would become lonesome for a view.

We follow the gorillas' spoor running dangerously close to the park boundary. As mid-day approaches I begin to worry we will once again catch up to the gorillas when they are having their siesta. By eleven-thirty we come upon their nests of last night.

Adrien shakes his head and points to the wide band of light streaming into the forest from the right.

"This is the edge of the forest." he says. We are now outside the park boundary, and Adrien tells me the gorillas had passed this way three months before. Since then, the forest has been cut back in places to the official boundary. By taking this route, the gorillas have therefore isolated themselves on a narrow peninsula of primary forest.

FRUSTRATED

To continue straight as they did without difficulty three months ago will now take them through populated country. "They will be frustrated," Adrien says shaking his head once again.

To the right I can hear the murmur of farmers working in the fields; I notice that for the first time we have all begun to whisper.

Suddenly a gorilla barks just ahead of us. The farmers in the fields below us recognize the sound and break out into a giant clamour; beating upon tins and crying out in self-defence. "It will be a bad contact," Adrien says with disgust. "The gorillas have nowhere to go but retrace their footsteps."

We creep ahead, and at the edge of the man-made clearing, he points to the left back into the forest, to indicate where the gorillas are sleeping. Once again we ready ourselves for a long vigil.

We wait for two hours before the first branch waves and then we slowly move to the edge of the clearing, compulsively silent. The silverback pounds the ground and soon his rank odour descends upon us with a chilling feeling of immediacy.

We wait for his scream of defiance and when it comes I feel like a veteran of his dramatics. We smile, hold our ground and pray for just one gorilla to appear.

There is a narrow tunnel piercing the cover where the gorillas feed and at its end a single shaft of light stabs the long cylindrical path of darkness. This is where I should see a gorilla, I say to myself. He should be at the end of this tunnel looking at me, staying still long enough for a photograph.

But hard as I look I see nothing. I join the others twenty feet to the left just in front of waving branches. The silverback is scrutinizing us from no distance, and he and the others are totally concealed.

I must return to the tunnel. I creep back like a thief and peer down the long black corridor, adjusting my vision to the darkness.

Two yellow eyes sunken into the very suspension of the forest stare back at me. Two inhuman eyes that do not blink.

A high arched bullet head of enormous size surrounds them, forming a remarkably flat and glistening face that tapers into massive shoulders and a sleek body. Zoo gorillas never looked like this.

It is the eyes that hold me; no animal has drawn me to its eyes as this one is doing. I try to keep from blinking, or looking away. And very slowly the animal disappears into the darkness.

Others come one by one, peer at us in turn, and then move off to feed.

A young male, larger than all the others, is the last. He stands nearly off his front limbs, dodges his head in and out of the light, hiding in the shadows, thinking that he is invisible in the blackness. He is playing a child's game and for ten minutes he has us rivetted. His stare, so intense, invites me to turn away, put down my field glasses, throw away my camera and retrace my steps into the tea fields.

Now, at last, we are all convinced that we must make a film. We all know how difficult it will be to obtain adequate footage in the spotty light and heavy cover of the forest, but it will not be impossible. Our film may even be amongst the first, in many years on television, to show wild mountain gorilla in the same frame with men.

We are all exhilarated with the prospects and anxious to start as soon as possible. "There is hardly an animal more intriguing to men than the gorilla," we say solicitously to one another.

Our film will not mock the gorillas. We will not humanize them; we will give them no endearing names, nor create a fiction out of their lives. We will not be tempted to make them appear more dangerous than they truly are. We will honour Zaire, its National Parks, the men who work for them, and the freedom of these great animals which they protect.

Nonetheless we threaten them, as any film will, as this article does. We threaten not their future survival, but their peace. Our film will make the gorillas accessible to more and more people; with knowledge will come familiarity and with familiarity will someday come an invariable "ho hum".

DISMAL

I have no doubt that the dismal state I speak of is many years away, but I worry just the same. In too short a time, I have seen so much of Africa's wildness deflowered by an unimaginative breed of exploiters, and an unconcerned effluvia of visitors, and I have no doubt that much the same will happen here one day.

Someone is bound to apply the old conservation truism here: "Make the gorilla worth money and his future will be guaranteed." Just so, a poor country like Zaire cannot avoid the temptation of letting tourism pay for the maintenance of this park.

Adrien insists he will keep the price of admission high to discourage the marginal kind of visitor, but invariably others will succeed Adrien and will seek after larger profits with bulk tourism. How much will a gorilla be worth then?

Once all the gorillas have vanished from view, Adrien suggests we climb to the far side of an open gorge which he suspects the gorillas will cross, giving us a chance to see them all out in the open. We sit and wait for an hour on the steep slope while the sun loses itself in smoke haze to the west.

The pygmies murmur unconcernedly amongst themselves as we slap at flies. "I think the gorillas have gone the other way," Adrien says. "They know we are here so they chose to retrace their steps even if it means crossing the tea field."

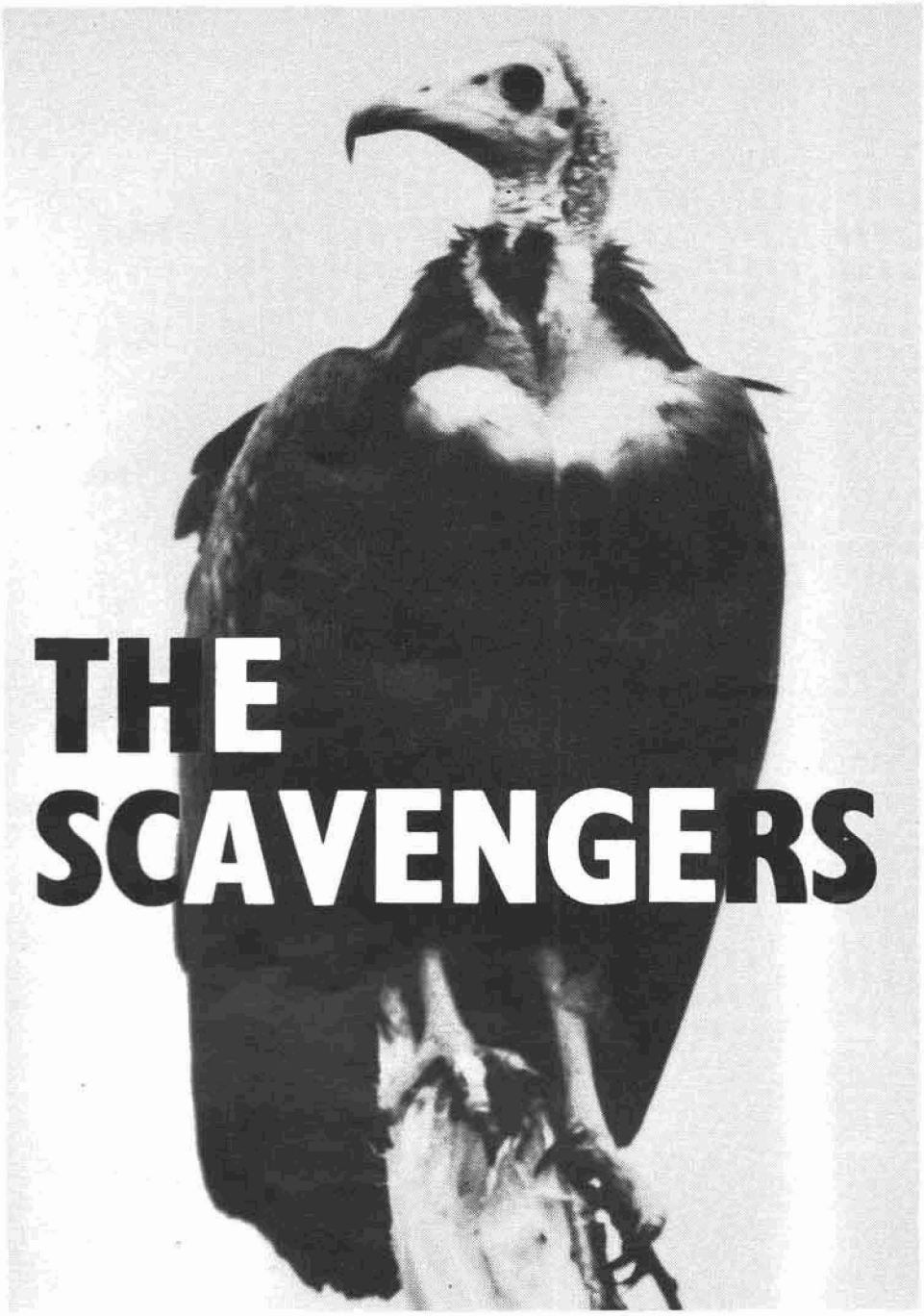
As if in acknowledgement out of the distance comes a burst of shrieking and barking from the direction Adrien has described. The barking continues as though electrically amplified. It seems to imply some kind of victory.

"They only scream like that, " Adrien explains, "when they have made it into the forest where they feel safe."

We slowly set off up the ridge back to the vehicles. In the back of my neck I can feel a tingle of exhilaration which I have felt only at the rarest moments in the wilds. "They are the kings of this mountain," Adrien says with pride. "And they know it."

A pity the age of kings is passing.

THE SCAVENGERS



HOODED VULTURE

It is a fact of nature that without death there could not be life.

In large mammals death can occur in many ways; when it is the result of an attack by a large predator the result is most obvious, but many more individuals may die of disease, or starvation, or as the result of drought.

Often these factors interact. For instance, in times of drought food can become scarce; half-starved animals are then most susceptible to diseases and, further weakened by this, they are more easily caught by predators.

Some predators consume the whole carcass—for example snakes, hyaenas and hunting dogs. Others, such as cheetahs and lions, may eat only a part, especially when prey is plentiful. Whatever is not eaten by the predator is food for the scavenger. So are the carcasses of animals which die "naturally".

In East Africa there are many different scavengers. The most famous is the hyaena which, as everybody knew, ate what the lions left behind—until Dr. Hans Kruuk showed that, in some places at least, hyaenas may be important predators and lions the scavengers.

Many insects are important scavengers too, particularly ants and maggots. It is not unusual to see a whole elephant carcass writhing as a result of the movements of thousands of maggots. Less obvious consumers of carcasses, but very important ones all the same, are myriads of bacteria.

But the most conspicuous scavengers are usually the birds. Unlike the nocturnal hyaenas, they are active by day. In places which remain largely unaffected by man the large vultures are the most numerous of the scavenging birds whereas in many towns it is the marabou stork and the hooded vulture which are the dominant scavengers.

Vultures, like most scavengers, are usually regarded with such disgust that few people are interested in them and writers can only raid their *thesaurus* to find new words of loathing. This is unfortunate since vultures are undoubtedly important and also interesting birds.

East Africa has seven different types of vulture which feed almost exclusively off carrion, which is a far greater variety of scavenging birds than any other region of the world.

Hans Kruuk found that these different species have different feeding habits, so that they may not all be looking for the same type of food at a carcass.

The lappet-faced vulture, for example, has a deep, powerful bill which can tear tough skin and tendons, often holding firmly onto a bone with one foot while it pulls away at a tough piece of meat. It is an aggressive species, which drives others from a carcass with a menacing threat display of arched wings and lowered head. Lappet-faced vultures can dominate a carcass first of all and feed chiefly from the skin and tough pieces of meat. When they have finished feeding, a group of smaller vultures moves in to feed.

These may be either Ruppell's griffon vultures, or white-backed vultures—or a mixture of the two. Both species have long necks for reaching far inside a carcass, and sharp bills for slicing through the soft meat and viscera.

Finally the little hooded and Egyptian vultures peck at any scraps dropped on the ground and at pieces of meat left on the bones.

Most people imagine that vultures obtain their food by finishing off any scraps left on a predator kill after the predator has finished feeding. Although birds do find some food this way, in the Serengeti the vultures obtain only a very small part of their food supply from predator kills.

Almost all of their food comes from animals which die naturally, perhaps from accidents, disease or malnutrition. The majority of animals in the Serengeti die in this way and are not killed by predators.

Vultures searching from the air can find these scattered carcasses far more quickly than any mammalian scavenger, and in fact lion and hyaena often watch the activities of vultures and gallop towards an area where they see birds landing and hope to scavenge a carcass from the vultures.

Since the vultures' food comes chiefly from these animals that die naturally, the amount of food that they can find varies greatly from month to month according to the general condition of the game animals. At the end of the dry season animals are in poorest condition and this is when they are most vulnerable to diseases—which means a good food supply for vultures.

At other times of the year when animals are in better condition there may be far less food around. Any scavenger therefore has to be prepared to tolerate a food supply that will vary considerably through the seasons.

A group of vultures can feed extremely rapidly, taking most of the meat off a gazelle in about 15 minutes, or wildebeest within perhaps 45 minutes. Although they feed quickly, they may not be able to find food very often; hence vultures have evolved crops so that they can store a large amount of food at each meal.

A griffon vulture can swallow about a quarter of its body weight at one sitting, and when it is bloated with this amount of food it will be able to last for about five days before it need find another meal. It will take almost two days to digest a whole crop gorged full of food.

Vultures are large birds and when they are weighed down with such a heavy load of food they may find it quite impossible to lift themselves off the ground. They may then have to wait for several hours to digest part of their meal before they can take off.

All vultures have long, broad wings and when they are flying they mostly soar and glide, usually only flapping their wings when taking off and landing. Once airborne they circle up in thermal up-currents of air to gain height and then wander off in search of another meal.

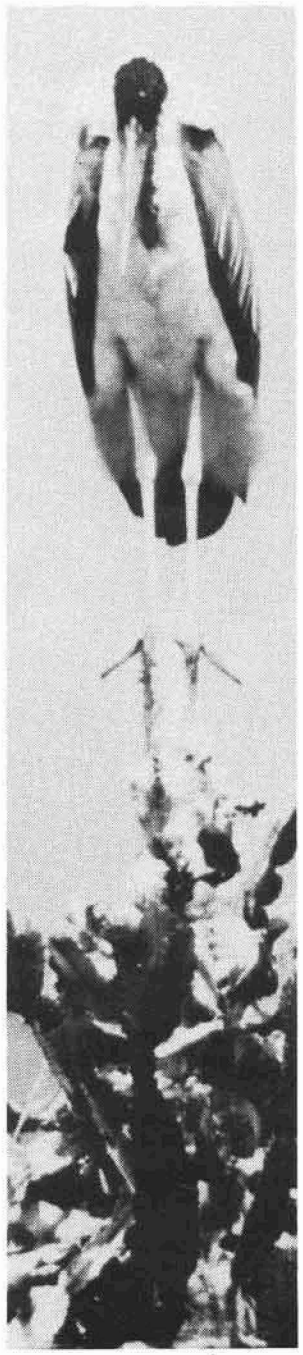
African vultures cannot smell food, unlike the apparently similar, but quite unrelated, American vultures, some of which have a very well-developed sense of smell. They rely on their sight to find carcasses, and it is here that birds have many advantages over mammalian scavengers.

They can search quickly and efficiently over a large area of ground. In places where game animals are sparse there are also usually few griffon vultures, each bird searching at a height of a thousand metres or more. But in areas of game concentrations birds search at far lower altitudes and will be more numerous.

Their ability to suddenly appear out of 'nowhere' as soon as some food appears is very impressive. It is reported that following the Charge of the Light Brigade in the Crimean war so many birds collected on the battlefield that shooting squads had to be sent out to protect the injured. Certainly they can collect in large numbers in a very short period of time.

Their method of searching is very simple. Birds are usually flying within sight of several other birds in the sky. When one bird finds food, it immediately starts to dive down in a straight plunge to the food, and

Continued overleaf



MARABOU STORK

TEXT and PICTURES by Dr. D. E. POMEROY and Dr. D. HOUSTON

from page 27

this conspicuous dive attracts any other birds within sight, and they too start to dive towards the first bird; birds still further away see these second birds, and so a chain reaction begins with birds being drawn from many miles around.

Vultures are only really efficient at finding food when they are searching at a high enough density to be able to use each other. In areas with few game animals, few birds will be searching and a carcass may lie for many days undiscovered.

Although some species of vulture remain in one area for most of the year, the commonest of the vultures, the griffons, wander widely. In the Serengeti some birds were caught by firing a cannon net over a group collected at a carcass. After the birds were untangled and extracted from the net, they were fitted with large plastic leg-rings engraved with a clear number so that each could be identified later and their movements could be followed.

One of these birds later travelled 175 kilometres in six days, and birds clearly moved around in any area where they were likely to find food. Some long-term studies made in southern Africa have shown that vultures there may travel up to 1,250 kilometres during their wanderings.

In the Serengeti, griffon vultures spend most of the year following the migratory herds of wildebeest in search of food. Because of the large distances covered by these herds, breeding is very difficult for the vultures. The nesting season is long—for the Ruppell's griffon about seven months.

During all this time they have to keep returning regularly to a nest site either to help share the incubation of the single egg, or to help feed the chick. The chick needs abundant supplies of food while it is growing, and so the parents are not only restricted in the amount of time that they can spend searching for food but also have to find large amounts of food to give to the chick.

Since the breeding season is so long, they cannot time their breeding to fit in with a time when there is always plenty of food around, but have to carry on during times when food is sometimes abundant and sometimes inadequate. They are able to do this by storing quite large amounts of fat in their bodies before they start to breed.

During rearing, the adults are not always able to find enough food to satisfy their own needs plus that of the chick, and in these times they go without food and live off the stored fat reserves. By the time they reach the end of the breeding season the adults have almost exhausted their stores of fat.

All vultures seem to time their breeding season so that the young birds leave the nest at the end of the dry season, when game mortality is at its heaviest and so there is most food around for the vultures. Young birds have to learn how to glide efficiently, which takes many weeks of practice, and also how to find food and compete with other birds at a carcass.

These young birds are not nearly so aggressive as their elders, and if food is scarce they soon get pushed aside and would not be able to find enough food. In order that the chicks are released from the nest at a time when they will be able to find food easily, the parent birds have to rear the young during a time in the year when food is rather hard to find. Breeding is therefore very difficult and in years when the vulture food supply is not very good, few birds or none at all may be able to breed.

In recent years with the decline in game animals in many areas the population of griffon vultures has declined, but the hooded and Egyptian vultures have increased in numbers. They are both rather general-purpose scavengers that will eat insects, dung and any food they can find, and they have found very convenient food supplies from the village rubbish tips.

Like hooded vultures, marabous have benefited a great deal from man's activities. Until quite recently they must have been rather rare birds. In fact in places where man remains rare, so does the marabou. The 14,000 square kilometres of the Serengeti, with all its teeming game, seem to support only one or two hundred marabous.

On the other hand, Uganda's Queen Elizabeth National Park, where one of us (D.E.P.) has been studying them for over two years, supports from 2,000 to 4,000 marabous. The reason is not hard to find; in the Queen Elizabeth Park there are a dozen or more fishing villages, and two fish factories.

A particularly large supply of food comes from the factories in the form of fish heads, guts and indeed most of the fish, because the fillets of *Tilapia* make up less than a third of the whole fish. What cannot be sold as fillets is thrown out into the bush: and the sight of several hundred marabous all endeavouring to feed from one pile of fish remains is almost as memorable as the smell.

Marabous have always made an impression on those who wrote about East Africa. Almost invariably the impression was unfavourable, but nevertheless marabous are hard to ignore. Their relationship with writers (and photographers) is of the nature of the love-hate type; although with more emphasis on the hate.

One of the more notable descriptions is that of Alan Moorehead; 'the marabou ..... is a revolting object to anyone except a besotted bird-lover, with its pendulous pouch and its scraggy neck and a look of pure bile in its eye'. (*No Room in the Ark*.)

The name marabou seems to have been derived from the French word *marabout;* apparently it used to refer to a priest, or shrine.

The distribution of marabous extends over most of tropical Africa, except for areas where there are still extensive forests, and in the most arid regions. They can be seen in many types of country, although birds far from water are usually paying only a temporary visit.

Marabous are, of course, storks and they retain many characteristics of that family. Their closest relatives are the



two species of adjutant storks of south-east Asia whose behaviour is rather like that of the marabou.

Storks in general are large, well-built birds with long bills. They presumably evolved as birds feeding on or near to the shores of lakes or rivers but several species have since taken to feeding mainly on land. Many storks feed on large aquatic insects, or small vertebrates, and marabous have retained this habit to some extent.

But the natural food of marabous covers a much wider variety than that, including such things as termites emerging for their nuptial flights, grasshoppers swarming, snakes fleeing before a fire, and fish trapped in a pool as it dwindles in the dry season.

They are occasionally troublesome to conservationists. Their habit of killing flamingos at Lake Nakuru is well known, and they are one of a number of predators which, given the chance, attack baby crocodiles as they emerge from the sand after hatching.

Another feature which they share with some other storks is the ability to soar; but of all the storks, the marabou seems to be more highly adapted to this than any other species. As with the vultures, soaring enables marabous to survey a large area of land while expending the minimum of energy.

Although their diet is much more catholic than that of vultures, marabous are often seen with vultures at a carcass. If you watch them there, you cannot help noticing that they appear disdainful. Whereas the vultures tumble and fight, marabous have the habit of simply standing around, a few metres away, as if nothing was happening.

From time to time, however, one will enter the fray. Provided that the mass of vultures is not too tightly packed, a marabou can walk easily between them because of its great, long legs. If it notices a vulture pulling on a piece of intestine, it can plunge down with its bill and take hold of the food. A tug-of-war commonly results and the marabou rarely fails to obtain something.

Perhaps because of its size, the marabou is dominant to all species of vultures except the large lappet-faced, with which it seems to be on roughly equal terms. Even lappet-faced vultures seem to swallow their food particularly rapidly whenever a marabou is standing over them. Marabous feeding around a carcass are really behaving like food parasites—they depend upon vultures to obtain the food, and then steal it from them. A marabou by itself would probably get nothing since its bill is quite unsuited for pulling and tearing.

The breeding behaviour of marabous was studied extensively by Dr. Philip Kahl. Marabous breed in colonies, often in tall trees with large crowns. Particular favourites seem to be the mvule (*Chlorophora excelsa*) and some species of *Acacia*.

Elsewhere they nest on rocky ledges on high cliffs. For such a large bird, the marabou lays rather small eggs—usually two or three to a clutch—which hatch after about four weeks. The nestlings remain in the nest for a long time; often it is nearly four months from hatching to fledging, during which time both parents are kept very busy.

Several writers have commented upon the apparent scarcity of breeding colonies. In fact, colonies are easily overlooked, and careful enquiry, together with a certain amount of luck, shows them to be quite numerous. In Uganda at least 20 are in use and there are probably a number of others not yet recorded. They vary in size from single pairs (which is rare) up to 300 or more.

But although breeding colonies are not, in fact, uncommon there is apparently an excess of adult birds so that some do not breed every year. The reasons for this are not yet known, although they are being investigated. It seems that non-breeding adults occur in a number of large African birds, including cranes and flamingos.

Recording the growth-rates of young marabous, and the breeding success of their parents, would provide good training exercises for Commandos. In Queen Elizabeth National Park, marabous breed in an uncommon species of *Euphorbia, E. dawei*. These trees have the advantage to the visitor of being only ten or twelve metres high, but the nests are still quite difficult to reach, partly because of the thick undergrowth beneath.

One method is to use a ladder standing on a platform built on the back of a Land Rover. These studies have shown that the breeding success of marabous is rather low, often less than half the young being reared; but the reasons for this are not clear.

Catching marabous in order to determine their vital statistics is also a memorable experience. By setting out well before dawn, it is possible to reach the fishing villages by first light, when the birds, hungry from the night's fast, are beginning to arrive from their nearby roosts.

Carefully weighed-out doses of a suitable drug are then placed in lumps of meat or fish, and thrown to the waiting birds. Two or three hours later the drugged birds become dopey enough to be picked up fairly easily. They then have to be transported back to base for marking and various observations.

On the journey they tend to regurgitate the contents of their crops, which often consists of rotten fish-heads. Ten marabous, each producing half a kilogramme of partly digested food, smell quite distinctive. So does the Land Rover. So do we.

In many tropical countries scavenging birds are protected by law, and are often regarded with respect. Scavengers in the savanna fulfil an important role at the end of the food chain and in towns and villages they assist man by removing waste. Although neither vultures nor marabou might be regarded by most people as objects of beauty, they are interesting animals and well worthy of attention.

OWL NAMED WOO

COVER PICTURE-STORY—by ANTHONY DEANE

Mackinder's Eagle Owl—*Bubo capensis mackinderi*—is generally regarded as one of the most handsome and fierce looking owls on the African continent. Beautifully mottled black and deep rusty brown on a light ashy-grey background on his front, and heavily blotched blacky-brown on his back and wings, he stands about twenty inches high. From a dark grey facial mask ringed with black, intense yellow-orange eyes gleam.

The owl has a restricted habitat throughout its range from Mt. Elgon in Uganda to Rhodesia. On Mt. Kenya and along the Mau Escarpment it is normally found above 2,500 metres. On lonely alpine type moorlands seared by mountain streams flanked with lichen covered trees, Mackinder's Eagle Owl can be found—if you are lucky. Although locally common in some places, very little substantive knowledge has been published about the bird.

The owl who became known as Woo, was picked up at the end of January, at Mau Narok on the Mau Escarpment this being the usual breeding season. A pathetic bundle of wet grey fluff, covered in hungry soldier ants, the young owl looked out on a most bleak and uncertain future through myopic baby blue eyes.

About ten metres above us, as we picked up the owl, a magnificent hen sat in the fork of a gnarled cedar, and glared down. It was obvious where the youngster had come from. Standing away from the tree we could see another, larger owlet.

For the past ten years Mackinder's Eagle Owls had nested at the base of the tree; a site generally favoured by this species of owl. For some reason they had chosen to nest in the tree this year. Another feature of nest sites found in the Mau Narok area is the preference for sites immediately adjacent to streams, even to the point of nesting over water.

Perhaps in a struggle for food the smaller owlet had been pitched out of the nest. The normal clutch of eggs is two or three, and usually all the young are reared.

We brushed the ants out of the downy covering of the young bird, and the writer's son stuck it up his jumper to keep it warm while we debated what to do with it. Even if we managed to get it back in the nest, there would be no guarantee that it would survive. Getting up to the nest was easier said than done, so eventually it was decided to try and rear it.

From examining owl casts and nests over the years, it was apparent that Mole Rats *(Tachyoryctes ibeanus)* formed the staple diet of Mackinder's Eagle Owls in the Mau Narok district. And as the ground was riddled with mole hills, and the local people were expert mole catchers, food was not going to be a problem.

As soon as we got back to the house the owl was adopted by Mrs. Vanda Sessions, who named it "Woo".

We all agreed that the owl must be hungry and a mousetrap should be set up at once. As luck would have it a mouse was caught almost immediately, cut up, and offered to the owl. We tried making what we thought were passable mother owl noises, but after running through a somewhat limited owl vocabulary, it was suggested the owl would die of hunger before we learned the language.

So we opened the owl's bill and pushed a lump of mouse into its mouth. There was no problem. As soon as the bird had the food in its mouth it swallowed it avidly. And after finishing the mouse, Woo shut its eyes, snuggled up to Vanda and dozed off.

Later it showed a great liking for nestling under an old sweater which probably simulated the feeling of a brooding hen. Another odd attitude it would adopt was to lie flat on its stomach with its legs stretched out behind it, apparently in a complete state of bliss. It is not known if this position is adopted by naturally reared birds but it could happen on hot afternoons because the nest sites are not generally shaded.

Woo was about 2½ weeks old before she staggered about on shaky legs. At no time were her movements restricted and she spent a lot of time wandering on the lawn and in the shrubs, much to the curiosity of passing Augur Buzzards who would glide round in a wide circle to get a closer look at her. If the dogs came and sniffed too closely, she would snap her beak or, if this didn't work, she would start mewing until Vanda rescued her.

It wasn't long before she could eat a whole rat, though it had to be cut up and handed to her. Although she liked playing with lumps of rat, she was not able to pull the lumps to pieces. Presumably this is learned from the adults.

Woo was about three months old before she lost the last of her baby down. At this age she had rudimentary ear tufts of a couple of flimsy feathers, which fell out after a few weeks, and which were not replaced until she was six months old. When it became obvious that she had more or less stopped growing, a measurement of her wing was taken and compared with published data, which established her sex. Previous to this, reference to her as 'her' was based entirely on feminine intuition!

As Woo's powers of flight developed, she would fly further and further from the garden, usually ending up in a line of conifers in which she roosted during the day. But she always appeared when called by Vanda.

Some nights as she sat on the roof of the house, she would be joined by a family of three Mackinder's Eagle Owls which were probably her own family from four kilometres away. At six months with her ear tufts fully grown, Woo looked very adult. A little softer and lighter in appearance than adults in the fields, but a worthy member of her race.

At this stage she spent a lot of time 'hunting'. She would stalk leaves blowing along the ground, and like a hop, step and jump athlete she would land on the leaf with a growl and wings wide out. She also hunted bare toes sticking out of sandals in the same way, much to the chagrin of the owner of the toes.

When the rains started Woo would lie back and open her wings wide, inside upwards, and enjoy a shower. We often wondered what would become of Woo, especially as there were other owls about. Inevitable the call came. The rains had started and grey steaks of mist drifted through the sopping lichens covering the cedars, and Woo went home.

PEREZ OLINDO... from page 17

set aside as national parks should remain unimpaired for the benefit of the animals. I feel the difference is a matter of emphasis and may vary from country to country.

It must be accepted that if conservation of wildlife or any other resource in developing or developed countries is not seen to be within the context of human welfare and the well-being of the total environment, then the future for such a resource cannot be bright.

Water pollution and siltation in rivers which originate outside national parks are posing very formidable problems in many countries and the hippo and crocodile, amongst water loving animals face the imminent dangers of being expelled from their normal surroundings inside national parks.

Concern for the quality of the total environment (the human environment) must be stepped up and funds located to guarantee the quality of water, air and the soil.

This problem faces national parks mainly because of human activity outside the protected areas. It serves a useful purpose to note that any effort to create national parks into isolated islands will not succeed, in any case, not in Africa. If, through education, we succeed to turn the conservation idea into a way of life, then a secure future will emerge. If on the other hand insufficient effort is made to enlist the support of the general public, then the national parks idea must be seen as being transitional and of no serious consequence to future generations of the world.

The idea of developing national parks for the interest, advantage and enjoyment of the people must be seen to constitute a conflict with the animal and at times vegetation interests of these areas.

Mediators have tended to moderate over the conflict by advocating that man and his activities in park areas should only be a privileged element. The question really is whether this goal can be realised? Or should we be satisfied with relative qualities in the apparent process of continuing deterioration in the quality of the environment?

In Kenya, we try to maintain policies based on scientific findings and these policies are passed onto the people through a national Environment/Conservation Education Programme, to ensure that the people appreciate and thereby understand the foundation on which conservation is based and the reasons why it should be continued.

In many countries, the question of road development and staff matters have constituted some of the major problems facing park authorities:

During the earlier stages of park development, roads tended to be established on the ridge tops with the aim of taking the best advantage of high ground for viewing purposes. But we know today that this consideration is not in harmony with proper park development. Roads should as far as possible follow natural contours without having a disruptive influence on important eco-systems or habitats.

It is also necessary to regulate the speed of vehicles used by the visitors. This necessitates the building of relatively narrow roads with curves designed to lead the visitor to pre-determined locations at pre-determined speeds.

Roads also act as fire-breaks and therefore constitute a built-in safety measure. When roads cross dry river beds, a little extra effort can result in the development of a series of small catchment dams at no extra expense.

Perhaps man-management is one of the most complex involvements there can be. However, for a park to function and for a system of parks to take shape with a noticeable impact on the economy and the way of life in any given country, proper man-management is compulsory.

It is therefore considered absolutely essential that continuance in the service of the National Parks should be on merit and on a clear understanding of basic natural history principles and the respective legislation in the countries concerned. This applies to both the senior and junior members of staff in these countries.

VISITORS

We have accepted the concept that a national park is an area set aside where man can enjoy, as a privileged visitor, the plants and animals that are indigenous to that environment under conditions as little affected by his presence as possible, and the Trustees of a park hold it in trust for the benefit of future generations as well as for the present.

This brings us to the question of visitor management which should be provided for by way of legal notices made up of specific regulations of what can/cannot and what should/should not be done inside a national park.

It has become abundantly obvious in Kenya that visitors should not be allowed to drive off the roads. In the case of the Amboseli Game Reserve, this practice of driving anywhere in the sanctuary has caused much damage to the ecosystem. The same has been the case with certain areas in the Nairobi Park as mentioned above—but to a lesser degree—the main difference depending on the difference in soil types.

When visitors pay to enter an area, they expect to make the best use of such an opportunity and they do not take kindly to rules and regulations if they are not tactfully presented. However, park regulations should be compulsory under the law if they are expected to give the desired protection to given areas.

Apart from specific cases, visitors should be disturbed as little as possible. This calls for a very high degree of good public relations by all employees of the national parks. All in all, visitors should be given personal attention, the result is that a satisfied visitor becomes a very good ambassador of the parks and the country.

It is along this line that the Kenya National Parks have built up a tremendous number of friends all over the world. These friends support our conservation programmes, mainly financially. They act either individually or persuade foundations, societies and other organisations around the world to give support to a course we believe to be of vital importance to the future well being of the human race.

To ensure that visitors to Kenya shall be looked after properly, the Kenya National Parks have announced a syllabus, geared to the training of tourist guides, couriers and tour drivers. This will mean that a tourist guide, courier or tour driver who does not qualify, or who breaks any rules or regulations in a national park or game reserve; will under the law not be allowed to handle or have anything to do with the tourist industry.

Those who are qualified will prominently wear a badge which will always remain the property of the national parks, who will under the law reserve the right to issue and withdraw these badges. It is believed strongly that only after a carefully prepared course of instruction can a high quality of presentation of facts to our visitors about conservation and other programmes be achieved.

LOCATION OF TOURIST FACILITIES

The trend in Kenya over the last 10-15 years was in the direction of establishing lodges inside national parks and game reserves. In fact, these facilities were located in areas of high wildlife concentration and it must be accepted that their impact on the ecology of the areas concerned has been disruptive.

It has been found that to every one bed in a game lodge there is an average of two people in residence at the lodge compound. This includes lodge staff, their families and the actual guests. Assuming that a 100-bed lodge is built, then an average of some 200 people may be expected to be in the precincts of the lodge most of the time, naturally moving back and forth in the course of viewing wildlife and other attractions, and the staff supplying the lodge with food and other requirements.

The need for recreation, schools and hospital facilities, a shopping centre, petrol station and garage is evident. What begins as a simple camp site and then a small lodge, eventually develops into a small village and then a township inside the park!

Many countries which made these mistakes in the past are encouraged to adopt corrective measures while consultation on the future well-being of National Parks and equivalent reserves continues.

NEWS FROM THE NATIONAL PARKS

TANZANIA

Ex-Major Moses Karanja a safari driver with Pollmans Tours and Safaris in Nairobi. has been accepted as a "Friend of the Serengeti" after paying a considerable sum from his savings.

Moses came to Tanzania Parks H.Q. and explained his views on how local people value the country's natural resources and particularly the National Parks.

To him it is an honour to be able to contribute to the conservation of these national assets and he is convinced that by his example, many more people will follow suit.

Nine out of 10 'Friends' are from America and Europe and the remainder from all over Africa, with only very few from East Africa. As Moses says: "Something has got to be done about this. We have to attract more local people." The Parks authority report: "We are very grateful to him for the way he helped towards our aim of preservation of wildlife and wild places for our future generations."

* * *

The Minister President of the State of Hessen, West Germany, Mr. Adolf Oswald, was a guest of the Tanzania National Parks. He visited the Lake Manyara and Serengeti National Parks and the Ngorongoro Conservation Area.

* * *

The Lake Manyara and Ruaha National Parks Guide Books are being reprinted. Copies should be available by September.

TARANGIRE

Dr. B. Grzimek of the Frankfurt Zoological Society and his wife were among recent visitors.

* * *

A Masai boma recently erected near the N.W. boundary was twice raided by lions with a loss of two cows. Shortly afterwards a large male lion was found dead near the gate—killed by arrows.

* * *

A herd of elephant has recently displayed agression towards vehicles.

* * *

Greater and Lesser Kudu, usually rare, have been seen regularly. A comment in the visitors' "Remarks Book" states: "If you see nine Greater and nine Lesser Kudu in one day you forget the Tsetse!"

* * *

A large albino male baboon has been seen on the western bank of the Tarangire River, and an albino kongoni calf in the Lemiyon area.

MIKUMI

The rare Sable Antelope have been sighted twice—once a herd of four, then a herd of seven. Wild dogs have been noted occasionally—a pack of 20 were near the Park Warden's house one morning. Lions have been much in evidence in the HQ area, sometimes as a walking nocturnal chorus through the tented camp.

* * *

The male buffalos who spent many hours daily in the C.P.W.'s pool, growing thin and weak during the dry season, are now sleek and fat. One or two may frequently be seen wallowing in a new muddy rainpool in the high grass—completely invisible until the car is almost on top of them.

* * *

The large crocodile has returned to Hippo Pool. On one occasion the carcass of a wildebeest (half eaten) was seen in the water.

* * *

Six cows escaped from the Mikumi village butchery. The butcher sent an SOS to Park Officials for permission to enter and track them down; but only one was found (by a group of tourists) being eaten by a lion.

* * *

One evening a lioness, walking down the road past the office, was noticed by a bull elephant grazing in the area. He worked himself into a rage, pursued her towards the hostel, trumpeting wildly and making fake charges. The lioness walked fast but did not run. The pair disappeared into the distance.

ARUSHA

As usual a pair of crested cranes bred in one of the swamps, and many passerine birds nested in the Ngongongare area. The return migration of palearctic species brought in Willow Warblers, Red-backed and Red-tailed Shrikes, Bee-eaters, Swallows and Blackcaps. Waders on the shore of the lake increased—especially Avocets and Ruffs. The alkaline lakes have returned to normal and ducks are more numerous, mainly Maccoa Ducks.

* * *

Two rhinos were found fighting in a mud wallow in Ngurdoto Crater. They upset a group of nearby elephants, who retreated fast into the forest. Two rhino at Lake Elkekhotoito refused entry to a party of buffalo: they had to retreat and wait their turn.

* * *

At Momella Game Lodge two dogs were killed, either by hyena or leopard. When guests approached on foot to get a closer look an elephant appeared and chased them off.

SERENGETI

Among the "Friends of the Serengeti" who visited the Park were Mr. Royal Little with a large party, and Mr. and Mrs. James Stewart.

* * *

A 5-mile strip of the National Park was "handed over" to the Wakuria people on the N.W. of the Serengeti for grazing only. This immediately became a matter of grave concern throughout the world, and also within Africa, and fears were expressed that the famous "Serengeti shall not die" was no longer a foregone fact. However, the Wakuria have only been "given" the area involved (70 sq. miles) for grazing until another possible area has been investigated.

* * *

When Warden Lyuaruu entered his bathroom one morning he found it occupied by a 4½ft. boomslang. The unwelcome visitor was swiftly removed.

* * *

Mr. Alan Root, while filming in Ngorongoro Crater, reported immense numbers of flamingo drinking at the fresh water springs at the S.E. corner of the lake. Some jackals were waiting in the area, and when the birds were suitably massed they rushed into the flocks and seized several.

UGANDA

The National Parks Organization wishes to record its sincere appreciation of the recently retired Parks' Director, Mr. Roger Wheater's untiring efforts in the interest of the Parks.

* * *

Mr. Abondio Odur, Chief Warden of Queen Elizabeth National Park has also retired from office; Mr. Odur served the Parks for 20 years. He was the first Ugandan Chief Warden of a National Park in 1964 and the first African Chief Warden in East Africa. He has begun a very busy retirement in the vicinity of Gulu, his home area.

* * *

Senior Warden Augustine Bendebule was transferred from Murchison Falls to Queen Elizabeth Park to take over from Mr. Odur.

* * *

The Director records deep regret over the death of Col. C.D. Trimmer, a former Director of Uganda National Parks. Col. Trimmer served in the K.A.R. and afterwards joined the Parks organisation. He was first placed in charge of Murchison Falls Park where besides the routine duties, he planned and opened up game viewing tracks and set up the Chobe Sub-headquarters of that Park. He succeeded Mr. R. M. Bere C.M.G. as Director of the Parks in 1961. He retired from the Parks in 1964 and handed over to the late Francis Katete. Col. Trimmer died of a heart attack.

Another sad report is that of the sudden death of the Head Ranger of Murchison Falls National Park, Mr. Jekeri Obol. He was 36 and had served in his post for two years.

* * *

In Queen Elizabeth National Park the celebrations of the first anniversary of the Second Republic of Uganda ended on a very sad note. Five junior Park staff lost their lives in a car accident near Katunguru when the Park vehicle in which they were travelling collided with a lorry. The victims and survivors were travelling from Katunguru where they had participated in District Sports to mark the Anniversary.

* * *

A fisherman of Kazinga fishing village in Queen Elizabeth National Park was killed by a lion, the man was walking towards the lake, alone in darkness, to go fishing.

* * *

A Ranger Parade was held in the Kidepo Park attended by the British High Commissioner who officially handed over to the Ranger Force military webbing equipment generously donated by Her Majesty's Government. The National Parks Organization is very grateful for this donation.

* * *

Dr. H. Cott has returned to Murchison Falls Park to carry on his work on the Biology and breeding habits of the Nile crocodile.

* * *

Paraa Tented Camp, an extension of the Paraa Lodge, has been enlarged; this has been in answer to the demands of many visitors. The new Kateer Lodge near Pakuba is nearing completion.

Work on Katurum Lodge in Kidepo progresses very steadily and extensive work has been done on the Park tracks in realignment and upgrading.

* * *

Poaching of hippos has been widespread in Q.E. Park. The situation has been tackled energetically by the Park authority and steps are to be taken against junior Park staff suspected of co-operating with the poachers.

* * *

In *Murchison Falls Park* a shortage of patrol vehicles is held responsible for an outbreak of poaching in the southern part of the Park. The Park authority organized intensified Ranger patrols in response.

In the same area Rangers were almost overwhelmed by a gang of poachers. They had to open fire in self-defence wounding one poacher in the leg. An armed poacher was arrested. The situation is now calm.

With the appearance of fresh grass towards the end of the quarter animal trapping by wire snares increased. A number of these snares have been collected and brought to the Park Headquarters by Rangers.

* * *

Routine aerial reconnaissance was carried out in Kidepo Valley. Poachers have been encountered often and a few arrests were made.

It must be said however that since the Peace Pact between the Sudan Government and the Freedom Fighters, the security situation in the Park has generally been peaceful although the Anyanya and civilian factions seem to be maintaining their position until they receive more definite news from their leaders. Consequently the Anyanya activities in the Park harassing game and worrying Staff have not yet disappeared completely. It is hoped conditions will improve.

* * *

The Murchison Falls authority is concerned about hitch hikers who move about in the dark at Paraa. One such visitor encountered an elephant late one night and received serious injury. A hotel employee moving in similar circumstances from the Lodge to the tented camp received slight injury from another elephant.

* * *

The youngest calf of *Nelly* died last February. The cause of its death was suspected to be broken glass swallowed in the food the family collect from the hotel garbage.

A herd of some 400 elephants was once seen in the Southern part of the Park.

* * *

The distribution of buffalo was scattered throughou the Park. Chobe residents moved off the compound during the dry season. It was a sad sight when one of these old bulls was found dead stuck in mud.

* * *

Baboons became a nuisance again in Chobe. They raided the Lodge and snatched some valuable articles. When some leaders were shot, the invasion

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AROUND A

by LADY HEWETT

Ruaha National Park—the second largest in Tanzania lies about 70 miles west of Iringa, and varies in altitude from 2,400 ft. to 3,000 ft. It is plateau country dotted with rocky hills and outcrops, and dominated by the lovely Great Ruaha River which extends a hundred miles along its eastern border, frequently flanked by huge spreading Winter Thorn trees (acacia albida) *through which, in the dry season, vast herds of elephant wander.*

The other attractions are the Greater Kudu which, though numerous, are so difficult to see and photograph. They slip through the twisted grey trunks of the bush trees and then present themselves fleetingly at point blank range. With Roan Antelope we were lucky, seeing them on our first evening's ramble but never again. The bird check list is immense with more than 300 varieties recorded.

One day my host, the Warden, offered to take me to a water-hole to watch game, and to collect me in the evening. We drove out about 11 a.m. and found a herd of elephant in possession, but the banging of Land-Rover doors soon moved them on and we traversed the Mwagussi Sand River, walking a few hundred yards to a Mkinde tree (diospyros mespiliformis) *overlooking a pool and mud wallow.*

MUD-HOLE IN RUAHA PARK

In the centre of the tree was an ant hill roughly ten feet in height, with branches spreading out round it. A short piece of matting had been erected on one side as a blind. Here I installed myself, amply supplied with food and drink, draping my old cotton hide round the back in an attempt to remain invisible.

There I sat, legs dangling, with a branch to support my back and it was not a long wait before I became conscious of a presence. A large male elephant on soundless feet came gliding past—almost within arms reach. He stepped into the squelching mire, proceeded to spray himself with liquid mud and then quietly moved off.

He was the fore-runner of an endless procession, of family groups emerging from the surrounding bush to drink and wallow in the mud.

It was a most orderly scene. A family would split up—half going to the pool to drink while the remainder joined me, beneath the tree, to roll, scratch against the bank and spray each other. They then changed places and when finished, moved on to dig in the sand or pass the time of day in the shade of bigger trees up river before finally wandering off in search of food.

Only one old cow with a very small baby seemed to notice something strange about my tree. She came twice and stood beneath it in the mud, lifting her trunk to sniff into the branches as I shrank behind the biggest one, mouse-still, until she moved on. About 3 p.m., the elephant parade ceased and I was able to relax, drink and eat.





BIRDS IN

by
DAPHNE BALL
pictures:
ANTHONY DEANE

EAST AFRICA as a whole is an ornithologist's paradise. But, for those of us lucky enough to live here, there is often a wealth of birdlife in our own back-gardens.

My home is in Karen, 12 miles from the city centre of Nairobi. The house is situated close to a forest reserve, with the undulating peaks of Ngong Hills silhouetted against the sky in the near distance.

Its five acres are divided into two parts. Half is left wild and half is cultivated with lawns, flower beds and flowering trees and shrubs.

Brilliant Bougainvillea and Hibiscus bloom for most of the year and feathery Jacaranda trees cast their shade over the roadside hedge.

When these are in flower there is a constant chittering from Amethyst, Bronzy, Scarlet-chested, Variable and Collared Sunbirds, all busily intent on extracting the last drop of nectar from the flower clusters. Three large fig trees dominate this part of the garden and are also centres of continuous bird activity.

The lower section of the garden is deliberately left as a wilderness, in which Aloes, Grewia, Leonotis, White Hibiscus, Sisal and a single Erythrina tree all flower freely, providing food and cover for numerous birds.

The uncut grass in this area is a shelter for various small mammals. Bush squirrels, small striped rats, a duiker, a reedbuck, a porcupine which digs nocturnally in the sweet potato patch, and an African civet which has twice produced babies in the root formation of one of the trees, all live happily without disturbance.

At night one can hear the weird shriek of the tree hyrax in the forest and occasionally the mournful cry of the hyena. Sometimes jackals are silhouetted in the headlights of the car, before loping off into the shadows. Even a serval cat has been seen recently only a short distance from the house.

I fully appreciated my garden and its ever-increasing birdlife when I was recovering from an illness. After a spell in hospital I was advised to rest for two weeks. The weather was warm and sunny at the time, and I chose to recuperate in the garden. Every day I sat out under a shady croton tree, near to the bird bath.

From this vantage point I was able to study the birds as they came in to drink. They very soon became used to my presence and completely ignored me. Even at the hottest time of the day there was always something to see moving in the tree above my head.

The Black-headed Oriole, its lovely liquid notes followed by a rather harsh churring sound, so that at first it sounds like two different birds, is a constant habitué, and is one of the early morning risers. I usually hear it calling from the Chorisia tree as the day breaks.

White-breasted Tits, Black-backed Puff-back Shrikes, Kikuyu White-eyes, Black-breasted Apalis, Red-eyed Doves, Yellow-vented Bulbuls,



BRONZY SUNBIRD



BLACK-HEADED ORIOLE



SCARLET-CHESTED SUNBIRD

PIN-TAILED WHYDAH

A NAIROBI GARDEN

Tropical Boubous, White-eyed Slaty and Dusky Flycatchers are regular inhabitants of the trees around the house. They can be seen hopping from twig to twig in search of some juicy caterpillar or insect larvae.

Seasonal visitors include the Didric, Emerald, Klaas, Red-chested and Black Cuckoos, European Willow Warblers, Black-cap Warblers and Chin-spot Flycatchers.

The Cuckoos are easily detected by their respective calls, and the Red-chested Cuckoo is an excellent weather prophet. Invariably the clouds gather after he has returned and told us *'It will rain, it will rain'*.

SHRUBS

The main bird bath and seed trays are not far from the house, underneath a fig tree. This is flanked at the back and sides by flowering shrubs which provide a thick cover, and serve as waiting rooms for those birds who wish to drink or bathe, but prefer to take stock of their surroundings before venturing out into the open.

Around the bird bath I have planted Aloes, Kalanchoes and various perennials, whilst a potato creeper clings to the tree trunk. These provide convenient perches for birds who come to eat or drink and find all trays occupied—a not uncommon occurrence! One seed dish is wired to the tree at a height of about five feet, another is at ground level.

The most constant of the smaller feeders are Streaky Seed-eaters, Red-billed Fire-finches, Red-cheeked Cordon Bleus, Bronze Mannikins, and Kenya Rufous Sparrows. Other regulars include Layard's Black-headed Weaver, Holub's Golden Weaver, Reichenow's Weaver, Red-eyed Doves, Pin-tailed Whydahs and occasionally the little Indigo Bird. They are always well represented at the feeding trays and peck away greedily until the dish is empty, then search for tit-bits on the ground.

The Common Robin Chat, Ruppell's Robin Chat and Olive Thrush are permanent residents, but they only come in to drink or bathe, usually in the morning or evening.

The Black-backed Puff-back shrike also visits the bird bath, but he chooses the lower one which is about 60 yards from the house. He seems somewhat shy and aloof and obviously prefers to drink alone. His rather quarrelsome voice can be heard complaining from the Cape Chestnut, the tree he favours most, and his red eye peers out from the foliage to see what is moving below him.

The most aggressive of all the regulars at the seed tray which is surprising considering his size, is the male Pin-tailed Whydah. He sits in the bush near-by, then suddenly dive-bombs the other birds, scattering them to right and left. When he has routed them all he takes sole possession of the seed container, his long tails waving like victory banners in the breeze as he perches conceitedly on the edge. This is one bird I do not welcome in my garden, as I feel he drives away other more interesting species. He has a number of wives who are sometimes allowed to join him when eating.



FISCAL SHRIKE

TURACOS

Hartlaub's Turacos are also fairly regular visitors, although they are more frequent when the mulberries are fruiting. They sit silently in the fig tree, and only betray their presence when flitting from branch to branch and a flash of red is glimpsed against the green.

In the mornings their distinctive call which has been compared with a smoker's cough, or frogs croaking is answered by others in the forest, but for the rest of the day they are usually silent.

Other colourful spasmodic visitors include the Cinnamon-breasted Bee-eaters, Violet-backed Starlings, Red-naped Widow Birds and the Blue-eared Glossy Starling, which is fond of sitting on top of the tallest sisal flower, with his beautiful irridescent feathers aglint in the morning sunlight.

A croton tree grows at the side of the house and a number of birds have made this their home. Recently a Golden-rumped Tinker-bird was busily engaged in excavating a hole in a small branch low down on the tree. This branch, although dead, has orchids growing on it and has been wired on to prevent it from falling off.

The bird may have chosen a dead branch, thinking it would be easier to work on. The first choice proved too hard, so she—or he—moved a little nearer the trunk and this spot was satisfactory.

The bird worked diligently for about a week until the nest hole was to its liking. Although this branch is less than ten feet from the verandah, the bird took no notice of people sitting there, nor of three large Ridgeback dogs rushing up and down the steps to chase the squirrels and Red-eyed Doves.

Eventually two babies appeared, and were taught to fly. On one occasion, one lost its balance and fell on top of the car with a thump, and stunned itself. I held it in my hands for a few minutes, after which it recovered sufficiently to fly back to the nesting hole, where they still slept.

TINKER

The Tinker Birds are often seen hopping about in the trees and their 'tink, tink, tink,' resounds monotonously throughout the garden. I have since seen a Tinker Bird going in and out of the hole and it is possible that this may become a permanent nesting place.

Another inhabitant of this tree is a Red-eyed Dove. She too has taken up permanent residence and built her frail platform of twigs on one of the higher branches. She also produced two babies and we watched them learning to fly. Once again a Dove is sitting on the nest and this could be the second clutch to be laid by the same bird.

Yet another bird to make her home in the tree is the Bronzy Sunbird. I had to come to the rescue of her baby when it collided with the female whilst learning to fly. Momentarily stunned, it fell to the ground, only to be picked up and carried off by my young Ridgeback.

I retrieved it, held it gently until it recovered from its fear, then placed it on a low branch. The little bird cheeped frantically until the adult bird came along to feed it, then encouraged it to fly off to its evening perch, and safety.

The Bronzy is the most common sunbird in the garden and a number of them have nested successfully at various times.

A pair of Kenya Rufous Sparrows built their large and shaggy nest in the top of a tall macrocarpus tree. But after a stormy night I found the nest on the ground. Undeterred, they built another one, still in the same place, and again it fell out when the tree was buffetted about by wind and rain. Once more they are building, but lower down in a more stable position. We hope that this will be a case of third time lucky.

It is strange how so many birds nest in the most precarious places. A Green Pigeon was sitting happily on her nest, built on the flimsiest twigs right at the end of a branch. It appeared to be quite unperturbed at the way it was tossed around in the wind. But then one morning I went out to find a smashed egg on the ground beneath, and the bird gone from the nest.

PIGEONS

Some weeks later a pair of Green Pigeons made their home in the fork of a stronger branch and successfully reared a young bird.

One afternoon, when showing a friend around the garden, we watched a very touching episode. One pigeon was sitting on the nest and the mate flew on to the adjoining branch, holding a little spray of leaves in its bill. This was, presented to the sitting bird while its mate sat on the branch beside it. I am told that the male incubates the eggs and that the female presented the little token of love, but perhaps a reader could confirm this.

Fiscal shrikes are common in all parts of my garden, and periodically produce young, although I have not found the nests. Recently I have been watching two juveniles in the lower part of the garden and was interested in their change to adult garb. Personally I prefer the lovely soft browny scalloped effect of the juvenile plumage to the dead black and white of the adult.

Streaky Seed-eaters have nested twice in the same brunfelsia bush and we were able to have a close-up view of the eggs and babies. The Robin Chat built in the Bignonia and again we could study the eggs without difficulty, although they hatched out when we were away from home.

The Olive Thrush made her nest in a Bougainvillea bush and a pair of Auger Buzzards constructed a lofty home on top of a clump of viscum—or mistletoe as most people know it—in the highest branch of a tall tree in the lower part of the garden.

FLY-CATCHERS

I also have a pair of resident Paradise Fly-catchers, but I have yet to find their nesting place. Blue-eared Glossy Starlings chose a hole in a Cape Chestnut tree just down the road, for their home. Each species has its own territory and does not welcome intruders.

A number of predators fly into or over the garden. One morning I watched a Great Sparrow Hawk swoop down on to the lawn and carry off one of the numerous Red-eyed Doves. Then it sat calmly on the lower branch of the fig tree, tearing the dove to pieces and devouring it, regardless of the fact that I was watching from below.

Another bird which has found the Red-eyed Dove a tasty morsel is the African Goshawk, whilst the Long-crested Hawk Eagle perches on some vantage point looking for rodents. The cumbersome Marabou Storks fly over to the near-by abattoir, as do Hooded and White-backed Vultures.

African Black Kites twist and turn in the blue sky, making their distinctive mewing calls and Black-shouldered Kites and Lilac-breasted Rollers sit on the telephone wires by the roadside.

Continued overleaf

NAIROBI BIRDS

from page 33

Other birds flying over include Hadada Ibises, and also Crowned Cranes and Black-necked Herons which I have seen perched precariously on the top-most branch of the fig tree, surveying the countryside before taking off again.

A hammerkop took up residence in a tree in the next garden, but has moved off since a near-by pond was drained. Sacred Ibis are to be seen on the open grassland near the house and sometimes Silvery-cheeked Hornbills stop and rest in my *Chorisia speciosa* tree.

A family of Yellow-necked Spurfowls hides in the long grass in the *bundu* part and I often see a White-browed Coucal flop into a low bush.

African Pied Wagtails tease my dogs by strutting around on the grass immediately in front of them. But as soon as the dogs give chase, the Wagtails fly off a few yards and then repeat the enticement process.

We are often amused to see one of them peering at its reflection in the hub cap of the car. It flutters up and pecks frienziedly at what it believes to be a rival in the field. Then it tires of this unrewarding sport and flies away.

Eastern yellow and Blue-headed Wagtails are common but again only come at certain times of the year.

RESIDENTS

One permanent resident I have not mentioned is the African Grey Parrot. This, of course, is my pet bird, rescued as a two-month-old fledging in Nigeria in 1960. Because of Polly, the Streaky (or Cheeky, as we call them) Seed-eaters are the best fed in Kenya. They fly in and eat her sunflower seeds and even come into the house looking for more.

Even the Grosbeak Weaver ventures down looking for the fallen sunflower seeds, and occasionally I see a Golden - breasted Bunting searching for these delicacies.

My parrot mimics all the birds. I have often rushed to get my camera or binoculars, thinking that a Black-headed Oriole or a Tropical Boubou is in the bush near the house, only to realise that it is the parrot.

A short time ago we had another young parrot staying with us, and it is interesting to note that she learned the bird calls from my parrot, not from the actual bird, and now reproduces them faithfully, in her own home.

The rarest bird seen in my garden is Cassin's Honey Guide, *Prodotiscus insignis* which has been observed feeding on insects in the hibiscus bushes.

● Perhaps other readers would like to write about the uncommon species they have encountered in their gardens. I am continuously adding new birds to my list and even while writing this article I saw for the first time the Grey-headed Silverbill drinking at the water.

LETTERS

from page 12

with the Wild Life Society, thus multiplying membership.

I knew about poaching and its problems on my first visit to Africa but only on my second visit did I learn about the Society.

The mobilization of conservationists I consider still as a most urgent problem. I think they may, in fact, be very numerous, perhaps even a (still) silent majority.

The most active people are, however, spread over a large number of different organizations serving a variety of special causes. Probably most members of associations furthering outings, riding, yachting, mountain climbing, diving, any kind of environment protection and health protection and even sport fishermen and hunters are conservation-minded.

The co-ordination of this variety of components to a roof organisation that is able to gain comparable political power as large trade unions appears to me essential to overcome the always increasing threat of environment and habitat spoliation and destruction.

The risk of the latter grows together with man's technical potential and therefore an always faster acting organization will be necessary to prevent disasters.

Conservation in this broadest sense has already become a political issue, but conservationists have not yet become a strong enough political power.

The risk is, of course, that if this happens, ambitious people instead of dedicated people will tend to join the movements and hitherto every cause that came to great influence has also been misused.

These are future problems. The idea of conservation and its comparison with the senseless powers which destroy our environment for an immediate dubious advantage needs perhaps philosophers and ideologists like those of other movements of our time. to make it really popular. It certainly needs educators.

I disagree violently with a well-known biologist who considers conservation as the senile phase of our life. I think I started my feeling for conservation at about the age of five, mainly due to the influence of my parents, and for many others at the same age, due to different, influences the glorification of technology takes root.

The scientific exploration of our needs for a healthy environment has hardly even started. The deep psychologic effects that for example animal life in our surroundings has on our psychic well-being is frequently noticed, but not at all understood.

I may be most worried or in the worst of all moods, but with a visit to a zoo or a ride on a horse into a forest and all is forgotten.

Is there any substitute for this? How is mental health, especially that of the youth, connected with environment and animal life? I think we still know very little about this and the spoliation of our natural environment may prove even more dangerous than we suspect.

What everybody who lives in a democracy can do even before collaborating actively with conservation organizations is to control his candidate for the elections, especially for the local ones most carefully on this point. (It appears to me a strange fact that dictatorial governments in general control environment spoliation much more strictly, except for finally starting wars which are of course the worst of all polluters.)

Allow me to close this letter by taking issue with some suggestions made in *Africana* not too long ago.

I remember a letter suggesting a campaign among the population of Eastern Asia informing them about the inefficiency of the rhino horn's role as an aphrodisiac. Certainly this should be done. I am only afraid that until this shows results decades may pass.

My cynical (but probably quicker effective) suggestion is: Produce with the help of modern science a convincing and cheap imitation of the stuff and with agreement of the respective governments dump it on the market at such rates that the illegal competition goes out of business. The revenue, which may be spectacular, may be used for conservation or education.

In connection with game farming I would like to mention the *dyrehave* in Copenhagen, a fenced arc of perhaps 30 square miles where many thousand species of different kind of deer live in freedom yet in close contact with the numerous visitors.

This has worked well for a long time. I was only sorry to find that the carefree existence of these animals during most of the year seems not only to diminish their shyness but also a lot of their grace; I did not see them frequently move any faster than a human being.

Scientists arrived not long ago at the conclusion that the consumption of the meat of wild animals is much less cholesterol-producing than that of domesticated species. Such meat which by modern refrigeration methods can be conserved may thus easily become a desired export article.

If one succeeds in multiplying the number of some species adequately by such protection, one may even admit legal hunting by the local population after instruction on humane hunting methods.

I think that Dr. Aerni is right in assuming that this would reduce poaching in general. An (unreproduced) point that I made in the letter on bringing tourists to the remote areas to diminish poaching was that the local population there may find a better means of earning money through contact with the tourists than by poaching.

This, of course, is rather contrary to Dr. Aerni's point of view. I realize, however, that many of my ideas lack the support of adequate practical experience.

Leopold Halpern,
Faculte des Sciences,
Universite Libre de
Bruxelles, Brussels,
Belgium.

NEWS FROM THE NATIONAL PARKS

from page 30

ceased and the calm at the Lodge was restored.

Many crocodile nests have been identified and are being protected from the marauding baboons and other predators.

* * *

A white rhino carrying a wire snare round his front leg was successfully darted and the snare removed.

* * *

In Queen Elizabeth Park. . .

A young elephant made a nuisance of himself in the camp at Mweya by forcing doors to get at food. He stepped on a dustbin of one household and flattened it. When the dustbin was restored to its shape he came round and flattened it again.

* * *

The lame lion which used to live on Mweya peninsula has not been seen for two months. He may have died; it is suspected that the decomposed remains of a lion found near Lake Edward were his! The tree-climbing lions were often seen in their perches at Ishasha.

* * *

A hippo fell into a water cistern at TUFMAC and was unable to get out. It was destroyed. Before a protective fence was built around the cistern a buffalo also fell into it, and also had to be destroyed.

* * *

At Kidepo Valley Park . . .

Roan antelope were sighted often near Katurum, Naguco-kopire, the base of Napore Hills and near Lomej.

* * *

A female cheetah with five cubs has been sighted often along Kakine circuit.

* * *

Two topi were sighted along the international boundary between Lokundul and Kananarok at the peak of the dry season. Similar sightings have been made in the same area and during dry seasons.

* * *

The Republic of Uganda Medal was awarded to Sergeants Lokwang Lodapango:e and Filiteo Oboo of Kidepo for outstanding services to the Park.

* * *

Ranger John Kasigazi (30) whilst on Q.E. Park patrol was overpowered by poachers and killed. In the foray, he had shot dead one poacher and wounded another.

* * *

On the night of June 2nd Bitete, a fisherman of Katunguru, was eaten by lions on the outskirts of that village. And two nights later another fisherman, Kalonda, was eaten near the same village. A pride of these man-eaters was identified and three lionesses were shot from among them.

* * *

The degazetting of the Aswa-Lolim Game Reserve to the North of the Park attracted many licenced and unlicenced hunters who shot many of the big tuskers in that area. This led to the trekking of very many elephants and other game from that area southwards to the Park.

* * *

Dr. K.S. Eltingham of the Uganda Institute of Ecology successfully darted an adult black rhino so as to remove a wire snare round its leg.

* * *

An aerial count carried out in Q.E. during the month of May showed the Park to have 2,757 elephants and 13,568 buffalo. There were 678 elephant in the adjacent Chambura Game Reserve and only 264 baffalo.

* * *

An elephant with a tusk curving back into the lower jaw was immobilised and the tusk cut short to prevent it locking the two jaws. The operation will have to be performed again later unless this tendency stops.

* * *

Henry the Hippo guards the jetty at Paraa day and night. To date Henry has never lost temper even when he had to ward off a few women-folk coming too close after dark. He meant to remind them of the bye-laws of their Park.

* * *

A filming group working in Murchison got some macabre footage of a male hippo assaulting and eventually killing a juvenile hippo not far from its mother who had failed to defend her offspring.

KENYA

TSAVO (EAST)

The long awaited rains once again proved disappointing. with falls well below average and very patchy. Certain areas received virtually no rain at all.

The isolated storms that occurred, however, have been adequate to bring on a green flush of vegetation in many areas which has provided much needed browse and grazing for the drought-stricken elephant.

However, unless there is more substantial rain, there will probably be further mortality amongst the elephant and rhino before the end of the next dry season.

* * *

●The collection of jaws for ageing purposes from elephant that died during the 1970/71 drought continued. The Kenya Police very kindly placed two helicopters at the Park's disposal for a period of several days to speed up this work. We are most grateful to the Commissioner of Police for the valuable assistance he has rendered this Park.

* * *

Scientists of the Tsavo Research Project are involved in a close study of the effects of the past drought on the elephant population, the main points of interest being :-

(a) The total numbers that died.
(b) The age and sex distribution of the dead.
(c) The geographical distribution of the mortality.

Age and sex data is being derived from the lower jaws and tusks and from notes made in the field at the time the elephants were dying. Although still incomplete,- the

work shows a clear pattern of high calf and adult female mortality, which, together with the high numbers involved has far-reaching implications for the future populations growth of the elephants in Tsavo East.

* * *

The Park Field Force completed a ten day course of military training with the 5th Kenya Rifles, which has resulted in a general improvement in bearing and discipline. We are greatly indebted to the Officer Commanding, Col. Godana for arranging this Course.

* * *

● Our radio network has been greatly improved by the installation of a remote controlled VHF Station provided by the East African Wild Life Society on the top of a 600 ft. hill behind our Headquarters at Voi. Positive communication is now possible at all times and to all out-stations. We are also indebted to the Frankfurt Zoological Society and Prof. B. Grzimek for donating four SSB radio sets for the use of our Field Force, which have proved invaluable in anti-poaching work.

* * *

● An extremely generous donation in the form of earth moving equipment was made by Mr. George Barrie of Faberge Inc. The machines have been used to deepen several existing waterholes in areas where there has been a rapid build-up of plains animals. It has been found that a lot of our plains game have been leaving the Park in the dry season to search for water on the neighbouring ranches, where they are subject to heavy poaching.

TSAVO (WEST)

Dr. Leuthold of the Tsavo Research Project and the Warden darted and fixed a radio on a fifth elephant. The operation went smoothly although they had to follow the darted beast on foot into the lava, carrying all the necessary equipment with them for use when the animal was tranquilised.

This bull was tracked by Tim Morgan for some time using the aircraft loaned by the East African Wild Life Society. It was observed to have moved very quickly to the Rombe area—4-5 miles from where it was darted. After a few more days Tim lost it—almost certainly through radio failure.

* * *

Bachelor herds of buffalo and solitary bulls have been observed alongside the main tarmac road between Mtito Andei and Tsavo Gate at nights—lured by the short tender grass by the road-side or in fear of the predators. As a result of this habit, five buffalo have been killed by fast-moving vehicles.

* * *

Two baby buffalo were found abandoned by their mothers in the Park. The first arrived by itself, on the eve of 24th April, at Ngulia Lodge. The staff at the lodge received the self-invited visitor, gave it milk and kept it in a warm place for the night. The infant actually had a deep wound on its rear left thigh presumably inflicted by a carnivore. Despite the warden's treatment with penicillin—their being no veterinary help available—the calf worsened and died.

The second buffalo was found abandoned near Chyulu waterhole after a heavy storm. The baby was in good shape but, in necessary translocation to the Nairobi Orphanage, the calf lost condition and later died. The Warden feels that perhaps by erecting a small Orphanage in Tsavo West, it would be possible to nurse animals up to a certain age prior to transferring them to the Nairobi Orphanage.

* * *

Two rhinos were shot at by Poachers north of Kamboyo H.Q. The animals ran in agony into the Park, one dying some yards short of Kamboyo staff quarters—its horns were recovered. The other did not move very far into the Park and the poachers escaped with its horn.

* * *

A sick rhino was spotted near Mganga waterhole. The animal could neither stand nor move. On close examination, the fore left leg was swollen and was rotting, possibly from a snake bite. It was hungry and thirsty—really in great pain and the warden was forced to destroy it.

* * *

Patrick Hamilton caught a male leopard near Ndawe waterhole. The cat was then fitted with a radio and was tracked for a few days, the beeps being picked up in the Ndawe hill area. Then contact was lost—on about April 12.

On June 23, he had another leopard in his trap in the same spot as before. Surprisingly, it was the same leopard. Its radio and collar were still on, but the radio was not transmitting at all.

In comparison with previous notes, the animal was found to have lost weight; it had several wounds around its neck which were attributed to perhaps a fight with other males over a female in the area.

* * *

A group of German tourists were lucky to have watched, from their Kombi buses, a leopard hunt and catch an impala near Poachers' Lookout. The cat then carried its kill up a *Delonix elata* tree and began feasting in the presence of the tourists. This same leopard has been seen occasionally basking on a murram heap below the Lookout.

* * *

A similar drama again happened at Poachers Lookout, but right in the lava. A group of tourists watched a pride of five lions follow an about-to-give-birth giraffe. Immediately the giraffe delivered, the hungry but determined lions snatched the baby away from the mother and devoured it. The tourists watched helplessly from the Lookout using the high-powered telescope installed there.

* * *

Poaching is still a serious problem along the park boundaries. Many animals have been found dead from poisoned arrows and wire snares. Only a few out of the many carcasses recovered by the field force rangers had their trophies intact.

Raids have been carried out twice a week between Mtito Andei and Tsavo Stations. Not many people were arrested, but the raids have changed the poachers' system of movements. Now they are known to alight from buses at night and then wait in caves and hide-outs, many of which are now known to our Rangers. The warden is planning night ambushes around these strategic points.

* * *

● A new four seater air-craft has been donated by the Frankfurt Zoological Society, in conjunction with the New York Zoological Society, which gave the Park a Super Cub in 1966. The new plane cost £7,800 of which £3,800 was a donation from Prof. Grzimek. The Parks express sincere gratitude for donations of all kinds which help various Parks' projects.

MERU

The cow white rhino, *Matanza*, was badly gored by the bull *Gofan;* however, she is recovering well. Her calf *Matata* is growing fast, and is now sixteen months old.

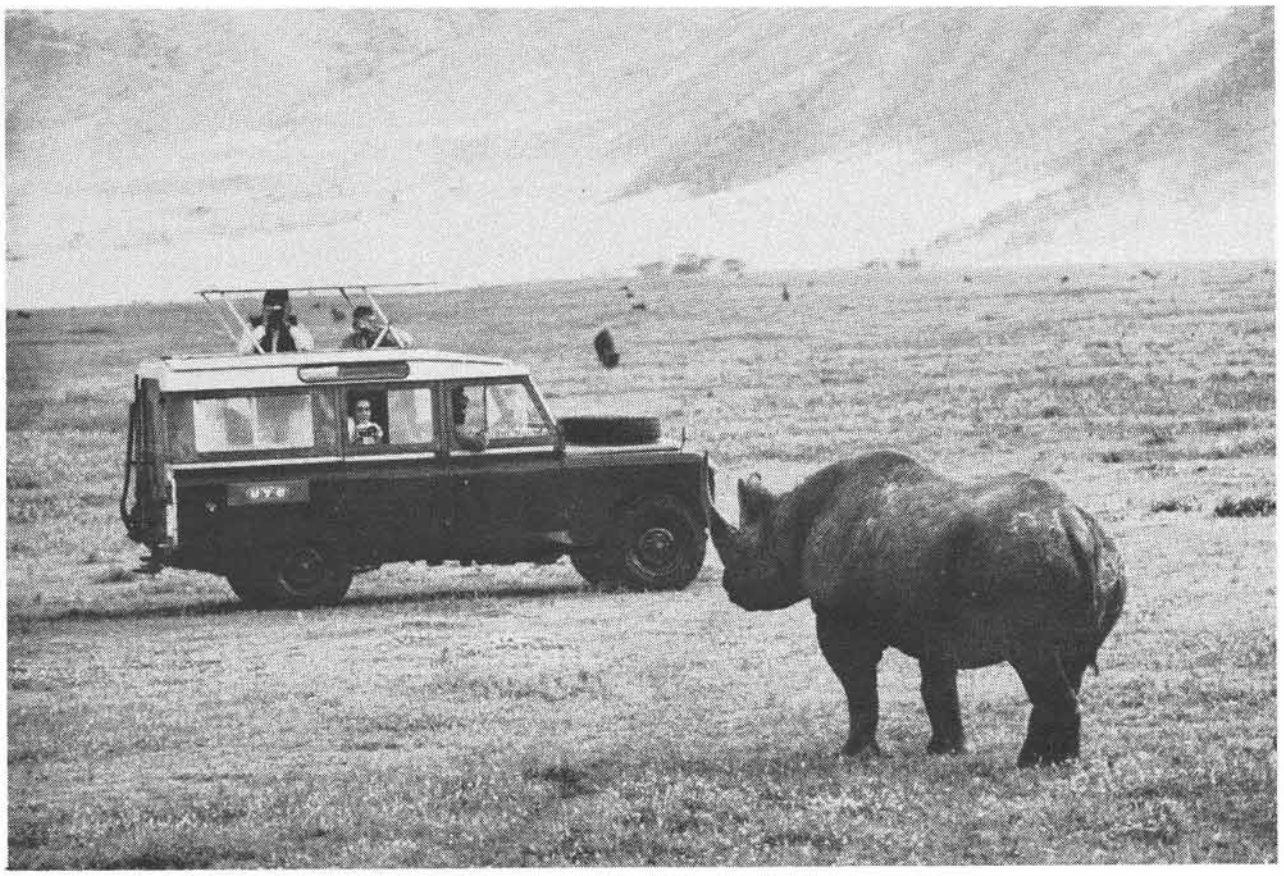
* * *

The construction of the 100 bed Lodge on the Mulika Swamp is advancing well, the thatched roofs being almost complete; it is hoped that the Lodge will be opened early in 1973.

* * *

The Self-help Lodge at Leopard Rock was opened by the Minister for Wildlife and Tourism, the Hon. J. M. Shako, MP and is proving very popular. Bookings are through Bunson's Travel Agency, Nairobi.

The Lodge, owned and operated by the Meru County Council, consists of six double



Picture: Vic Tomasyan

BOOK REVIEW: NGORONGORO

"Ngorongoro — The Eighth Wonder" by Henry Fosbrooke, published by Andre Deutsch, at £3.95. (in U.K.)

"Survival" is the title of a TV wildlife series presented by Anglia Television in Britain, and exported to many overseas countries (including, occasionally, Kenya). Although the pictures are generally first-class, all too often the accompanying words are facetious and juvenile, aimed at (to use the immortal words of film-trade journals) "the cap-and-muffler trade", one must assume.

The Survival Books, of which this is one, are off-shoots of the TV show, edited by Colin Willock who is frequently responsible for the TV commentaries: one therefore approaches "Ngorongoro" with some foreboding. But fear not, things are rather in reverse, in that the pictures are not too good (the colour is frequently wishy-washy) but the words are just fine.

Henry Fosbrooke, the author, has known Ngorongoro Crater for 38 years and was its first conservator, so who better to take us on a Grand Tour of this magnificent natural wonder? He does us proud, drawing upon his unique experience to give a lively and authoritative survey of its geology and vegetation, its inhabitants—animals, birds and humans—peppering his narrative with perceptive and entertaining personal anecdotes.

He takes us to neighbouring Olduvai Gorge, happy hunting-ground of Dr. and Mrs. L.S.B. Leakey, to meet the very earliest men who knew the Crater, before coming right up to date to show how modern man is coping with present-day problems—and they are many—in and around this area.

The final chapter bluntly asks and fearlessly debates the question: "Can Ngorongoro Survive?"; a timely question one may feel, and it is with considerable relief that we find our expert author giving a guarded "Yes", concluding his excellent book with the words, ". . . if present trends in policy and administration continue, it will indeed survive for posterity". A pity that there has to be that "If" . . . Let it serve to remind us that, this fickle world, even for wonderful, wonderful Ngorongoro—"the eighth wonder" as the book's subtitle calls it—conservationists dare not relax.—**D.T.**

NEWS FROM THE NATIONAL PARKS



The elephant pictured above was brought to the Orphanage by the Game Department having been found abandoned near Namanga: she was only 32 inches in height and proved to be too young to nurse. She survived just 27 days. The buffalo was brought to the Orphanage aged 2½ weeks and, now aged four months, is very healthy—Picture by Samuel Ng'ethe, the Orphanage Warden.

bandas, and is fully equipped—visitors have only to bring their food. It is hoped a swimming pool will be built soon to add to the amenities.

* * *

Poaching activities in the Park generally have been quiet, but in areas bordering the Park there have been signs of fairly active poaching gangs, especially in the proposed Bisanadi Extension and the South bank of the Tana River.

* * *

Many new roads have been constructed in the Western area of the Park, opening up large tracts of country which, to date, have been closed to visitors. These provide some pleasant new circuits around the swamp areas.

MARSABIT RESERVE

Poaching activities have kept the small Field Force busy. Recently a gang of poachers were found at Badasa by the Police, and on searching their hideout a cheetah skin and two giraffe tails were recovered. Unfortunately the gang escaped.

Leopard traps have been found in the Reserve which appear to be locally made. One man was recently prosecuted.

* * *

As yet no decision has been reached on the future status of this area.

MOUNT ELGON

Anti-poaching patrols have been kept very busy in the last quarter resulting in the arrest of several poachers.

Warden Mburugu took part in these patrols and in June testified against two poachers charged with killing game and being in possession of trophies, wire snares, bows and arrows.

In Court, Mr. Mburugu spoke generally of the "appalling destruction" caused by poachers who have contributed to the elimination of certain species in Mount Elgon Park, including the black rhinoceros.

The two accused were each sentenced to three years imprisonment, the most severe sentence imposed thus far on poachers caught in this Park.

A total of 48 wire snares were removed from the bush and eight hideouts were discovered and destroyed. Five dogs, trained and used by poachers, had to be destroyed and 12 skins of bushbuck, duiker, rock hyrax and colobus monkey were collected.

* * *

Elephant are frequently found licking salts from the walls of the well-known Mount Elgon Caves. Unfortunately one elephant accidently fell into a crevice in Kitum Cave and, unable to extract itself, eventually died.

* * *

The construction of staff quarters continues at a steady pace and recently a "rhino boma" was completed in order that rhinoceros may be reintroduced into the Park.

LAKE NAKURU:

Two new Assistant Wardens were recently assigned to Lake Nakuru; they are Nahashon Sindiyo and Arthur Mahasi, both diploma holders from the College of African Wildlife Management, Mweka, Tanzania.

* * *

An effort has been made to limit cars to a single track near the west shore area of the Lake; formerly cars were driven everywhere and, besides getting stuck, were destroying the vegetation at an alarming rate. This track is to be made one-way with several points along it where people may park and walk short distances along the shore.

* * *

Three albino Kirk's Dik-dik have been seen recently and one of them is a pregnant female. Anyone interested in their whereabouts should check with the Warden or Education Officers.

* * *

Several leopard have been seen within the dense forest along the southwest shore.

* * *

Several families of warthog have moved in and are commonly seen at the south end of the Lake. They were formerly quite rare within the Park.

* * *

The large numbers of juvenile flamingos on the Lake indicate that there was a successful hatch on Lake Natron in Tanzania, and elsewhere, this year.

NAIROBI

Over the past six months the cheetah population has declined through mysterious death and accident. In early January a letter, posted in Nairobi but addressed from London, reported seeing a dead cheetah with four cubs nearby. The letter was received by Parks HQ 18 hours later.

A search party immediately went to the area indicated and found the four cubs but no sign of the dead mother. The cubs were seven months old and being unable to fend for themselves were removed to the Orphanage. It is hoped to release them into the Park as soon as they are old enough.

It is not clear why the visitor reporting the incident did not give immediate information to ranger patrols in the Park or at the gate of exit.

* * *

Patience, the famous mother cheetah of Nairobi Park, was found with a damaged right front paw. The X-ray showed that all fingers were broken, however, she has responded well to treatment and will be rehabilitated into the Park.

At the time of her accident, Patience had four cubs aged 16 months; when their mother was removed to the Orphanage, they left the Park. However, one of the females has been seen mating in the Park.

At the time of writing there are two male and one female cheetah known to be in the Park. A mother together with five cubs aged about 5 months left the Park three weeks ago.

* * *

At the beginning of the year there were 43 lions in the Park consisting mainly of young ones. There are currently two prides seen regularly, made up of two adults and six young respectively. Two adult males make frequent visits into the Park. No young were born in the last quarter.

* * *

A male and female rhino were released into the Park but unfortunately the female died a few days later; the cause of death is unknown.

* * *

Leopard are being seen more often than ever before, especially in the early mornings and late evenings along the forest edge and, particularly, in the Kisembe and Elephant Skull areas. A lone male lives at *Kampi ya Fisi* and another at Sosian Valley; an adult female has been seen several times near Hippo Pool.

* * *

Several python are known to live below the Karen Primary School Dam; one of approximately 15 ft. in length was seen swallowing a young Thompson's Gazelle. On August 13 a python was seen at No.12 together with a pride of lion beneath a tree. The lions were fully aware of the python's presence but made no attempt to move from the shade instead they remained very much "on edge" because as the tail of one lion touched another, it would leap in the air and the rest of the pride would rise, growl and then settle themselves back again.

* * *

There have been few poaching incidents along the Park boundary this quarter. A male waterbuck and female bushbuck were found dead in wire snares. Three men were arrested for fishing and each was sentenced to four months imprisonment. Reports have been received of a mobile poaching gang operating in the Kitengela area; the Acting Warden saw two zebra with bullet wounds in their stomachs just South of the River Athi.

ORPHANAGE

A female leopard was found one morning in "Chui's" enclosure. In order that she should not damage herself, she was tranquilised, tagged for future identification and removed.

The following morning an irate male leopard was found in "Chui's" pen, almost certainly looking for the female. He climbed the central tree and leapt across into the adjacent pen where there were two resident male leopards. A fight ensued and eventually the Warden, Mr. Samuel N'gethe, managed to tranquilise the intruder, tag it and released it, together with the female of the previous day, in the Olmanyi Dam area of Nairobi Park.

Ten days later the female was back and found in "Chui's" pen; once again she was tranquilised and released at Olmanyi. She has since been sighted several times near 30A and the male has been seen near Mr. Olindo's house, the National Park's Director.

This male is believed to have been responsible for several leopard attacks within the Orphanage resulting in the death of a female cheetah on May 10. On May 11 two male carracal were found dead as well as a male serval cat.

The Warden spent several nights waiting for the leopard to return, but it stayed away until June 21 when it entered the Orphanage, killed a bushbuck and managed to escape together with the remains of its victim into the nearby forest.

In the same week a female leopard was attacked in the Orphanage, but not fatally; she is now recovering in the Orphanage Hospital.

* * *

The cheetah brought in from Wajir with an injured spine and ricketts has made a complete recovery.

* * *

Sebastian, the chimpanzee, has recently been introduced to a female, Mary aged 6½ years. He rejected Susie in an earlier match-making attempt in 1969, so she was put together with Max where, although they have been together for three years, there have been no signs of young.

Mary's introduction began at 8.00 a.m. when she was tranquilised and moved to a pen adjacent to Sebastian, who showed great interest in all that was going on. At 2.00 p.m. having fully recovered from the tranquilisation, Mary was allowed into Sebastian's cage and they responded to each other immediately.

CONSERVATION EDUCATION CENTRE

From July 19 to August 7 the Mobile Education Unit the Unit operated along the coastal area and included several hotels in its schedule. A total of 3,547 students and members of public saw a series of wildlife film.

MOUNT KENYA

Rainfall on the Mountain has been persistent though not unusually heavy; climbing conditions have not been as good as might be expected for the time of year and the peak routes were made difficult due to ice.

* * *

The Mountain Rescue Team has continued its training course as bad conditions are the norm for rescue work. Two notable ascents were of Point John in April by a previously unclimbed ice gully and of Batian to Shipton's Notch in July. The latter climb is normally carried out on rock and completed in one day but snow and ice en route necessitated step cutting and a bivouac in the amphitheatre at 16,000 ft.

* * *

In July rescue facilities were mobilized twice—in the same day. In the morning a distress report of a woman with a respiratory ailment in Teleki Valley reached the Gate; a large rescue party met the woman as she was making her own way down the Mountain. The same evening, a team was again mobilized to search for a young man who had lost his way on the lower moorland and entered the forest at the wrong point to reach the road. He spent an uncomfortable and frightened night in the forest and finally arrived at the Gate alone, exhausted and with his clothes in tatters.

* * *

In May two notable safaris were made on the Mountain: a four-day tour of the Peak area by Mr. Helmut Senn, an Austrian tourist development advisor and cable car expert; and a pilgrimage by Mr. Steve Hastings, brother of the American helicopter pilot who was tragically killed during the Judmaier rescue in 1970.

* * *

A penniless foreign visitor wandered alone into the Park by a circuitous route which avoided the Gate and payment of fees. Nine days later he returned having lost himself in snowstorms around the Peaks and an unsuccessful attempt to penetrate the forest on the East side of the Mountain.

* * *

The Mountain supports a considerable leopard population; a black leopard has been seen twice recently on the North and East sides of the Peaks at 15,000 ft.

* * *

Percivals Bridge, at 9000 ft. on the Naro Moru track, first built in 1961 by 34 Squadron Royal Engineers, has recently been rebuilt and enlarged.

MARINE

It was relatively quiet in the Park from the end of March through to June during the (Kusi) South East Monsoon; however, this slack period provided an opportunity for repairing and repainting the glass-bottomed boats and also allowed members of staff to take leave. Only a few poachers ventured into the Park.

THE SOCIETY'S NOTES

Compiled by The East African Wild Life Society

The Society has great pleasure in welcoming the following new LIFE MEMBERS:

DONOR LIFE MEMBERS:

BRITISH SOLOMON ISLANDS
Mr. R. K. Finnimore.

UNITED STATES OF AMERICA
Miss M. T. Kimberley
Mr. W. J. Pfizenmayer
Dr. & Mrs. Von Berg

REGULAR LIFE MEMBERS:

BERMUDA
Mr. C. Gordon

DENMARK
Mr. G. Norlyng

ITALY
Mr. U. Delago

KENYA
Mrs. E. Caudle
Mr. J. Norlyng
Dr. F. Radar
Mr. J. F. Reynolds

SWITZERLAND
Dr. H. P. Koechlin
Mr. B. Staehelin
Dr. E. A. Vischer

UNITED KINGDOM
Miss R. Andrews
Mr. J. A. Davies
Miss G. Marshall
Mr. B. Neate
Col. J. C. A. Swynnerton

UNITED STATES OF AMERICA
Mr. L. G. Bailey
Mrs. C. Benson
Miss M. Bizak
Mr. J. S. Buckley
Mrs. N. S. Clark
Mr. C. B. Clay
Mrs. H. T. Eaton
Miss B. Fleischman
Mr. & Mrs. N. E. Foster
Mrs. A. J. Gibbs
Mr. & Mrs. C. M. Hall
Dr. S. Hanson
Mrs. L. Hunter, Jr.
Dr. S. A. Jones
Dr. A. S. Leopold
Mrs. F. W. Lincoln
Miss A. W. Lucas
Mr. T. S. McIntyre, M.D.
Mr. C. Monet
Mrs. R. Nearney
Newtown Friends School
Mr. G. Norlyng
Mrs. Z. D. L. Nutter
Mr. D. R. Okerstrom
Mrs. J. A. Parks
Mr. & Mrs. E. T. Radel
Mr. & Mrs. P. Shane
Mr. S. Slavin
Mr. A. Von Gontard, Jr.
Mr. & Mrs. E. Walton
Mrs. L. Yonkler
Miss N. E. Zumpe

COMPLIMENTARY LIFE MEMBERS

West Germany
Kenya Tourist Office.

HONORARY LIFE MEMBERS

Kenya
Mr. C. Hayes

South Africa
Dr. D. R. M. Stewart

United Kingdom
Dr. J. S. Owen
Mr. D. Shepherd
Mr. B. Travers
Mr. Wheater

AUDUBON SOCIETY

Recently the National Audubon Society made its second safari to East Africa. It was organised by Cahill Laughlin of New York, who enrolled all participants as Members of the Society; and led by Roland Clement, who presented funds donated by members of the first Audubon Safari to house the elephant and rhino skulls at the Tsavo Research Project.

On this second safari was a remarkable young woman called Emily Ford (daughter of Mr. & Mrs. F. Richards Ford III) who has already carried out a conservation crusade of her own on behalf of the wild mustangs of the Western states, and helped to get a bill through Congress to protect them.

These horses are descended from the Andalusians brought in by Spanish conquistadors 400 years ago, and within living memory have been reduced from upwards of five million to 16,000 to fill the cans of pet food manufacturers.

Emily Ford wrote us this report of the Audubon Safari:

"As July 5th dawned, a weary group of 30 National Audubon Society members arrived at Nairobi's New Stanley Hotel to embark on a seventeen day safari. The main emphasis was on ornithology. Tour Director Donald Turner, of East African Ornithological Safaris, was assisted by Torr Allan, a professional courier; Daniel Freeman from the Bird Room in the National Museum of Nairobi; and Charles Wurster, Associate Professor of Environmental Studies at New York State University at Stoneybrook.

"July 6th was spent touring the National Museum and the Nairobi National Park, which gave the group a sneak preview of the tremendous variety of birds and mammals to be seen on the safari.

"The next day we flew to Entebbe, Uganda, and piled into minibuses en route to Murchison Falls National Park. We stayed in the Paraa tented camp overlooking the Victoria Nile where choruses of hippopotamus bellowed 24 hours a day—and some even grazed around the tents at night!

"During the day scores of different varieties of birds and mammals were seen on the Buligi circuit in the park, or from the African Queen style boat that steamed up to the Falls. The highlights of these four days were Ayre's Hawk Eagle, three Whale-Headed Storks; a leopard with its kill, and ten of the 14 white rhino in the Park!

"One evening the Park Warden led a discussion on: 'The intelligent cropping of Wildlife in an African National Park', with particular reference to the cropping of elephant and hippo in Murchison Falls National Park between 1964 and 1967. This talk helped to spark many of the philosophical discussions that followed throughout the trip.

"Via the top of Murchison Falls the safari continued to Masindi. From there, trips were made into the Budongo Forest. It was explained that because of rapid climatic changes many of these forests act as evolutionary islands. This accounts for the fact that particular birds can be found only in certain forests. An early morning "chimp walk" into the forest was organised. The chimpanzees were heard but not seen. Colobus monkeys though, kept a close watch on the intruders.

"We then flew in small, five passenger airplanes on July 13th to Samburu/Isiolo Game Reserve and stayed at the Samburu Game Lodge. This was a complete change from the rain forest vegetation of Masindi to dry, dusty bush country.

"Most of us were treated to close-range viewing of the reticulated giraffe, and of the gerenuk feeding on their hind legs. One of the three afternoons was spent in a nearby Samburu Manyatta for a performance of traditional Samburu tribal dancing. The red-ochre covered warriors hurling their spears upward toward the darkening greyish blue sky with the imposing mountains rising in the distance was really a sight to behold.

"By car the group went from Samburu (about 2,300 ft.) to the Outspan Hotel at Nyeri (about 6,200 ft.). Stops were made along the way to view Jackson's Widow-bird, and the Long-tailed and Red-collared Widow-birds.

"On one of the three nights at Outspan, Ian Parker, of Wildlife Services, Ltd., gave a stimulating talk on "Conservation and Politics". He pointed out the great similarities between elephants and humans; showing how both populations have a tremendous adaptability to environmental conditions, and how they are able themselves to modify their environment on a massive scale.

"Mr. Parker pointed out the incompatibility of the two populations: elephant become extinct where human density exceeds one hundred per square kilometer. Man is now in control of the elephant populations and in addition he is managing most other animal populations. Mr. Parker then raised the fundamental question—what are we doing about our own population? The future of the world lies hidden in man's answer to this question.

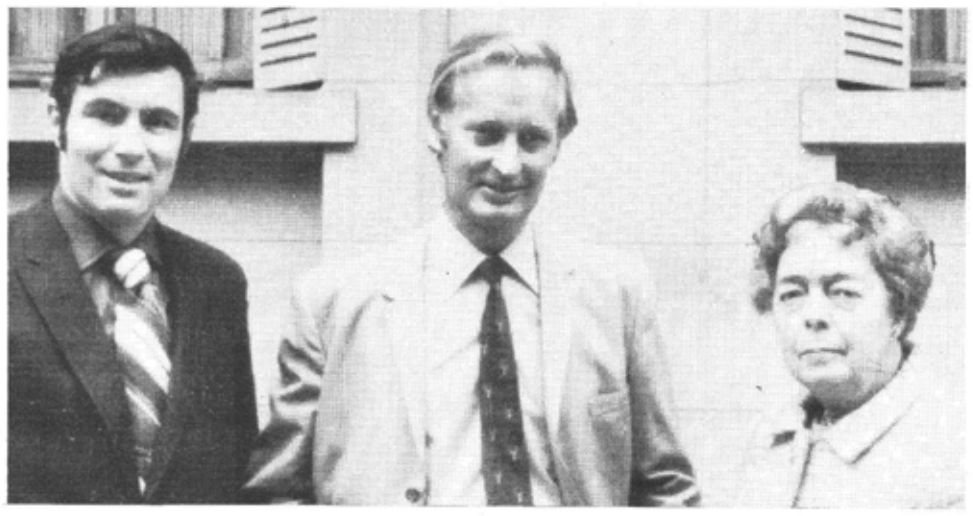
"Unfortunately Aberdare National Park was closed on account of rain. But for the energetic there was a hike part-way up Mt. Kenya to see the Scarlet-tufted Malachite sunbird. And some spent a night at Treetops.

"The last five days we were at the Mombasa Beach Hotel, and early morning side-trips (leaving 5 am) were planned for the real bird enthusiasts. Trips to the Shimba Hills, to see the sable and roan antelopes, to the Marine National Park, to Mida Creek, the Gedi ruins, and to Lamu island, were all possible.

"Back again to Nairobi on July 23rd for a final 24 hours in Kenya before departing for the United States. Everybody's last day proved to be *mzuri sana*—whether it was flying to the Serengeti and spotting three leopard, a few cheetah and a lion (all with cubs) or staying in Nairobi and visiting the National Park.

"The trip to parts of East Africa was very successful, not only because over 450 species of birds were spotted along with many species of mammals, but because it gave these 30 Americans an insight into the grave mistake that was made in the management of America's unique and varied wildlife. It's sincerely hoped that in learning from other countries' blunders, East Africa will see fit to manage her land, her population and her wildlife in a more enlightened way."

Emily Ford is part-way through her ecological studies, and hopes to do some field work in East Africa.



DANIEL SAMUELS, for many years the Society's District Representative in New York and Roger Wheater (ex-director Uganda National Parks), are pictured together with Miss Aloise Boker of New York, who is a great supporter of wildlife conservation.

FOR SALE

"Safari 99" brings you 99 animal and bird sounds from East Africa, all identified, recorded on tape in a cassette which plays for one hour. Price $7. or KShs: 49/-. Airmail overseas $9.

GREVY ZEBRA

Hans and Ute Klingel have submitted a report on the second half of their Grevy Zebra Research Project in the Northern Frontier Area (from July to October 1971) which was supported by the Society. It is, however, not for publication until a more detailed account of their work has appeared in the E. A. Wildlife Journal.

U. S. REP

The Society's Chief Representative in the United States is: Mrs. Alice Smith, 1255; N. Sandberg Terrace, Chicago, Illinois, 60610. Mrs. Smith has a supply of films and Society literature. Anybody willing to help her in the Society's work would be most welcome, and we should be grateful if they would kindly get in touch with Mrs. Smith at the above address.

EAST AFRICAN WILD LIFE SOCIETY
P.O. Box 20110, Nairobi Kenya, East Africa

Members of the Diners Club

Annual Subscriptions

Corporate	K£ 50	$143	B£ 58.85
Supporting	K£ 10	$ 29	B£ 11.77
Contributing	K£ 5	$ 15	B£ 5.90
Ordinary Overseas ..	Kshs. 70/-	$ 10	B£ 4.12
Ordinary E. Africa ..	Kshs. 40/-		
Junior E. Africa (under 18 years)	Kshs. 25/-		

Life Membership Fees

Donor	K£ 100	$286	B£117.65
Regular	K£ 25	$ 72	B£ 29.41

SOCIETY NOTES

MANAGEMENT COMMITTEE

An Extraordinary General Meeting of the East African Wild Life Society was held at the Norfolk Hotel, Nairobi, on June 9 to consider amendments to the Constitution under Article 47.

The Chairman, Mr. Oliver Brooke, spoke briefly about the proposal to appoint a Management Committee. He said that in September, 1971, a special committee appointed by Council met to consider matters affecting the administration of the Society and make proposals to clarify its future policy.

After very full consideration, one recommendation submitted to Council was "that an extraordinary general meeting be called to amend the Constitution in order to dispense with the present Executive Committee and for it to be replaced with a Management Committee, consisting of six members, with a quorum of three; appointing its own Chairman and with the right to co-opt."

The special Committee explained that the present arrangement of a large Executive Committee, meeting jointly with Council, was unwieldy and hampered the day-to-day administration and business requirements of the Society.

The Chairman said it was not intended that the experience of those who were on the Executive Committee should be ignored; they would still continue to meet as Council, but only once a quarter.

The Management Committee would meet once a month and would report back to Council at its quarterly meeting to keep them in touch. It was intended that if the Management Committee required assistance, they could call on the Council.

It agreed that the Constitution be altered that the phrase "Executive Committee" should be replaced by "Management Committee", and that this should consist of six members.

The Members of the new Management Committee are:

O. Brooke
M. Cowie
P. R. Davey
E. T. Monks
C. E. Norris
J. M. Richmond.

THE A. G. M.

The Seventeenth Annual General Meeting of the Society was held at the Norfolk Hotel, Nairobi, on Friday, June 9. Present were: Messrs O. Brooke, (Chairman) M. J. Sawyer (Chief Executive) I. R. Leslie (Hon. Treasurer), M. Cowie (Trustee), P. R. Davey, A. Davies, J. Eames, M. A. Higginson, F. Minot (Member, S. & T.) E. T. Monks, C. E. Norris, A. Parkinson, H. Patel, M. J. Richmond, Sir Malin Sorsbie (Trustee), 30 Members of the Society and Mrs. J. C. Poppleton (Secretary). The Chairman, Mr. Oliver Brooke, opened the meeting in the President's absence, and welcomed everybody present, especially Mr. A. L. D. Mongi, Acting Director, Tanzania National Parks.

In his report Mr. Brooke touched on various matters:

●*Policy.* Eight meetings had been held during 1971, including two on the future policy of the Society. These were particularly important in view of continually changing conditions.

●*Roan Antelope.* This operation is now complete, and has resulted in the translocation of two viable herds of roan; one on a private ranch and the other in the Shimba Hills National Reserve. The last capture exercise was attended by an A.B.C. television team, which filmed the operation.

●*Sitatunga.* In this project both the habitat (The Saiwa Swamp) and the herd of Sitatunga (a marsh antelope) are to be protected. The area has been surveyed, changes have taken place in land ownership, and the boundary plan is awaited. The Society has the money available, and on advice received proposes to fence the habitat and thus prevent poaching and trespassing. It is hoped that everything will be finalized soon.

●*Anti-Poaching Activities.* We have given a lot of consideration to these, although not much of our money has been spent on them. We have an active Committee, and with the support of our President (Mr. Charles Njonjo, Kenya's Attorney General) legislation has been passed banning the sale of spotted cat-skin items in Kenya shops. The East African Governments look to the Society for support on anti-poaching measures. We have received requests for vehicles and equipment and I believe we shall be doing more in the future.

●*Wildlife Society Journal.* This is a great success story. It began in a small way with the assistance of Dr. and Mrs. Stewart. It now goes out to eighty different countries, and Blackwells the Scientific Publishers (England) are going to take it over.

●*Lakes Naivasha and Nakuru.* We have made money available for research into residual pesticides and pollution. The position at Nakuru is more serious than at Naivasha.

●*Africana.* There has been more effort regarding production. Endeavours have been made to supply more news and more informative articles. Public relations have progressed. Many letters of praise have been received by the Editor—and a few containing criticisms which is a healthy sign. We may expand from 4 to 6 issues in future, if we can afford it.

●*Films.* The Society's film "Way of the Wild" (produced in 1970) continues to be shown all over Kenya. Recently 10 copies were made for showing elsewhere in the world. The Society's Cinema Van continues to give shows throughout Kenya. Since 1971 we have had film shows monthly in Nairobi and I would like to thank Messrs. Monks and Richmond for making them a success. We have gained many new members from these shows. We are now collecting in order to purchase more films and vary the programmes.

●*Scientific and Research Work.* We devote a lot of energy to encouraging both activities in East Africa, and over the past year have donated funds for scientific investigations necessary for future planning of conservation work. Requests for such financial assistance are always coming in and are carefully assessed by our Scientific and Technical Committee. We often get asked for finance urgently, to solve an urgent problem. It is hard to refuse, but in future we are going to require longer notice.

●*Membership.* This is divided between 2,000 local and over 14,000 overseas.

●*New Offices.* We are intending to open an office in Uganda, to channel more help through to that country. If this succeeds, we shall do the same in Tanzania. We are considering an office in the United States. I think we must realize that the most generous people in the world are those in the United States of America. Their support is invaluable to us; they are always wanting to know what we do and I feel that an office in the U.S. would increase our activities in that country.

●*Staff.* I would like to pay tribute to the staff of the Society who work in rather cramped conditions on the mezzanine floor of the Hilton Hotel. It is nice to see so many of them sitting here tonight. We welcome them heartily and appreciate their interest in the Society's affairs. If you have any queries go along and see them, they are always pleased to help.

●*The Society's Role in Conservation* is always changing. We work within the pressures of population, pollution, politics and scientific problems. A few years ago people said: "Save the species". Today they say: "Save the habitat". Our position is not easy. We are probably the only East African Society left, but a very large proportion of our members are overseas. Most of our local members are Kenyans and a lot of the interest is generated in Kenya. We try very hard to share out the assistance to Uganda and Tanzania, but they feel that we favour Kenya.

●*Problems.* Every Society has them, and they are usually rising costs and things not budgeted for at the beginning of the year. We are apt to give all our money away. Then a rise in postal costs can upset the economy, or our staff request raises in salary for the good work they are doing. However we are trying to improve as we go along. Our trading activities must continue as they make an important contribution to running costs.

●*Donations.* I would like to mention the importance of these and thank donors for their individual gifts and their continued support. I would like to say a special thank you to the tour operators and district representatives throughout the world who try and encourage people to join the Society. Finally thanks to the Norfolk Hotel for allowing us to hold the meeting here.

NILE CROCODILE

Press Release has recently been received from the Frankfurt Zoological Society regarding the protection of crocodiles in the Murchison Falls National Park.

It opens with the well-known fact that it has been the practice of boatmen, taking visitors up the Nile, to pull in too close to the bank and frighten away female crocodiles who are guarding their nests. Once the female takes to the water, hyenas and monitor lizards will dig up the eggs and eat them.

This is one of the main reasons for the decline of the crocodile population in the Murchison Falls National Park, and Parks Administration have issued strict instructions that nesting crocodiles should not be disturbed.

Members of the Frankfurt Zoological Society, and other West German citizens who have recently visited Uganda's Parks state that these regulations are not being observed, however. Boatmen are still pulling in too close to the bank and frightening the female crocodiles away from their nests. It is regrettable that they show no interest in the preservation of Uganda's fauna.

RADIO FOR KIDEPO

The Frankfurt Zoological Society has donated 1,150 dollars to Uganda's Kidepo Valley National Park for the purchase of additional radio equipment. This was badly needed by the Ranger Field Force Anti-Poaching Unit and will greatly facilitate their work. In 1968 the Society provided £2,064 to purchase transport for this Unit.

WORLD CONFERENCE

In September, Dr. Hugh Lamprey (Director, Serengeti Research Institute) attended the Yellowstone World Conference on Parks, and presented a paper on the Management of Flora and Fauna in National Parks. Dr. Lamprey also represented the Society at this Conference. He was sponsored by the Ford Foundation. Mr. Norman Myers attended as an observer.

Dr. Lamprey kindly agreed to represent the Society also at the 12th General Assembly of the I.U.C.N.

VISITOR PRESSURE

●*U.S.A.* The IUCN bulletin states that a small-scale experimental effort to regulate public use of wilderness sections of National Parks is being initiated in areas of Great Smoky Mountains National Park, Rocky Mountain National Park, and Sequoia-Kings Canyon National Parks.

These Parks are experiencing substantial visitor use of remote areas; and this threatens to destroy the very resources which attract visitors.

Studies of the experimental programmes may serve to guide future planning, thus providing optimum use of the National Park System without degrading the natural environment.

●*EAST AFRICA...* Concern has been expressed from most of the East African National Parks regarding the rapidly-increasing volume of traffic using Park areas. The pressure of vehicles is beginning to disturb the animals, and is making the upkeep of roads and surrounding areas extremely costly.

It has been agreed that Dr. Glover (as Director, Tsavo Research Project), Dr. Lamprey (as Director, Serengeti Research Institute) and Dr. Eltringham (of Uganda Institute of Ecology) should each ask the Chief Research Officer in his area to write to his Director of National Parks, suggesting that research be started into the heavy pressure of vehicles on National Parks—and mentioning that the Society wishes to be associated with this.

CAT SURVEY

Following reports on the endangered status of leopard and cheetah in Africa, the fur industry in Europe and North America has agreed to a three-year moratorium (starting late 1971) while the facts are investigated.

Norman Myers is carrying out a survey for the International Union for the Conservation of Nature on the position of both animals throughout Africa south of the Sahara. Their current distribution and density; their population dynamics in the face of progressive predation by man; their prospect for survival in emergent Africa.

He will also investigate the commercial chain, from local hunter to overseas retailer; the distribution of revenues; and how far the trade may be regulated in future through legal sanctions supposing that leopard and cheetah skins continue to be high fashion priorities.

It is known that much relevant information is available, and all contributions will be greatly appreciated. There will be no conflict between this I.U.C.N. project and that of any other person who may want to work on cats in East Africa: it can only result in knowledge complementary to this project.

NEW BOOKS

●*Project Aqua,* by H. Luther and J. Rzoska, published for the International Biological Programme, with the assistance of UNESCO, Societas Internationalis Limnologiae, and IUCN, by Blackwell Scientific Publications. ". . . . A source book of information on more than 600 inland water bodies throughout the world judged worthy of conservation . . . . It is anticipated that the international convention on wetlands which has recently reached a stage of agreement . . . . following much preparatory work . . . . may provide an appropriate legal framework of protection for some of the sites mentioned in this volume".

●*The Natural History of the African Elephant,* by Sylvia K. Sikes, published by Weidenfeld and Nicolson, 398 pp., 8 colour, 115 black and white plates.

●*African Birds of Prey,* by Leslie Brown, published by Collins. 320 pp., 12 plates, 18 text figures. "The author, well-known as an agricultural civil servant in Kenya . . . . is eminently qualified to produce a sound comprehensive volume on his subject, and he has done so."

●*World Dynamics,* by Jay W. Forrester, published by Wright-Allen Press, Inc. "To expose the problem created by growth and analyse suggestions for the future, Forrester and his computers at M.I.T. present the result of 15 years of research. . . . The main message of the book is of course the need to reach an equilibrium."

KITENGELA

Negotiations are still proceeding towards the acquisition of this additional land for the Nairobi National Park.

CONSTITUTION AND ACCOUNTS

Copies of the Constitution and Annual Accounts are available to any Member of the Society on application at the office, on the mezzanine floor of the Nairobi Hilton.

WHITE RHINO

Peter Jenkins, Warden of Meru National Park, reports that the new white rhino calf is doing well and that another birth is expected soon. Both females and the calf are being kept in the boma for protection.

He laments that the breeding stock is so small, because with the rhino's long

gestation period it will take many years to build up a viable population.

Six white rhino were originally imported into Kenya for the Meru National Park (three of each sex) and kept closely guarded until they were completely acclimatized.

ETHIOPIAN OKAPI?

A letter from Mr. R.R.C. Field, who teaches at St. Mary's College, Kisubi, Entebbe, Uganda, contains the following interesting paragraph:

"I am almost perfectly sure that an okapi was caught in the headlights of my car late at night in the hills west of Harrar in Eastern Ethiopia. It disappeared very quickly into the undergrowth, but at the time both myself and my companion were pretty certain it was an okapi. My only doubts now are because it seems so unlikely, and possibly its size—though if it was smaller than average it may have been young. Have you ever had a similar report, or can you suggest what else it may have been (same distinctive shape with stripes)? The country was well wooded with thick undergrowth and bushes, but could not be described as dense rain forest. As my memory is now hazy, a bongo seems just about another possibility."

Can anybody help?

REPRESENTATIVES

●*EAST AFRICA: A. M. Davies,* P.O. Box 82, Nyeri, Kenya.

Col. J. N. Nimmo, P.O. Box 161, Naivasha, Kenya.

Col. H. Hook, P.O. Box 45, Kiganjo, Kenya.

F. Poppleton, P.O. Box 3031, Moshi, Tanzania.

F. Seed, P.O. Box 42757, Nairobi.

●*U.S.A./CANADA: Daniel Samuels,* 4 Hadley Road, Armonk, New York, N.Y. 10504, U.S.A.

Ned North, P.O. Box 428, San Dimas, Ca. 91773, U.S.A.

Miss. Sybil Lamson, 72 Oakland Ave., Arlington, Mass. 02174, U.S.A.

William R. Morrall, Rt. 1., Box 774-E, Flagstaff, Arisona 86001, U.S.A.

Chas G. Allen Jr. Chas G. Allen Co., Barre, Mass. 01005, U.S.A.

Roger Mitton, Box 3461, Station D, Edmonton, 41 Alberta, Canada.

Mrs. Alice Smith, 1255 N. Sandburg Terrace, Chicago, Illinois 60610, U.S.A.

●*EUROPE: J. E. Cook,* Horseshoe, 63 Shaw Green Lane, Presbury, Cheltenham, Gloucest; U.K. *A. Corry Thomas,* Kilima, Carrowreagh, Dundonald, Co. Down, Northern Ireland.

Dr. Henry W. Clarke, 6 Via Maria Adelaide, Rome, Italy.

Peter Ugarder, Rorstrandsgatan 33.B, 113 40, Stockholm, Sweden.

Ft. Lt. D. G. Downey, C/o Midland Bank Ltd., Tadcaster, Yorkshire, U.K.

L. E. Edwards, Longmans Group Ltd., Longman Hse., Burnt Mill, Harlow, Essex, U.K.

A. R. Lindsay, 2 Oaklands, Bulmershe Road, Reading RG15 RW, Berks, U.K.

P. E. His Wartenbergstrasse 50, 4052 Basle, Switzerland.

Major F. Schiotte, Rask Skovhus, 8762 Flemming, Denmark.

Henri Roskam, Crocker National Bank, Westbury Building, 5 Rue de Loxum, B-1000 Brussels, Belgium.

●*AUSTRALIA: D. M. Luckin,* Box 2039, Konedobu, Port Moresby, Papua.

David Child, 16 Spencer Road, Killara, New South Wales, Australia.

NEW PROJECTS

The Society is trying to build up a reserve of funds before financing any new projects.

AIRCRAFT USAGE

The total number of hours flown so far this year by the Society's aircraft, Super Cub 57 ADY in use in Tsavo National Park—up to June 8—is 347, which gives an average of 66 hours per month for the 5½ months to date.

This average figure would have been more but for the low utilization in March which was due to the aircraft being out of service for nearly 2 weeks for C of A renewal, and removal and replacement of the time-expired engine.

It is likely that between 70 and 80 hours a month will be flown for at least the next few months.

The elephant radio tracking programme is gaining momentum and another six elephant are due to be fitted with radio collars within the next two months. The flying programme for the rest of June includes a comprehensive elephant count in the area north of the Galana in Tsavo East; continuation of radio tracking in Tsavo West; and a detachment to Nyeri to assist the Game Warden there in game counts of his area.

The aircraft itself has performed very satisfactorily with virtually no unserviceability between the mandatory 100-hour checks. A leaking fuel tank was quickly repaired and the only other snags have been in connection with the radio which gave trouble from time to time.

The engine completed its 2,000 'life' in late March and has been replaced with a re-conditioned unit. No more heavy expenditure is now envisaged until February next year then the Check III will become due.

A radar altimeter was fitted in early March and after some initial teething troubles, is now working satisfactorily and proving its worth.

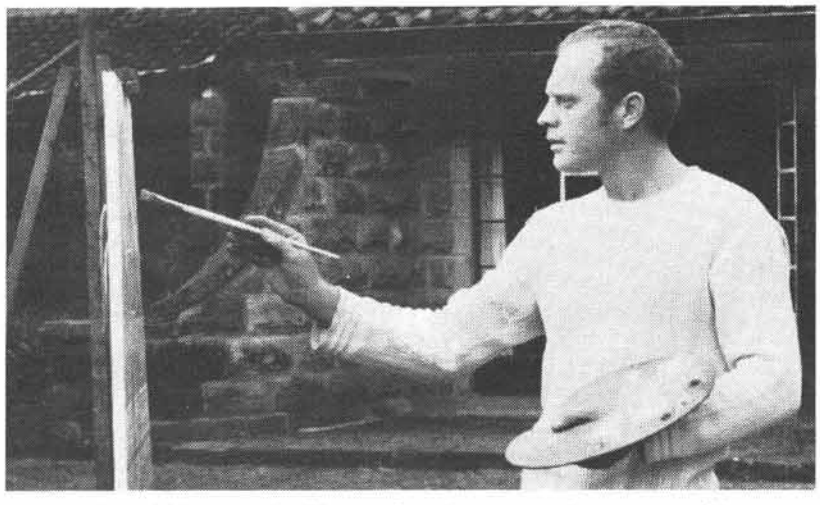
Another instrument which will be of great benefit is a gyro direction indicator which would greatly assist in accurate flying of transects and where accurate reciprocal turns are required, such as on block game counts.

I understand a second-hand one can be picked up for about £20, less fitting charges, and at this price might well be worth considering.

'The report was submitted by Dr. P. E. Glover, Chief Biologist Tsavo Research Project



Kenya's Attorney-General, the Hon. Charles Njonjo, EGH., MP. introduced the first of a series of local programmes, "Focus on Wildlife." He is pictured here with the producer, Joseck Gatitu. (see "Kenya TV" below)



East African artist Simon Combes at work—story p. 41.

PELICAN MYSTERY

The Great White Pelican (*Pelecanus onocrotalus roseus*) breeds at Lake Shala, Ethiopia. It has been assumed that the fledglings, on leaving the nesting site, fly to Lake Abiata about 10 kilometers away where most breeding adults seem to feed; but this is not the case, writes Dr. Emil K. Urban, Associate Professor in the Department of Biology at Haile Selassie I University, Addis Ababa.

Towards the end of the breeding season, when 5,000 young might be expected on the lake, the proportion of immature birds is always very small. For example, on 11th April 1966 only 10 out of 3,500 pelicans counted on Lake Abiata were obviously immature—and at that time about 3,500 young were on the wing.

Subsequent counts have upheld this, Dr. Urban says. Very few young birds travel to Lake Abiata, or even Lakes Zwai and Langano, two neighbouring Rift Valley Lakes. They may travel to other parts of Ethiopia or, in fact, to East Africa.

In order to solve the puzzle, during May and June of this year Dr. Urban and some colleagues marked and ringed 95 young pelicans about to leave the nesting site. They placed a bright pink

SOCIETY NOTES

EAST AFRICAN WILD LIFE SOCIETY

PROJECT ACCOUNTS FOR THE YEAR TO 31st DECEMBER, 1971

FUNDS HELD FOR SPECIFIC PROJECTS:	Funds at 31st December, 1970: *K.Sh.*	Specific Donations Received: *K.Sh.*	Appropriated from Uncommitted Funds: *K.Sh.*	Paid Out In Year: *K.Sh.*	Funds at 31st December, 1971: *K.Sh.*	*£*
Projects 1966 and earlier:-						
Animal Rescue	59,611.15	—	—	—	59,611.15	2,981
Louwana Fund — (Tractor Mara)	384.85	2,130.85	—	166.00	2,349.10	117
	59,995.40	2,130.85	—	166.00	61,960.25	3,098
Projects 1967:-						
Society Film Programme	2,050.40	—	—	—	2,050.40	103
Film Reprints—"Way of the Wild"	5,607.25	16,044.50	—	7,009.80	14,641.95	732
	67,653.05	18,175.35	—	7,175.80	78,652.60	3,933
Projects 1968:-						
Sitatunga Ecology Study	3,972.25	—	10,067.75	7,020.00	7,020.00	351
Tanzania Game Department Anti-Poaching Unit	15,844.00	—	—	—	15,844.00	792
	87,469.30	18,175.35	10,067.75	14,195.80	101,516.60	5,076
Projects 1969:-						
Louwana Fund—Meru National Park	4,385.35	—	—	4,385.35	—	—
Louwana Fund—Meru Anti-Poaching	137.65	—	—	—	137.65	7
Mobile Film Van—Annual Running Costs	12,531.90	—	24,736.10	25,268.00	12,000.00	600
Research Herbivores	369.00	—	5,000.00	3,810.65	1,558.35	77
Miombo Lab./Selous Park	11,014.40	—	—	—	11,014.40	551
Roan Antelope Translocation	30,836.60	—	72,540.10	96,376.70	7,000.00	350
	146,744.20	18,175.35	112,343.95	144,036.50	133,227.00	6,661
Projects 1970:-						
Saiwa Swamp Sitatunga	188,400.00	24,763.45	—	1,600.00	211,563.45	10,578
Ecology of Grevy Zebra	19,940.00	—	—	19,940.00	—	—
Chimpanzee Research—Tanzania	27,500.00	—	(23,900.00)	3,600.00	—	—
Gunthers Dik Dik—University	8,200.00	—	13,200.00	18,000.00	3,400.00	170
Ecology of Lion—Nairobi	40,000.00	—	—	24,000.00	16,000.00	800
Louwana—Meru National Park Radio	193.80	—	—	—	193.80	9
Louwana—Boat for Lamu	3,854.85	—	—	1,576.55	2,278.30	115
R. Elliot Donation—N.F.D.	30,371.85	705.90	—	23,454.75	7,623.00	381
T. Carne Donation—N.F.D.	8,500.00	—	—	3,500.00	5,000.00	250
	K.Sh. 473,704.70	43,644.70	101,643.95	239,707.80	379,285.55	£.18,964
Projects 1971:-						
Elephant Exclosure—Tsavo	—	—	46,600.00	46,600.00	—	—
Roan Antelope Film	—	10,652.00	2,302.10	12,954.10	—	—
Wildlife Clubs of Kenya	—	—	24,240.00	9,055.15	15,184.85	759
N.U.T.A.E. Aircraft	—	—	17,000.00	17,000.00	—	—
Range Post Serengeti	—	-	18,000.00	18,000.00	—	—
Insecticides Survey—Pollution	—	—	30,000.00	24,384.65	5,615.35	281
Final Year Students	—	—	13,730.40	13,730.40	—	—
Tsavo Park East—Radios	—	6,250.00	—	6,250.00	—	—
Eland Study	—	—	61,000.00	20,500.00	40,500.00	2,025
Kongoni Study	—	—	17,040.00	1,500.00	15,540.00	777
Tsvao Pilot	—	5,000.00	—	5,000.00	—	—
Topi Study	—	—	38,000.00	19,000.00	19,000.00	950
Tsavo West Park	—	525.00	—	525.00	—	—
Research Studentships	—	—	64,000.00	—	64,000.00	3,200
Oxford University Report	—	—	2,000.00	—	2,000.00	100
Kitengela Fund	—	390,556.45	—	35,164.65	355,391.80	17,770
	473,704.70	456,628.15	435,556.45	469,371.75	896,517.55	44,826
Less: General Donations			(283,571.35)			
Elephant Ditch Project			(10,793.60)			
Balance drawn from accumulated surplus			K.Sh. 141,245.50		£. 7,062	

flag 10 cms long on the right leg of each pelican, and a British Trust for Ornithology ring on the left leg.

The second half of this experiment requires the help of a great many people. Will anybody seeing one of these marked pelicans please write to Dr. Emil K. Urban, Biology Department, Faculty of Science, Haile Selassie I University, P.O. Box 1176, Addis Ababa, Ethiopia, saying when and where the bird was observed, and adding any other pertinent information.

KENYA TV

"Focus on Wildlife", a new television series on conservation, is due to start in Kenya on October 1. The 13 half-hour programmes will cover East and Central Africa and aim to introduce the Kenyan Public to the many values of wildlife, and why and how it should be conserved. The subjects of poaching and game cropping will also come up for review.

Where possible available film will be used, and the first two programmes are to be presented by the Hon. Charles Njonjo, Kenya's Attorney General. The first programme will feature the Society's film "The Way of the Wild".

Discussion programmes will be mounted to cover subjects for which no film is available, and personalities from organisations and ministries concerned with conservation will be introduced, and will give their point of view.

The series is being produced by Joseck Gatitu (a Production Assistant with the Voice of Kenya) in conjunction with the Society and the Kenya Institute of Mass Communications.

DONATIONS

We are most grateful for all the generous donations we have received; and in particular would like to mention the names of Mr. Walter C. Hecker, of the U.SA., and the St. Katherine's Fund, of Scotland.

AFRICANA

The following back numbers of Africana are required. If anyone can help, will they please contact the enquirers direct.

Vol. 4 Nos. 4 & 5. Mr. W. H. Laban, P.O. Box 672, Yorkton, Saskatchewan. Canada.

Vol 3 No. 9. Mr. F. Sylvester, Bell Helicopter Co., P.O. Box 482, Fort Worth, Texas 76101.

Vol 4 No. 3. Mr. H. Frings, 514 College Ave., New York, N.Y. 10034.

Vol 3 No. 8 & 10 Vol 4 No. 3. Mr. C. P. Denckla, Jr., Anselma Farm, Chester Springs, P.A. 19425.

Vol 4 No. 4. Miss M. Gosnell, 48, West 75th St., New York, N.Y. 10023.

Vol 4. No. 4. Col. D. Smiley, Tara, El. Trencall, Javea (Alicante), Spain.

MAN-EATERS

Mrs. Wm. J. Cheney has kindly written to inform us that the book "Man-eaters of Tsavo" is available for sale at "The Family Book Shop", 1367 E. Colorado Street, Hendale, California 91205. It is listed as Item No. 37, price £7,50(2). Would those Members who wanted copies please write direct to the bookshop.

LEOPARD

TERRY RYAN, Kenya-born author of "The Leopard", lectures in economics at Strathmore College, Nairobi. He has a degree in economics and political science from Trinity College, Dublin; and is now working for his Doctorate in economics at the Massachusetts Institute of Technology. He submits the following poem:-

I, Cat, sloe-eyed in the silent shadows
Wait.
I, Cat, sensing sound and wind
and mood Watch.
I, Cat, fanged and clawed
and compact still—
but tense
Bestir.
I, Cat, more by sinew
move so quiet,
so slow, so—ever so—soft,
Prowling, balanced, poised
and pantherine.
I, Cat, bare snarling barred and savage
fangs,
Light yellow lamps in wicked eyes:
I, Cat, am peril—moving.

PLANT DICTIONARY

Dr P.E. Glover, head of the Tsavo Research Project, sends us the following review of:- *LUO-ENGLISH BOTANICAL DICTIONARY of plant names and uses: by J. O. Kokwaro: published by the East African Publishing House.*

This dictionary is an invaluable record of Luo plant names and, in some cases, their medicinal uses and folk-lore.

In addition, a section has been included of some excellent drawings depicting the various parts of different plants with their leaf types and the anatomy of the fruit and flowers.

Dr. Kokwaro is one of the few Kenyans to have attempted a comprehensive compilation of this type. Not only is it of great value to the professional botanist but also to the

layman, for it is simply written and easily understood.

The dictionary fulfils an urgent need in that much of the knowledge which still exists now with the older generation, is fast disappearing with increasing urbanisation. Rural people of many tribes are able to recognise a number of their local plants—particularly the poisonous ones, those of medicinal value and those believed to have magical properties—but their knowledge will be lost entirely in the not-too-distant future unless more words of the kind produced by Dr. Kokwaro are carried out in other parts of the country.

He deserves the highest praise for his efforts and it is hoped that the success of this work may be an encouragement to undertake further studies of this nature.

SCHOOL PROJECT

In North Primary School, Southall, (a multi-cultural district of London) 26 children aged between 9 and 10 have carried out a project called "Animals in Danger".

Mr. Martin Creasey, their teacher, writes that between 500 and 600 children attend this school (parts of which are over 100 years old). They start at infant level between four and five, and leave at eleven plus.

The project began when the children were read an extract from a London newspaper about vandals killing wild fowl in a Park. Some were rare birds just beginning to establish themselves.

A discussion started on the balance of man and nature, and the precarious position of much wild life in the world today. Then with the help of the World Wild Life Trust Wall Chart it was discovered that many animals were in danger of extinction.

The children then chose animals in danger, researched their environments and illustrated their work with pictures and poems.

"The Giraffe" by Jane Knight, and "The Cheetah" by Angela Barnwell, are two of the selection of paintings shown to the Society. Angela writes:

"The cheetah runs so very fast.
"It doesn't stop it runs right past.
"The cheetah is shy
"But I hope she won't die".

Andrea Barker wrote a poem about a Siberian tiger in a zoo: it ends:

"The tiger escaped once and roamed the town,
"Everyone looked for him up and down.
"At last they found him in the park,
"It was nearly five and getting dark.
"The tiger one day will be extinct!"
"Said the hunter as he winked."

Tony Kelleher writes of "The Gorilla"

"The gorilla is a large and hairy thing,
"It doesn't use a glass and it doesn't wear a ring.
"It climbs trees like a monkey
"And is very fat and chunky.

"The gorilla lives near man
"And eats food when it can.
"It's nearly extinct and man doesn't care a wink.
"Nearly extinct,
KILLED BY MAN!"

"ANIMAL'S WORLD"

From August 16th-September 10th the Photographers' Gallery in Great Newport Street, London, presented an exhibition of colour and black and white photography by the world's leading wildlife photographers, showing animals from all over the world in their own environment and also the effects for good and evil that result from contact with man.

Among the photographers were many whose names are well-known in East Africa: Ylla, Norman Myers, C. A. W. Guggisberg, Des Bartlett, John Karmali, Alan Root, Peter Beard, Harshad Patel, Masood Quraishy

STAFF NEWS

From 2nd-12th August, Kenya hosted an international gathering of Girl Guides and Girl Scouts to celebrate the Golden Jubilee of the Kenya Girl Guides Association.

The theme was "Urafiki" (Friendship) and 300 girls representing Australia, Canada, Denmark, Fiji, Guinea, Ghana, India, Japan, Kenya, Malawi, Nigeria, Norway, Switzerland, Tanzania, United States of America, United Kingdom, Zaire and Zambia assembled at Rowallan Camp, Nairobi.

The World Bureau of Girl Guides and Girl Scouts was represented by Lady Jibou, Regional Representative for Africa. The opening ceremony was performed by Kenya's Vice-President, and Chief Scout, the Hon. Daniel arap Moi, M.P., E.G.H.

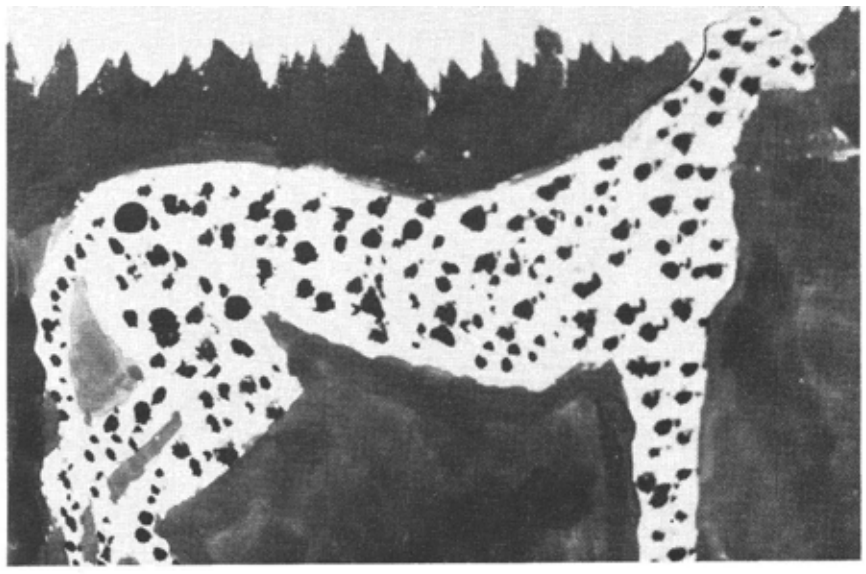
Among the Kenyan hostesses was Mrs Elizabeth Muoki, who helps to run the Society's Shop in the Nairobi Hilton, and who has been a Guide since 1956. In the past Mrs. Muoki has run a Company and worked at Guide Headquarters. She still assists at Headquarters in an honorary capacity.

Our picture shows her teaching "The Five Stone Game" (which is a Kenyan variety of "Knucklebones" or "Jacks") to Guides from other countries. Standing behind her is Mrs. C. E. Muli, Vice Commissioner, (bareheaded) who organised the Jubilee Celebrations, and arranged for each overseas Guide a week's stay in a private home afterwards.

STUDENT PROJECT

The Management Committee agreed to the financing of vacation employment for students; and from May to July this year the following students were at Kenya's Tsavo East National Park, attached to the Tsavo Research Project: Miss P. M. Mbai, Miss B. N. Kang'ethe, Mr. L. A. Mwangi, Mr. H. Cocker.

The following students were at the Queen Elizabeth National Park in Uganda, attached to the Uganda Institute of Ecology: Mr. J. N. Kenyi, Mr. A. G. Gimei.



School project—see story beginning p. 40.

SIMON COMBES

A self-taught and very successful painter, Major Simon Combes (paratroop unit Commander) has been in Kenya since the age of six.

His first one-man show was in Nairobi in 1969. He has recently held another successful exhibition in the Society's Gallery in the Nairobi Hilton Hotel.

Simon Combes loves the feline predators, and his latest collection of oils sing the praises of lion, leopard and cheetah. He also has some fine portrait studies of Africans, mainly from Northern Frontier District tribes.

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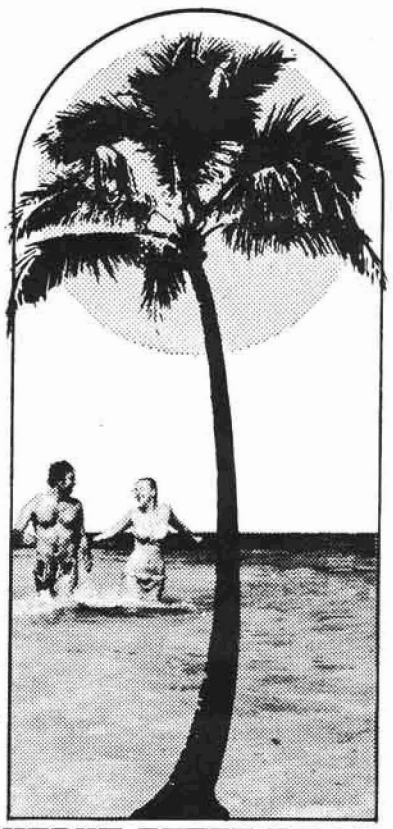
Artists include: Robert Bateman, Rena Fennessy, Robert Glen, Jonathan Kenworthy, Robert Kuhn, Terry Mathews, David Shepherd, Chloe Talbot-Kelly, Ralph Thompson.

AFRICANA

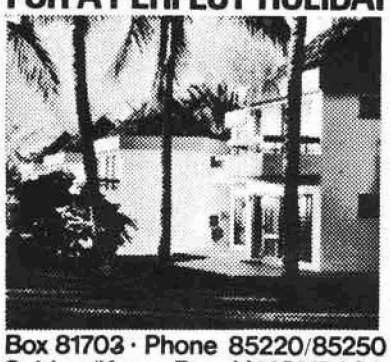
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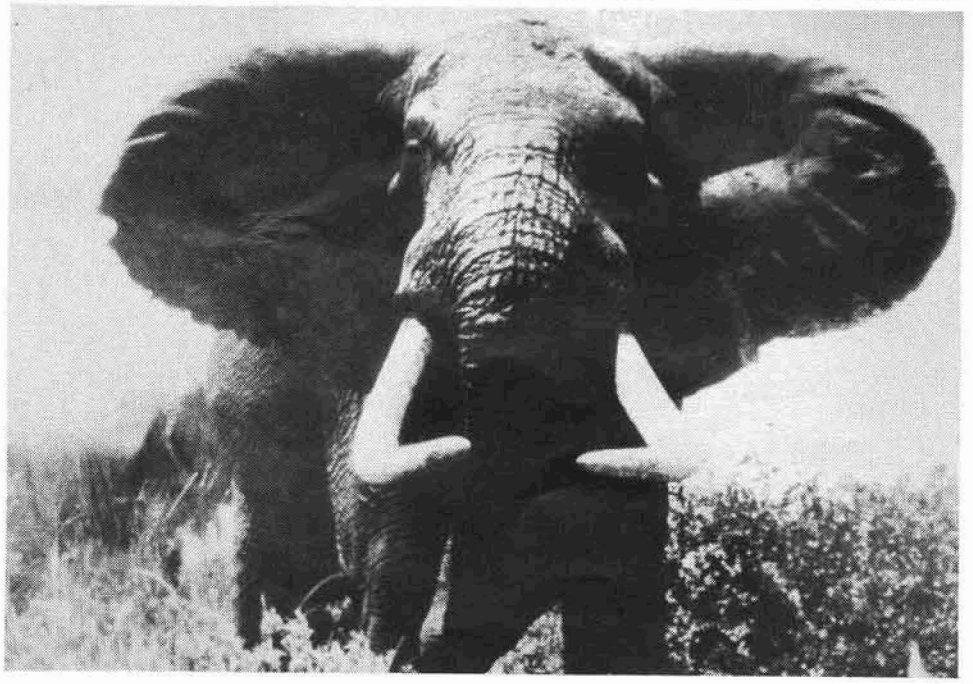
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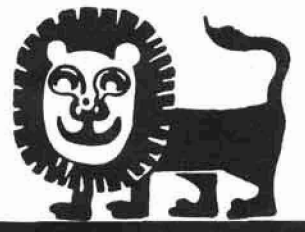
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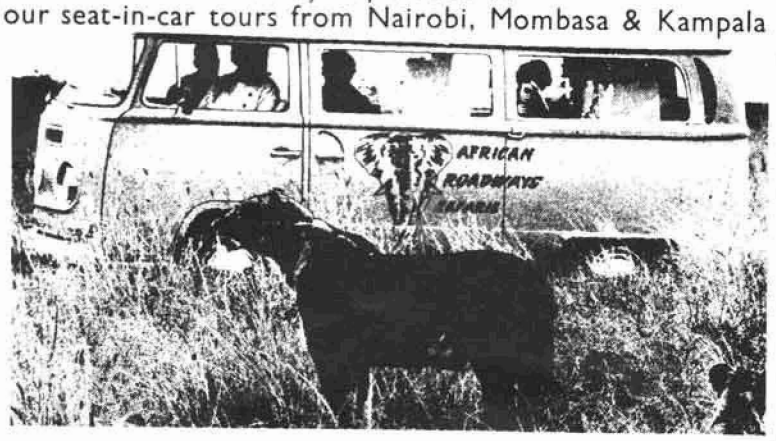


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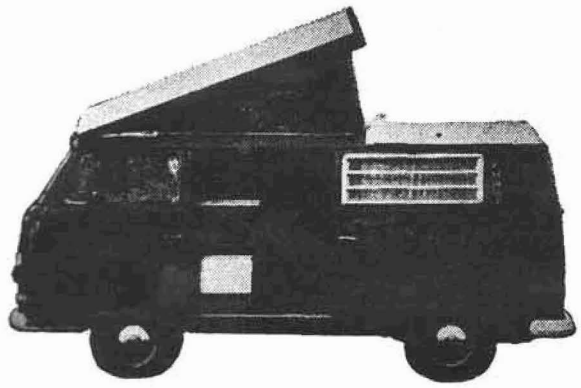
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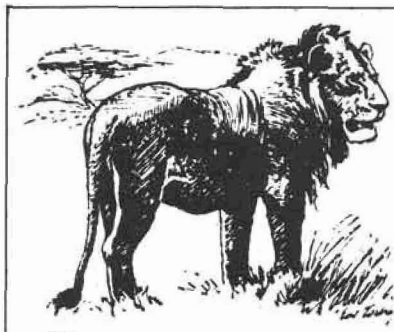


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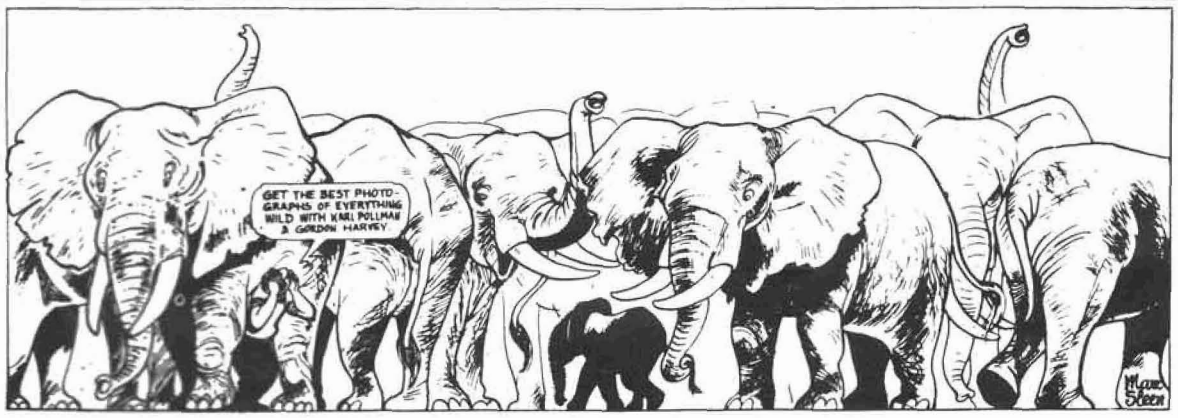
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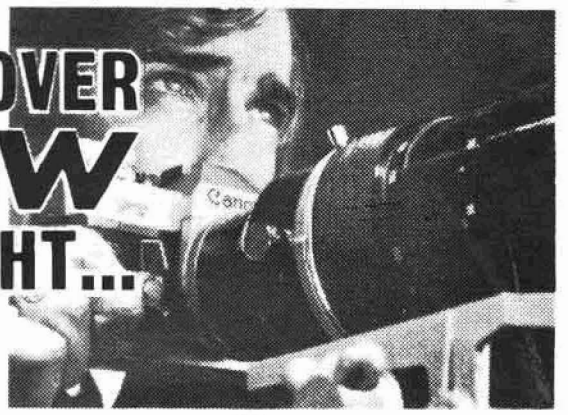
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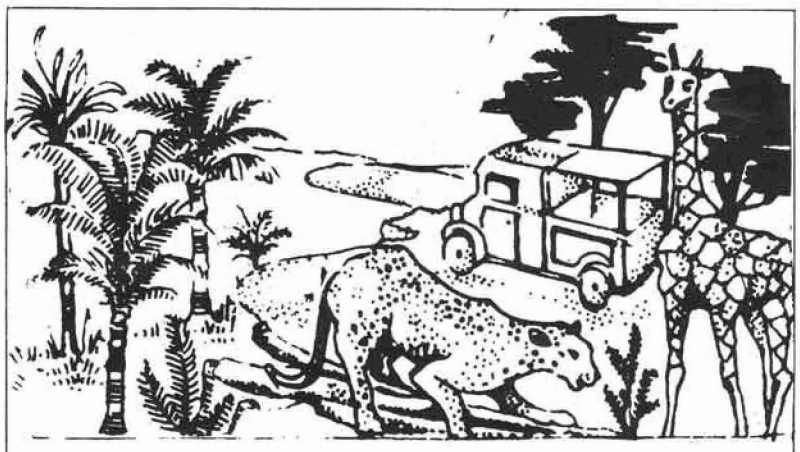


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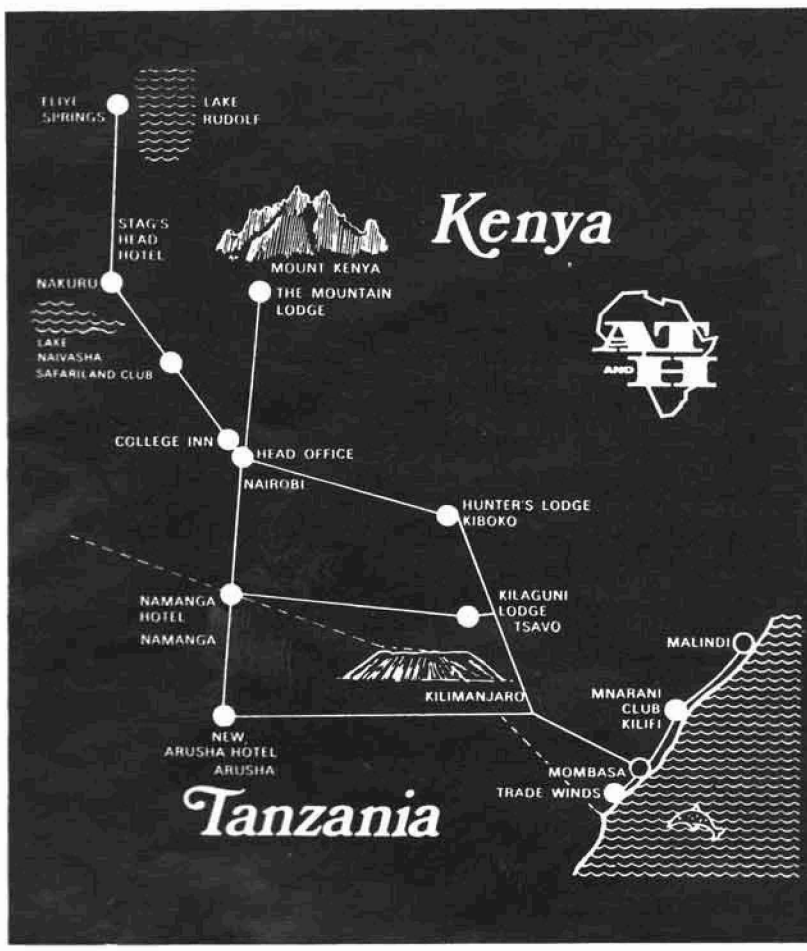
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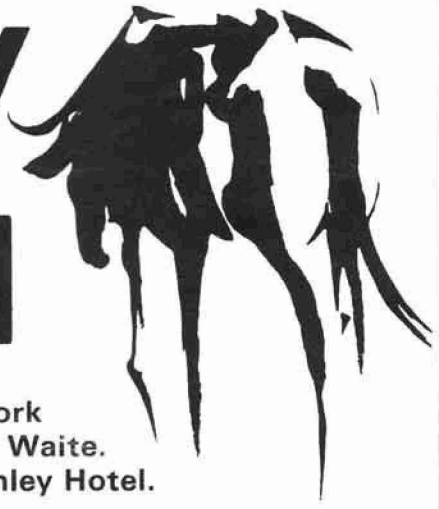
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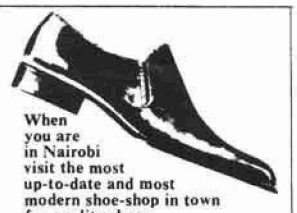
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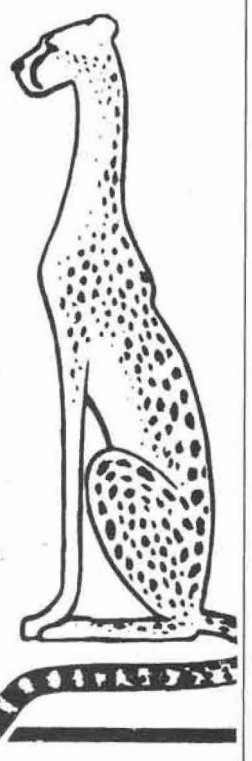
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