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The editor welcomes contributions, which should be typed, double spaced, on one side of the paper only, and with generous margins. Contributions should be accompanied by black and white photographs, line drawings, and tables where appropriate. For feature articles, the editor should be queried in advance in case a similar article has already been accepted.

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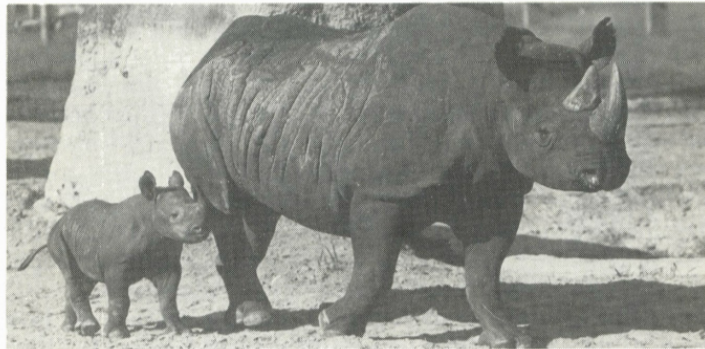
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CATCHING THE BLACK RHINOCEROS FOR TRANSPORTATION AT BRISTOL ZOO*

BY PAUL SHAPCOTT



Black rhinoceros

The black rhinoceros (*Diceros bicornis*) was first exhibited at Bristol Zoo in 1952 and five young were subsequently born. In 1980 there were just twelve black rhinos left in the United Kingdom and it was felt that the facilities at Bristol were no longer conducive to breeding rhinos. Consequently, Bristol's male rhinoceros was sent to London Zoo (and later moved to Whipsnade) and the female to Chester Zoo.

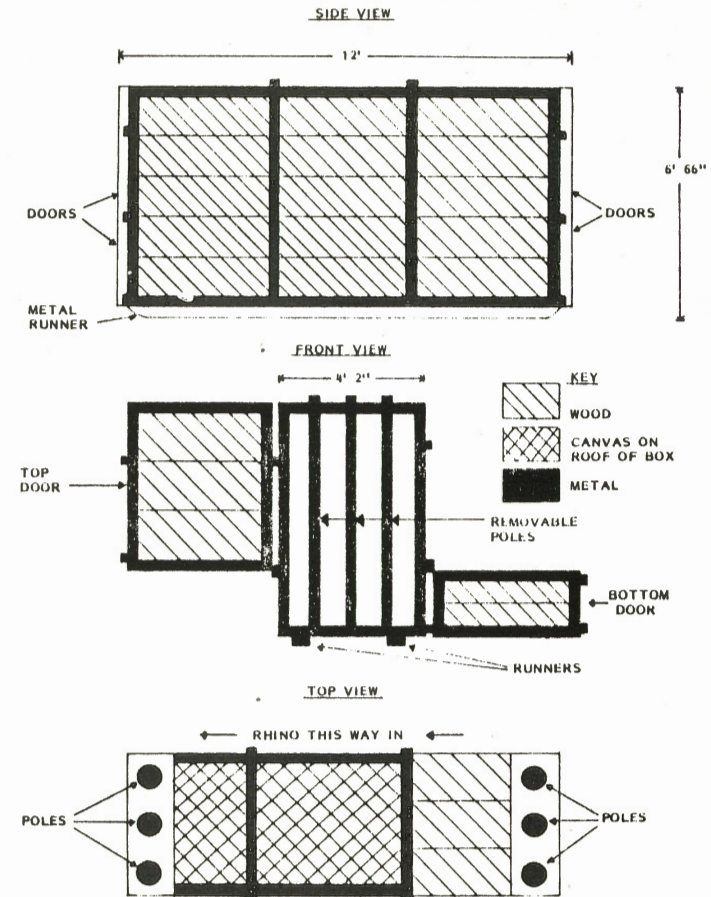
The following account explains how these animals were caught prior to moving them to their new homes, using different catching techniques for each animal.

Catching the Female

No drugs were used in this method. The catching box (see Fig 1) was put into the rhino's outside yard but up against the entrance/exit to the animal's indoor quarters three weeks before the attempted catching. The animal was allowed to walk through it, the doors at both ends having been temporarily removed. The

*Reprinted with kind permission from *RATEL*, the Journal of the Association of British Wild Animal Keepers, August 1985.

Fig 1: Rhino Catching Box



box was bolted to the floor. After a few days of investigation and suspicion the rhino would go quite happily through the box into the outside yard and return to her indoor quarters via the box.

The next stage was to shut off the far end of the box with three large vertical poles and place food in it to encourage the animal to enter. No other food was offered so she had to go into the box to eat. Water was available in the normal way in the animal's indoor quarters. The rhino was allowed to enter and leave the box as she wished. No attempt was made to shut her in. It soon became a matter of routine for the rhino to enter the box and take food from a keeper standing next to the poles at the far end of the box.

Step three was to catch her. Initially six people were required:

one to entice her into the box; one to shut the solid wooden doors at the front of the box; two to close the sliding door that divides the outdoor/indoor enclosures and two (standing on the roof of the house) to put into place and secure the vertical poles that were to slide down behind the rhino. (See Fig 2). Speed and co-ordination among the six people was imperative.

Once the animal had been caught it was found that she settled down quite quickly although past experience had shown that some rhinos, once caught, do react aggressively and, sometimes, the roof of catching boxes above the animal's head had been badly damaged. For this reason the front section of the catching box did not have a solid roof but was covered with a tarpaulin.

After catching the animal, the bolts securing the box to the floor were removed, the solid doors at the back of the box were

Fig 2: Catching the Female Rhino

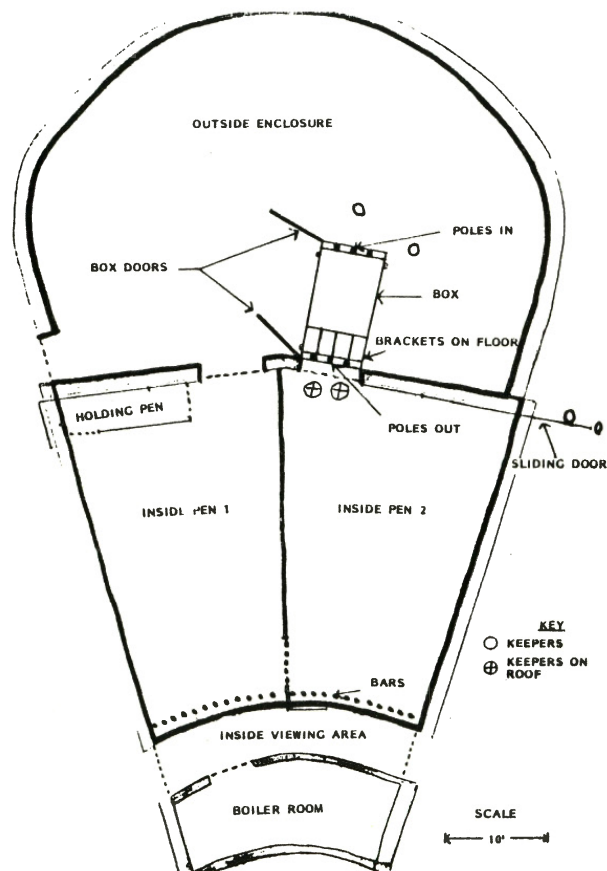
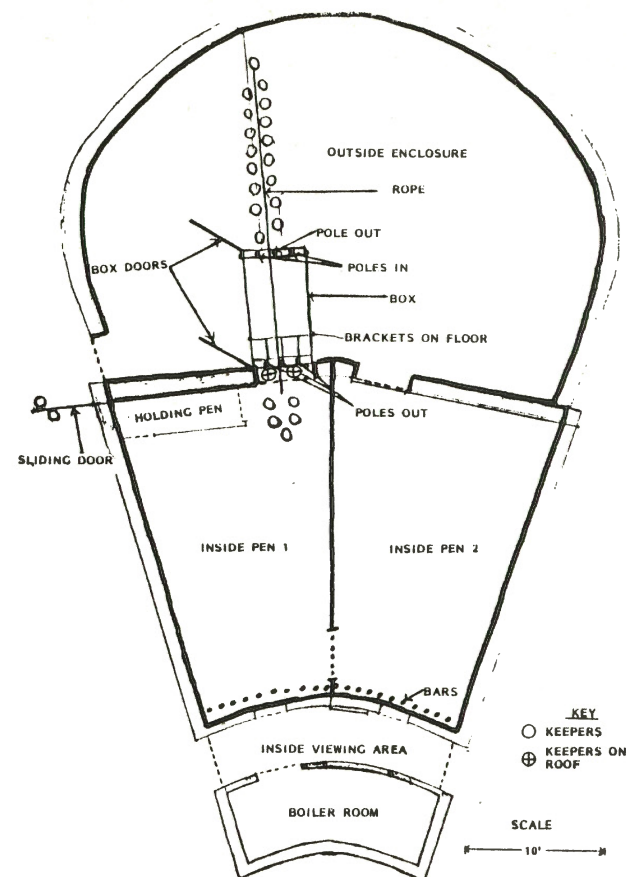


Fig 3: Catching the Male Rhino



secured and the animal was lifted by crane onto an awaiting lorry.

This method was relatively safe and involved a small number of people. During the operation, the zoo's veterinary officer was available, if needed.

Catching the Male

A totally different technique was used here involving the use of drugs. This animal was very nervous and it was thought that the catching method outlined above would not have worked in this case.

The same catching box was used (See Fig 1) and this was placed in the outside yard up against the door to the indoor quarters and

bolted to the floor. The wooden doors at both ends were opened wide and the vertical poles at the rhino's end were taken out. At the far end, the poles were in place with the central one being loose to allow a person to pass through. This was a safety feature in case someone accidentally got caught between box and rhino. The rhino was anaesthetised using 'Immobilon', administered by dart gun.

Once he had gone down, a rope was secured around his front horn and his eyes were covered to protect against damage. The rope was fed through the catching box to a large group of people who were expected to pull the rhino into the box. When all of this was set up, the drug antidote ('Revivon') was injected and as soon as the animal began to recover and stand up, he was pulled into the box, the box then being secured by inserting the vertical poles and closing the house sliding door. The rope and blindfold were then removed and the central pole at the front of the box secured (See Fig 3). As before a crane was used to lift the box onto an awaiting lorry.

Conclusion

The advantages/disadvantages of these methods are clear. The first method (catching the female) involved just six people and meant that no people had to enter the enclosure with the animal whereas with the male very many more people were involved and the securing and removal of rope and blindfold meant someone entering the enclosure. The use of drugs, however straightforward, is a hazard and this, in my view, is a disadvantage of the second method.

Both methods, however, can be used successfully: the decision as to which is best is often decided by many differing circumstances, not least of all the temperament of the animal in question.

Products mentioned in the Text

'Immobilon' and 'Revivon': Produced by Reckitt & Colman Pharmaceutical Division, Hull.

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Paul Shapcott works with large mammals at Bristol Zoo, UK.

Preventing inbreeding in captive populations: American black bears in captivity

BY HANS JÜRGEN SCHRÖDER

Probably the largest population of captive American black bears (*Ursus americanus ssp.*) is in a wildlife park in the Black Hills of South Dakota, USA, with some seventy bears. In the breeding season they are separated in three enclosures. The cubs live in a small pen after being weaned artificially and this takes place in March, about two months after their birth. The yearlings and older animals roam on ten hectares, approximately 25 acres each and the two groups are maintained in separate areas. After the tourist season the gates between the two big pens are opened. The animals then mix and establish their winter dens in almost natural habitat. In 1981 twenty-eight cubs were born in the park. The owner sold some of them, two cubs were loaned out and twelve more were purchased in 1981. Generally the characteristics of the individual bears are not known by the keepers, with a few exceptions not even the sex is known.

Effects of Inbreeding

The phenotype of animals and plants is largely determined by the genotype, of genes on corresponding chromosomes. Genes can either operate a dominant, recessive, or an additive way.

Many genes for birth defects (or even lethal factors) are recessive. They are hidden in the genotype of individuals. Through the breeding of closely related animals recessive genes are more likely to find expression leading in the F₁-generation to birth defects.

Even if no birth defects or lethal factors occur, this inbreeding leads to a mixture of closely related additive genes. This can generate poor condition and constitution in the F₁-generation. A high percentage of juvenile mortality was found among inbred wild ungulates in fifteen out of sixteen species (Ralls et al 1979). Also inbreeding often leads to reduced fertility in the