

was successfully administered using the same method. Assuming there was no loss of Flexibil during injection, and assuming the estimated weight of 250 kg. was correct, dosage was 0.64 mg./kg. body weight. After this paralysis occurred very quickly, most noticeably in the extremities. First the Polar bear assumed a dog-like sitting position, and ten minutes after the second injection, she lay on her side. She was, however, still able to raise her head, to snap and carry out defensive movements with her fore-legs. It was now possible to remove the piece of bone with the appropriate instruments.

Finally, about 70 minutes after the first injection, she was injected with 1 mg. Atropin sulfuricum and 2 mg. Protizimin<sup>5</sup> with the zoo injection syringe; and after a further 10 minutes, an injection of 5 ml. Veriazol<sup>6</sup> in order to weaken the effects of the Flexibil. The symptoms of paralysis then became visibly stronger. Eighty minutes after the first injection, breathing stopped. After the front extremities had been tied up, artificial respiration equipment was drawn into the inner cage through a hole in the roof. At the same time, artificial respiration was begun and oxygen directed into the mouth by means of a rubber tube fixed to an iron bar. After two hours of artificial respiration and a further injection of 5 ml. Veriazol, 200 minutes after the first Flexibil injection, light, steady, spontaneous breathing was observed. An hour later the Polar bear got up. On the following days she took food and water and apart from appearing to be still rather limp, she showed no further peculiarities.

#### PRODUCTS MENTIONED IN THE TEXT

1. Cap-Chur Gun, Palmer Chemical Co. Atlanta.
2. Combelen, Farber Beyer, Leverkusen.
3. Flexibil, C. H. Boehringer & Sohn, Ingelheim a. Rhein.
4. Potanevel, Hoechst, Frankfurt/Main.
5. Protizimin, D. Hoffman La-Roche AG, Grenzach/Baden.
6. Veriazol, Knoll A G, Ludwigschafen, Grenzach/Baden.

#### REFERENCE

Jaksztién, Westhues, Fritsch, *et al* (1961): *Narkose der Tiere*, Verlag Paul Parey.

## LESIONS IN THE VICINITY OF THE EYE OF THE WHITE RHINOCEROS

*Diceros simus*

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OVER the past few years, a number of White rhinoceroses were encountered with lesions in the vicinity of the eyes:

1. A post-mortem examination carried out on the carcass of an adult female, which had been brought to Pretoria Zoo to be prepared for mounting at the Transvaal Museum, revealed the presence of numerous exostoses round the orbits of the eye. One of these outgrowths was approximately 2 cm. long and it almost occluded the proximal opening of the naso-lacrimal canal.
2. During November 1963, our young White rhino bull, 'Ntjebe', developed ulcerations at the medial canthus of both eyes. These ulcerations were 1 cm. deep and 3 cm. long. This case is described below in more detail.
3. During March 1964, similar lesions, as in Case No. 2 were observed in a White rhino in the Umfolozi Nature Reserve.
4. A White rhino in the Umfolozi Nature Reserve became completely blind as the result of extensive cauliflower-like growths which covered the entire surface of both eyes.
5. During November 1953 a young female, transferred from Natal to Pretoria Zoo, developed lesions similar to those described above in Case No. 2. Surgical and medicinal treatment, as well as radio-active therapy over a period of ten years all proved unsuccessful. Granulomatous growths, which developed from these lesions, eventually assumed such widespread proportions as to include the third eyelid and part of the surface of both eyes. For humane reasons, the animal had to be destroyed.

A close correlation seems to exist between the five cases described above. It is suspected that injuries are the primary cause of such lesions. It is quite possible that the various lesions

represent different developmental phases of the same condition.

In Case No. 2, where ulcerations were present in the medial canthus of both eyes, it was noticed that tears were running over the cheeks while the nostrils remained relatively dry. This led to the conclusion that the naso-lacrimal canals were blocked; a suspicion that was confirmed when 2 per cent Sodium fluorescein was dripped into the eyes. The fluid drained over the cheeks and did not appear in the nostrils as was the case when the experiment was repeated with a healthy animal. Case No. 2 is continually involved in fights with his female companion and the blocking of the ducts could have been caused by bruising, chronic inflammation or exostoses in the vicinity of the naso-lacrimal duct.

The abnormal drainage of tears caused a softening of the skin in the vicinity of the eyes, and large numbers of domestic flies, *Musca domestica*, were attracted to the area. The rhino alleviated the irritation by rubbing its head against hard objects. The lesions caused in that way soon became infected and purulent. At a later stage, the ulcers were lined with granulation tissue. The lesions probably would have developed into granulomata if the animal had received no treatment.

Apart from a variety of bacteria, even *Habronema* larvae could have been deposited by house flies. Such larvae could have been responsible for the formation of granulomata as in the case of 'cutaneous habronemiasis' in horses, or 'cutaneous filariasis', as described in the Black rhino, *Diceros bicornis*.

*Treatment.* The lesions of Case No. 2 were treated three times a day, according to the following formulation:

Cocaine	1 per cent
(local anaesthetic)	
Chloromycetin	5 per cent
(broad spectrum antibiotic)	
Prednicilone	1 per cent
(corticoid)	
Methyl cellulose	qs.ad.
(base, forming layer over the lesion)	

The ulcers healed within two weeks and only narrow scars remained to indicate the site of the original lesions. Similar lesions, however,

again developed after four weeks. The above mixture was then applied three times a day, with Chloromycetin replaced by 5 per cent Polymixin and 5 per cent Neomycine. After a period of three weeks, the lesions again healed completely. However, it was experimentally determined with Sodium fluorescein that the naso-lacrimal ducts were still obstructed. Unless these ducts are opened surgically, a recurrence of the lesions in the same region can be expected.

## CHOLELITHIASIS IN AN AMERICAN TAPIR

*Tapirus terrestris*

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AN adult female American tapir, kept for over two years at Warsaw Zoo, suddenly died after a short disease which manifested itself by transient fits of nervousness, sweating and a declining appetite. Death occurred four days after the symptoms had first been noted and a fortnight after parturition.

Autopsy revealed a number of morbid anatomical changes which indicated gall stones as the fundamental cause of death. The animal was suffering from fibrinous inflammation of the parietal peritoneum, myocardial degeneration, degeneration of renal parenchyma, a gall stone in the common bile duct, haemorrhages and ecchymoses, and yellowing of the visceral peritoneum and mesentery.

The body found in the common bile duct was a yellowish green in colour and of a stratified structure in cross-section. It was 6 cm. long, 1.5 cm. wide and contained a piece of plant stalk, the nucleus of the gall stone.

An interesting fact is the formation of a gall stone round a piece of plant stalk, which must have penetrated from the intestine into the bile duct where it undoubtedly acted as an irritant on the wall. At the same time, large numbers of bacteria must have entered into the bile duct by the same route. This must have caused inflammation of the duct (choledochitis) with consequent precipitation of bile components and development of the