

East Africa's new International

TISSUE LIBRARY

THE NUMBER OF WILD ANIMALS killed in Africa, even over the last few decades, is probably incalculable. Animals have been shot in the past mainly for meat and trophies.

More commonly, they are being killed on control work as settlement spreads into new areas which have not previously known human habitation.

Without doubt, the rapid rise of human populations will put an increasing pressure on wild animal populations outside the recognised reserves and Parks.

It is the sincere wish of many that wild animals will continue to live on large farms and ranches, either for aesthetic pleasure, or sport, or as a form of land use.

These, and animals re-introduced for stocking farms from which they have been eradicated, are in a different category from the truly wild animals which form a continuum over a large ecological area.

In other words, it is likely that the truly wild animals, especially the larger ungulates such as eland, will become less easily available outside game reserves and some, such as the Hunter's Antelope and Kob in Kenya, are already rare.

In spite of the fact that many animals have been, or are being, killed for one purpose or another, very little has been preserved for study purposes and almost nothing is known of the micro-structure and function of the organs of these animals.

Recent observations indicate that wild animals in game reserves are not always in a state of healthy balance with their environment.

The diagnosis of muscular dystrophy in the Hunter's and Roan Antelope indicate that, for one reason or another, wild animal populations

customarily believed to be in a state of robust and natural health may in fact be on the knife-edge between survival and eradication.

Undoubtedly, the pressures on wild animals will grow as the ecological size of game reserves and Parks is reduced by settlement or other human activities, restricting the animals to the *de facto* geographical boundaries.

The impact of this on the animal inhabitants is unpredictable.

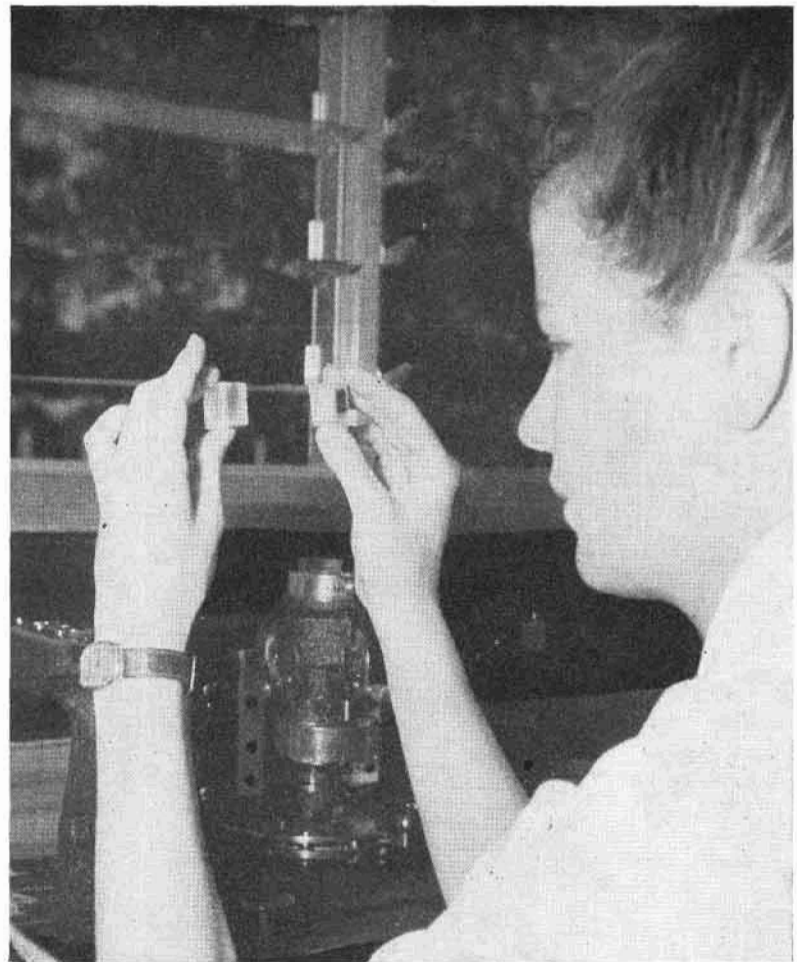
One thing is certain: When a population or species is endangered, it is usually too late — ecologically, scientifically and economically — to embark on a campaign of applied research designed to restore the *status quo*, or effectively to save the animal population as a national entity.

Scientific conservation can only be carried out on the foundations of known facts. This knowledge can only be derived from scientific and painstaking research.

This research, with the resources and personnel at our disposal is protracted, and the time required to elicit even urgent information may extend over many years.

To wait with investigations until a problem is urgent is to wait too long.

The question presents itself: What steps may be taken to remedy the lack of knowledge?



A RESEARCH WORKER in the Nairobi laboratory of the Tissue Library examines the waxed specimens produced under this process.

Undoubtedly, the ideal answer would be for sufficient funds and qualified personnel to be made available from international funds to launch an intensive multiple project with centres in all game parks and game reserves, as well as other areas rich in wildlife.

The chance of finding funds of this magnitude is small indeed, however

and the possibility of obtaining the necessary number of scientists is negligible. But there is nevertheless a way in which a great number of research workers may be drawn into the orbit of African wildlife studies: make tissues of African animals available to scientists overseas.

(Continued on page 17)

TISSUE LIBRARY

(Continued from page 15)

Whenever animals are killed — for sport, trophies, or even for meat or game control — a wealth of scientific material is thrown away.

Conversely, when the few scientists who come to Africa study, say arteriosclerosis — a killing disease which affects many animals — only a small portion of the main artery in the body is required; the rest of the animal is discarded.

If blood vessels had been collected from animals shot by hunters or game scouts, further killing for research might have been obviated.

LONG-LASTING

Tissues, collected carefully and preserved by standard histological techniques, last indefinitely.

Each block of tissue (about half the size of an acid drop) is able to furnish several hundred tissue sections for microscopic study. Furthermore, individual sections may be cut at intervals of many years.

With the help of hunters all over East Africa, as well as the men of the Game Departments, it is theoretically possible to document each organ of each species of animal to form an international "library" of normal animal tissues. Scientists all over the world could have access to such a collection.

IS such a project really possible? Or is this just another plan which may never reach fruition?

The answer is that such a project is already well under way.

The building of the "library" began early this year and a rewarding and growing response from farmers, the

Game Departments and the Professional Hunters' Association is making available specimens from animals killed for meat, game and vermin control, and for trophies.

The finances of the "Tissue Library" have come from a number of different sources.

The project was started by a grant from the Council of the Zoological Society of London, which provided the salary of the laboratory technician engaged on the histological tissue work.

Support was also given by the Wellcome Trust of Great Britain. Later, when it proved necessary for another assistant to join the group to collect the tissues from available animals, the African Wildlife Leadership Foundation supplied monies so that all available tissues could be collected without delay.

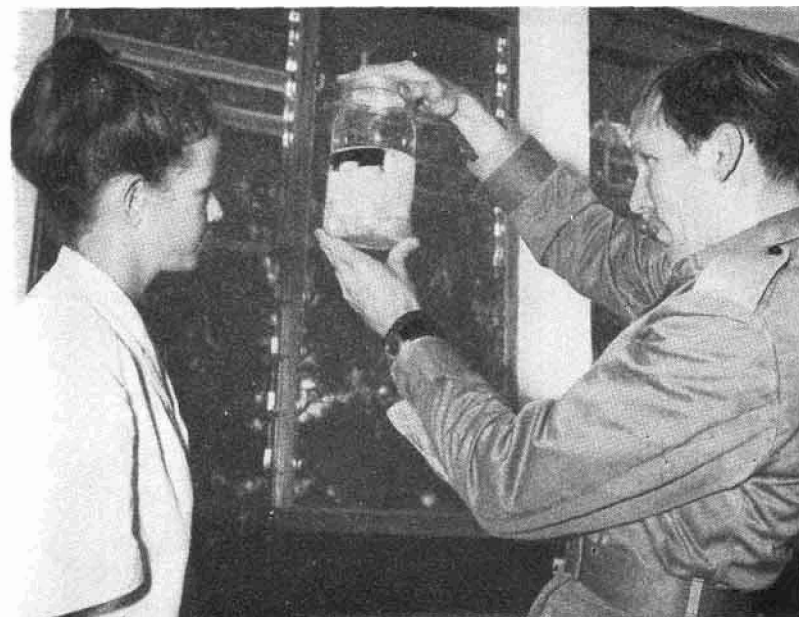
ASSISTANCE

It now appears that further assistance may be needed to cope with the growing number of calls as more and more people become anxious to help. They want to make their "kills" serve a double role—to contribute to game conservation, as well as to the larder.

How are these tissues actually collected? The process takes only some 15 minutes if undertaken by trained personnel. Unfortunately, the collection by the inexperienced was found to be onerous and not completely satisfactory.

Some 35 different areas are collected from, each representing a different organ — the liver, kidney, heart, spleen, blood vessels and so forth.

(Continued on page 19)



A FEATURE of the "library" process is the constant change of the preservative solution, until each sample is thoroughly penetrated by wax.



*Unforgettable gift...
It's a Sheaffer!*

Only Sheaffer could craft such a superior instrument, such a memorable gift. Only Sheaffer could put so many unforgettable features in a single pen. The point is 14K gold, inlaid for strength. A special air-tight cap keeps the point writing moist. Unforgettable, too, because a loss-proof clip securely fastens this Sheaffer to any pocket. See the many other reasons at your pen dealer's soon. Sheaffer—the unforgettable gift! Illustrated: Imperial VIII Pen and Matching Ballpoint.



Stocked by all leading stationers

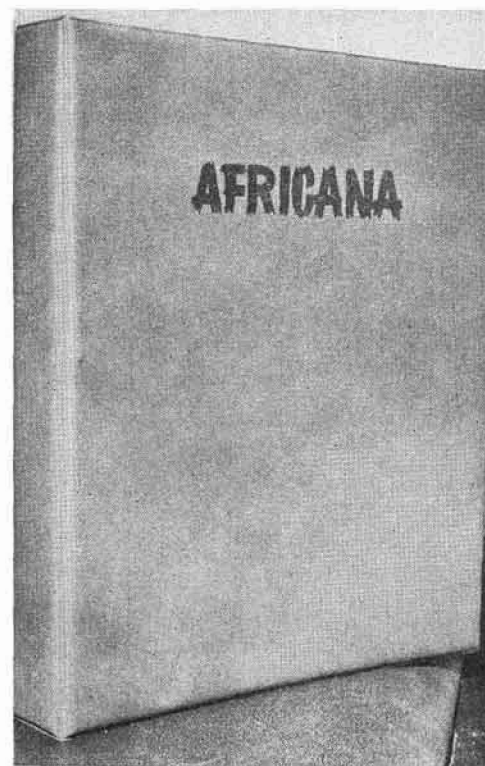
East African Agents:

WIGGINS TEAPE OVERSEAS SALES LTD.

P.O. Box 9998

NAIROBI

Tel: 58709/58700



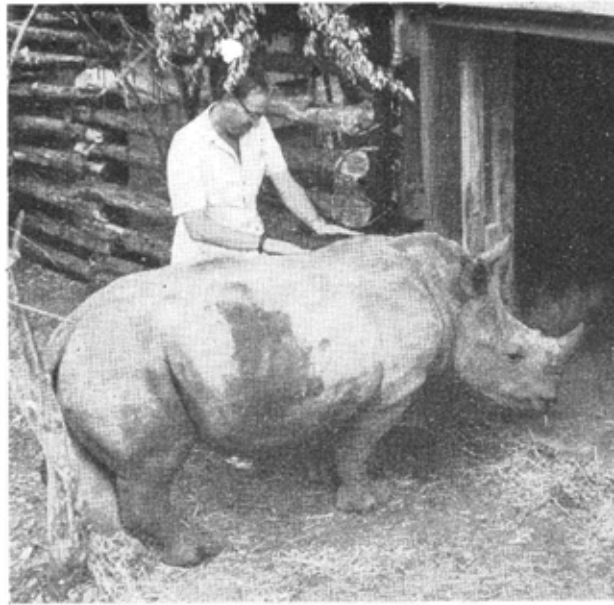
GOLD-EMBOSSED BINDERS IN DARK GREEN, OR RED, FOR UP TO TWO YEARS' ISSUES.

PRICE Shs. 25/- — U.S. \$3.60

Surface Mail postage and package:

Local Shs. 2/50 — Overseas Shs. 5/-

AFRICANA, P.O. BOX 9010, NAIROBI



Warden of Meru Game Reserve Ted Goss and his new charges. (Right) The White Rhino were "acclimatised" with help from Mr "Billy" Woodley, Warden of the Aberdare National Park

TISSUE LIBRARY

(Continued from page 17)

Several minute pieces are collected from each, and immediately placed in preservative solution in small labelled jars.

The collection should preferably be made within half an hour of death, depending somewhat on the temperature and the size of the animal.

Back in the laboratory, the preservative solution is changed several times, until the pieces have been thoroughly penetrated and the real process of preservation is then begun.

The latter is a lengthy procedure requiring several weeks per tissue. The pieces are taken from the preservative and put into low-percentage alcohol.

During the ensuing days, the alcohol concentration is gradually raised, until the last vestiges of water have been driven out.

PRESERVED

Then we place them in wax solvent such as Xylol; the tissue can then be subjected, usually under vacuum, to a mixture of Xylol and wax penetrating the tissues completely.

Eventually, the tissues are cast into individual and labelled blocks. In this state, they can be preserved indefinitely, and the wax forms no barrier to the cutting of microscopically thin slices, each only a few thousandths of a millimetre thick.

Cutting, removal of the wax, staining and mounting of a microslide can be done at a later date.

CAN anything else be done with these tissues besides forming a reference library of healthy animal tissues?

The library is a first step and we must know the normal before we can study the variations therefrom.

At the same time, however, the study of these tissues will give information with regard to the nutritional state of the animal, the prevalence of nutritional and metabolic disorders and the reproductive activity.

MAXIMUM USE

Currently, the parallel studies being started with the help of other scientists are:

The geographical pathology of muscular dystrophy and the species' susceptibility;

The function of skin glands in relation to the reproductive and migration cycle;

The micro-structure of the placenta, particularly of animals such as the elephant;

We hope, however, that this is only a beginning and that the specimens now being collected will form a basis for a large numbers of other studies.

The principle we are now working on is to make maximum use of the greatest number of animals which must be killed in Kenya and further afield in East Africa.

In doing this, we hope to provide against such a time in the future when these animals may be too precious to kill, by assembling knowledge to be used for their conservation.

The preserved tissues will enable further work to be carried out as needed and as scientific method advances.

A. M. HARTHOORN.

WHITE RHINO IN KENYA

SIX WHITE (or Square-lipped) Rhino have arrived in Kenya from Southern Africa and are providing one of the most vital experiments in translocation ever undertaken in the country.

Wildlife experts listed for AFRICANA six important points concerning the experiment:

1. From a small nucleus of some 30 animals — all which remained of formerly great herds — White Rhinoceros have increased in numbers to the extent that they were over-populating areas available to them in Zululand.

And because they are among the few survivors of the species left in the world, it was thought advisable to disperse this now growing population ensuring the species' continuation.

2. The habitat in Meru Game Reserve, Kenya seemed exceptionally favourable for this particular animal. Meru's grass types are very similar to those to which the White Rhinos were accustomed in Zululand; so also is the type of bush.

At the same time, other game is scarce in Meru, which was proclaimed a game reserve only recently.

3. The presence of prodigious grazers like the White Rhino should improve the grass for other game. This species is an animal which customarily keeps grass short and sweet, improving the sward.

In one of their lips is a cartilaginous strip which assists them to graze very closely, rather like the hippopotamus.

4. The White Rhinoceros is an extremely attractive animal — fairly tame and not as wild as the Black Rhinoceros. It is easily seen, and because of its rarity in East Africa, it should therefore attract tourists to the Meru area.

5. The Meru Game Reserve is one which has a very well-defined natural boundary and the animals can be kept conveniently in sight. They can thus be prevented from wandering away.

6. "This is an extremely interesting scientific experiment," said a wildlife expert. "We are re-introducing the White Rhino into a country from

which they disappeared some time ago.

"There are no records, but it is probable that they disappeared through hunting, for they are easy prey.

"These six animals are doing well so far. They are putting on weight and we know of no reason why they shouldn't live and breed in Kenya, particularly in Meru.

"At present, they are being accustomed slowly to their new home under very careful observation and supervision. They undergo regular medical checks, and small blood samples are submitted for microscopic examination."

Records are being compiled of their behaviour and of the way they are adapting themselves after a period of confinement in cages.

They spend their nights in small paddocks and, during the day, are released in very large paddocks, all together.

Sometimes, when rhinoceros have been separated for some time, or have come from even slightly different areas, they fight.

But in Meru they seem to be reasonably friendly and have formed into two groups of three — one group containing two females and the other group, one female.

They graze in their groups, bearing no animosity towards each other.

It is now planned to extend the large paddock. Eventually, the rhino may be completely released under a system of herding.

They can even be driven home again in the evenings, so that checks against local disease conditions can be made over their first year.

The wildlife expert summed up this way: "I think that when we consider very large ecological areas in Africa, politics shouldn't come into it at all.

"This is a natural ecological experiment and I think that all countries will benefit a great deal from it."