

Annual Report of the Board of Regents

of the

SMITHSONIAN

INSTITUTION



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national Wild Waterfowl Association, Inc., was appointed to its board of directors in July 1958.

Keepers Burgess, DePrato, Stroman, Welk, and Widman brought young animals to the television screen repeatedly. Many of these programs were on "Time for Science" from WTTG, which is watched by 43,000 students in the District of Columbia, Maryland, and Virginia schools. A half-hour program devoted to the Zoo was broadcast from WTOP, sponsored by the Friends of the National Zoo, and showed the Director and Keepers Maliniak, Stroman, and Gallagher with a young gibbon, a baby chimpanzee, and two hybrid bear cubs.

Ordinarily the Zoo does not conduct guided tours of the park, but exceptions were made for groups of physically handicapped children who visited the park. Two groups were from the District of Columbia Health School, whose children were brought by the Kiwanis Club, and another from the Silver Spring Intermediate School. A small group of blind children were conducted through the Zoo in July 1958. They came from Four Corners (Md.) School and were sponsored by the Lions Club International.

Fifteen members of the Virginia Society of Ornithology, Northern Branch, met at the birdhouse to study Central American birds. The American Society of Mammalogists, during its 3-day meeting in Washington, spent an afternoon on a guided tour of the Zoo. Ten students of chordate anatomy from Baltimore (Md.) Junior College were taken on a tour of the reptile house by Senior Keeper Mario DePrato.

While the Zoo does not conduct a regular research program as such, effort is made to study the animals and to improve their health, housing, and diet in every way possible.

VETERINARIAN'S REPORT

During the past year further uses of the projectile syringe for treatment and immobilization of the large animals in the collection were investigated.

With the help of Dr. Warren Pistey of the New England Institute for Medical Research, experiments utilizing the drug succinylcholine were carried out on numerous species with a view to developing a safe method of immobilizing animals for treatment and such routine procedures as the intradermic tuberculin test. Successful immobilization was accomplished by this method in the zebu, eland, tiger, lion, fallow deer, Virginia deer, gaur, American elk, yak, American bison, giraffe, peccary, and red deer. All these were immobilized without any form of physical restraint being applied. The full particulars of these and other immobilizations are to be published in two papers concerning the use of succinylcholine. The first paper was presented

with motion pictures by Dr. Pistey at the Midwinter Conference of the Midwestern Zoological Park Directors at Columbus, Ohio, in February 1959.

The projectile syringe was used also to effect the capture of an escaped Barbary ape. In this case the drug used for immobilization was the alkaloidal form of nicotine because of its more rapid and predictable action.

The past year has shown that the change in diets instituted in 1958 was a wise move. Wastage sharply decreased, animal reproduction is improved, and a better understanding of the nutritional state of the collection has been gained. One dietary change of major importance was instituted this year by the substitution of a packing-house byproduct for a portion of the raw ground horsemeat formerly used as the carnivore ration. This product has a much better nutritional analysis than horsemeat and requires no labor to bone and grind, as it is supplied ready to use.

As in the past 2 years, all bacterial isolations and identifications were made by Dr. F. R. Lucas, director of the Livestock Sanitary Laboratory at Centreville, Md. At least 300 bacterial isolations and 25 tissue examinations were made by Dr. Lucas for the park in the past year. Most important of the bacterial isolations are the following:

1. Four isolations of *Salmonella typhimurium* from the fecals of hoatzins brought back from British Guiana by Mr. Grimmer.
2. *Salmonella typhimurium* from a great red-crested cockatoo.
3. *Salmonella cholerasuis* var. *kunzendorf* from the spleen of a slow loris.
4. *Salmonella arizona* from a fox snake.
5. *Salmonella edinburg* from the intestine of a viper.
6. *Salmonella georgia* from the blood of a rainbow snake.
7. *Hemolytic micrococcus* from a young DeBrazza's guenon.
8. *Hemolytic micrococcus* from a pronghorn antelope.
9. Short chain streptococcus and pasteurella from an Indian rhinoceros.

The numerous enteric pathogens being isolated indicate that more attention must be paid to the cleanliness of food preparation and utensil cleaning operations.

In addition to the above, Dr. Lucas also identified *Leptospira* organisms in dark-field examinations of kidney tissues from one of the Zoo's aged bush dogs which showed gross kidney pathology. This and earlier reports indicate that leptospirosis is a problem in small mammals, particularly the canines.

Many parasite identifications were made by A. McIntosh and M. B. Chitwood of the U.S. Department of Agriculture. The following parasites, however, are repeatedly identified from the species indicated:

- Bears—*Toxascaris transfuga*.
- Cats—*Toxascaris leonine*.
- Grant's zebras—*Parascaris zebrae*.

Albatrosses—*Tetrabothrium* cestodes.

Snakes—*Neorenifer* flukes, *Bothridium* and *Ophiotaenia* cestodes.

The bears, cats, and zebras have been repeatedly treated with piperazine compounds, but the parasites persist. The zebra paddocks are certainly contaminated with infective parasite eggs, but the cats and bears are on concrete, which should help to break the parasite cycle.

Several of the Zoo's more valuable large mammals died during the year. The first loss was the female wisent, which had a fine calf by her side. She died within minutes of being found down. No previous indication of sickness in the animal was noticed, and nothing unusual was noted on the day prior to death. Necropsy was performed by the Armed Forces Institute of Pathology, but the gross post mortem failed to disclose the cause of death. A condition similar to bovine ketosis was suspected. The 13 bacterial cultures taken from important organs of this animal were all negative for pathogenic organisms.

The Indian rhinoceros received in July 1939 sickened on January 8. Symptomatic treatment was begun, using the projectile syringe, but the animal died the next day. Necropsy was performed by the Armed Forces Institute of Pathology. The pathological diagnosis was hemorrhagic enteritis, ascending cholangitis, arterio and arteriolar nephrosclerosis, hemorrhagic lymphadenitis, cholelithiasis, and acute pneumonitis. Of the 12 bacterial cultures taken from important organs in the animal, all were negative except two blood cultures, from which short chain streptococcus and bipolar rods were isolated.

The male okapi became sick on February 1 and was treated with the projectile method for 6 weeks until a sputum sample was obtained. This was examined by Dr. Feldman of the Veterans' Administration and found positive for acid-fast organisms. The animal was euthanized for necropsy by the AFIP. Examination of the carcass disclosed pulmonary granulomas consistent with tuberculosis infection.

The cage next to the okapi was occupied by a female African black rhinoceros which had been failing in physical condition for some months. A sputum sample obtained from the animal was examined by Dr. Feldman and declared heavily laden with acid-fast bacteria. The animal died on April 21. Necropsy revealed lesions similar to but more extensive and of much longer standing than those found in the okapi. Since these animals had some physical contact over the cage partition, transmission of the infection may have occurred by this route.

A family of elands consisting of an adult male and female and a female calf were all found to have similar lesions during the year.

Dr. A. G. Karlson of the Mayo Foundation was able to isolate *Mycobacterium tuberculosis* var. *bovis* from the okapi, rhinoceros, and the two adult elands. Results of examination of culture from a young South American tapir and an old female American bison are being

awaited. In addition, three capybaras and two more old bison showed necropsy lesions of tuberculous infection.

A young DeBrazza's guenon, a 6-week-old squirrel monkey, a pig-tailed macaque, and a moor macaque all sickened and died rapidly with signs and necropsy findings consistent with a virus encephalitis. No definite diagnosis could be made because of lack of facilities. The problem of virus infections is one which needs investigation, since it is probable that immunization procedures would be of considerable value.

Other losses during the year were animals that may have established a longevity record, such as the white-faced heron (*Notophoxyx novae-hollandiae*), which was received September 11, 1938, and died August 20, 1958; Anzio Boy, the hero homing pigeon, hatched in San Prisco, Italy, in 1943, and credited with completing 38 wartime missions in Italy during World War II; the Przewalski horse, born in Philadelphia in 1926; and the African civet (*Civettictis civetta*)¹ which was brought from Liberia by the Smithsonian-Firestone Expedition of 1940.

A long-acting ataraxic drug (Trilafon, Schering) has been used with very encouraging results on the following animals, all except the last being given by projectile syringe:

Gaur, young male. This animal was shipped to the Philadelphia Zoological Gardens after receiving two doses of the drug. He was crated, loaded, and trucked without creating any disturbance.

Yak, male. This very aggressive bull was given one dose of the drug which lasted for 4 days, during which it was possible for the men to enter his pen.

American bison, male. This bull became aggressive when it was necessary to treat one of the old cows. He also began to knock the cow about and keep her down. After the drug had been given he became docile and easily managed.

Brown fallow deer, buck. The animal was extremely excitable until given this drug for the removal of a leg cast.

Pampas cat. This excitable individual was given a small dose of the drug to facilitate trapping and moving to new quarters. The move was easily accomplished, and the effect of the drug lasted during the early acclimatization period in the new cage.

Following are the statistics for the mortality rates during the past fiscal year and a table of comparison with the past 6 years:

Mortality, fiscal year 1959			Total mortality, past 6 fiscal years	
	Deaths	Attrition*		
Mammals	95	25	1954	648
Birds	148	24	1955	735
Reptiles	138	42	1956	618
			1957	549
			1958	550
Total	381	91	1959	472

*Attrition is the term used for those losses due mainly to the trauma of shipment and handling after accession at the Zoo, or before an animal can adapt to cage habitation within the collection.

¹ Originally identified as *Civettictis civetta*, the animal was later carried on Zoo records as *Herpestes ichneumon*, but proper identification has been established as *Civettictis civetta*.