

# Veterinary Medicine in a Zoological Park

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THE conception of the plan of keeping collections of mammals, birds and reptiles for exhibit is prehistoric, but the method of exhibiting animals in a park today has changed in degree as much as the mode of transportation from bullock cart to modern car. Many zoos are still showing their original models, some have rebuilt, others have turned in their old buildings and with the aid of W. P. A. or private funds, have either added to the original buildings or, in many cases, have built entirely new parks on the modern plan. The construction of Zoological Parks, their operation and the active exhibit of animals (usually three classes, birds, mammals and reptiles) is closely tied up with veterinary medicine; in fact, the economy of operation is directly proportional to the judicious application of veterinary knowledge, through the veterinarian, not as a zoologist, efficiency person or disciplinarian, but primarily as a sanitarian, dietician, therapist and pathologist, (pathology in the broad sense, including causation, development, nature of, and disturbances—structural and functional—produced by disease). As sanitarian, he is invaluable as an aid to the architect and construction engineer to advise the practicability and adaptability of construction materials, for cleanliness and comfort for the various animals exhibited, to advise the amount and kind of air conditioning, with special reference to humidity necessary to individual exhibits and suggest sources of water and light.

There are eight zoos in America which exhibit in excess of 3,000 specimens and often exceed 1,000 species from the Ruby and Topaz hummer weighing 1.9 grams to the Indian elephant weighing 3,000,000 grams.

## Function

The primary function of a zoological park is the instruction of its public in

zoological lore. To attain this end the management, whether an incorporated eelymosynary society (Philadelphia, New York, Chicago), a civil institution (the national zoo) or privately operated zoos (Hersey), aims to exhibit the greatest possible number of species, in the best possible condition, as true representatives of the species. Most important today, is the exhibit of some strange, uncommon specimen to out do others in a competitive fashion, Komodo Lizard, Giant Panda, Gorilla, Elephant Seal, Okapi, Bongo, Saiga, Vampire Bat, Solenodon, Echidna, Platapus, Koala; to exhibit them to the greatest number of visitors in an attractive manner, and show the complete life cycle of the species, the new born, the preadult, the adult, mating, birth of young, post adult or aged; to place the animals in an environment which will permit the visitor unobstructed observation of their habits and to acquaint the public with these normal stages of development, anatomical, physiological and psychological, by all modern means. The food budget for these zoos individually exceeds \$40,000 and the cost of operation from \$100,000 to \$300,000 annually. Acclimatizing or rezoning new acquisitions and more especially the establishment of adequate acceptable rations, the medical care of exhibits arriving in poor condition, the treatment of animals showing active disease (often the result of dietary inadequacies), housing and the research associated therewith, is the business of the veterinarian. His first thought is, however, preventive medicine.

## Cosmopolitan Community

The Park is a cosmopolitan community of animals, indeed quite different from a human community because we are able to reach that Utopian state of selecting who shall live in the community and regulating their life, diet, housing, sleep, ac-

tivity and contacts, including the practice of euthanasia (a modern zoological purge). If we select our original specimens with care and understand their dietary and housing requirements, we may well expect to have them exceed the normal life span experienced in their native habitat. Unfortunately we know too little about many rare specimens, or we are economically unable to supply the housing we believe they require and often lose them after too brief an exhibit period. Directors of Zoological Parks know the experience of others with certain rare animals and prefer to exhibit them immediately, if only for a short period without the usual quarantine and adjustment so that their society can go on record as having exhibited such rare specimens.

#### Source of Animals

Most animals are purchased outright from dealers who make a business of collecting birds, reptiles and mammals through agents in foreign and out-of-the-way ports all over the world. Recently the director of a large eastern zoo told of his experience in the far East, while on an expedition sponsored by a national

organization to collect animals. He had travelled inland in Sumatra after receiving special Governmental dispensation (Dutch) through his position, contacts and papers, accompanied by the usual retinue of native soldiers (to see that he did not exceed his permission, rather than protect him from extraneous dangers). After much difficult travel, he arrived at a point where he was to pick up rare birds and reptiles and, to his astonishment, found a New York dealer on the spot, who greeted him cordially and showed him the many interesting specimens he might buy from this dealer in his New York depot on his return.

#### Private Expeditions

Some animals are obtained during the course of private expeditions, and occasionally zoological societies institute their own expedition for collection; and a small number, birds in particular, are received as donations from local people who are giving up a pet. In any event, originally, most specimens are actually caught by native hunters, who sell or trade to the collector. This is true of both private and commercial collection.

Prices are relative and depend on what the buyer is willing to pay. There is as much difference between animals of the same species as between horses. Physical conformation, condition, age, type and livability must be considered. Often there is a 1,000% variation in cost because of these factors. The following list of prices is typical:

#### Prices

Gorillas .....	\$600 - \$2,000
Chimpanzee .....	250 up
Orang .....	400 up
Gibbons .....	200 up
Baboons .....	75 up
Lions .....	100
	(as high as \$1,400)
Bear .....	200
	(or cost of transport from National Park)
Sea Lion .....	75 up
Fur Seal .....	500
Indian Elephant .....	800 up
African Elephant .....	2,000 up
Abyssinian Wild Ass .....	5,000
	(as high as)



Tropical mycosis is common in the primate. This young orang-utan is having the site of the healed lesion massaged to bring about normal skin texture.



Aged elephants kept on concrete floors have pedal disturbances. A solution of copper sulphate in a wooden tub is ideal for controlling infection.

Indian Rhino .....	5,000 up
African Rhino .....	2,500 up
Giraffe .....	2,500 up
Dromedary .....	500 up
Hippopotamus .....	4,000 up
Pigmy Hippopotamus (pair) ....	12,000
	(as high as)
Okapi .....	10,000
	(if they could be purchased)

#### How Animals Are Imported

Prices are high because of excessive transportation charges and insurance (usually they are not insured because of prohibitive rates). Let us review the procedure followed incident to the purchase of animals. A zoological garden wished to obtain a pair of giraffe and rhinoceros. Contact was made with a dealer who has an animal collecting base northeast of Nairobi, in Kenya Colony, in rhino and giraffe country. This dealer, a major leopard skin exporter (10,000 skins annually) has 3,000 native hunters in his employ throughout the African con-

tinents. A price was agreed upon for delivery of the specimens *alive* at the Port of New York. They were to be young. Permission was granted by the Bureau of Animal Industry to import the animals after it was understood they came from a disease-free source and would be accompanied by a certificate of health from the official veterinarian at the port of embarkation (all requirements of the regulations were met at this end and the Bureau of Biological Survey granted permission.) The shipment was assembled at the base in Kenya Colony after the Territorial Government granted permission for their capture and export. They were moved by truck overland to the railroad at Nairobi. A truck overturned, killing one rhino. The remaining three animals continued by rail to Mombassa, port of embarkation, on the East Coast. The three individual crates were made a deck load on a freighter. The shipment was consigned at that port to the zoo, so that Customs duty might be

waived on presentation of Oath of Free Entry by the zoological park when they entered the New York Port. Three days out the second rhino died (cause of death undetermined). The specimen was thrown overboard, the common procedure. The two giraffe arrived at the Port of New York after 46 days at sea. The entire shipment had been insured. The dealer was compensated for his loss. Because of this experience the risk on rhinos is greater and consequently the rate is higher. The animals were cleared by Customs, released by the Bureau of Animal Industry representative, and released subject to fifteen days quarantine at the Government Station at Athenia, New Jersey. The zoological park's representative veterinarian observed the animals. He found both specimens badly stocked with an injured leg in one specimen (trauma to the fetlock). The crate had overturned in a storm. However, the agreement, both insurance policy and dealer pledge, read specifically "delivered alive" with no mention of soundness. The crates were swung over the side and secured on the chassis of a truck and moved to Athenia from Brooklyn (Borough of Kings) over the Manhattan Bridge, across

Manhattan Island, over the Hudson River via George Washington Bridge. The usual 18 mile journey was stretched to 40, and five hours were used in the course of seeking out underpasses which had sufficient height to permit the fourteen foot giraffe passage. Many hours were spent moving the animals to box stalls at the quarantine depot. They could not be enticed with food, could not be led or driven and kicked viciously, head high. After an uneventful quarantine they were released, placed in new heavier crates, moved back onto the truck and transported 3,200 miles overland to their destination, on the Pacific Coast. Today the injured fetlock is approaching normalcy without intervention other than permitting them free range, cleanliness and adequate diet.

#### Animal Dealers

The great majority of specimens are purchased directly through animal dealers, who hold the specimens at their depots in this country. The majority are in New York City. They have completed their quarantine and are ready for delivery after the transaction is complete.

Most losses occurring during transportation are due to draft, temperature extremes (heat exhaustion and sunstroke), food infection, anorexia with resulting in-



This young gibbon came to us with a generalized infestation of *Sarcoptes scabiei*. The recuperating arrival is frequently groomed and oiled (vegetable).

adequacy diseases and poisoning due to the use of coal tar derivatives or other objectionable disinfectants in and on cages resulting in food contamination. Animals also require quiet. The late Ellis Joseph, the greatest wild animal importer of all time, related his method of transporting large shipments of mammals and birds. He would take on men, experienced if possible, to do the routine watering, cleaning and feeding and then instruct them in this fashion. "You men will be approached by passengers who have a keen desire to see our shipment below decks. I tell you now, the animals must not be disturbed under any circumstances. You may be paid 50 cents or a dollar for each visit. If I catch you disobeying this rule, I'll fire you on the spot and log you. If we go through without a break, I'll give you a fifty dollar bonus." Mr. Joseph had great success and experienced small losses. However, he did relate an experience with a shipment of 50,000 Australian finches, most of them shaft tails and Gouldians. During transportation his losses began—an epidemic septicemia (*Salmonella sp.*), and he arrived in Chicago with 300 birds. A local dealer took 200 with the understanding that he would compensate Mr. Joseph for the survivors. There were none. The remaining hundred came on to New York. Three were given to Mr. Lee Crandall, Curator of Birds at the New York Zoological Park. Two survived of the original 50,000 and lived for some years. These survivors must indeed have had an outstanding genetic resistance.

#### **The Application of Public Health Methods**

All new acquisitions must undergo a quarantine in the hospital (reptiles are not quarantined, but undoubtedly should be. Snake sanitation is of the lowest order and reptiles generally have a high mortality rate in every zoo in the world. Snake handlers are not good sanitarians and definitely not bacteriologists. No animal can apparently demonstrate quite as much pathology, bacterial and parasitic, as a snake.) (Schroeder 1934). The minimum period to be held is fifteen days. The specimen is not released after that

period unless it shows good appetite, is bright, shows a negative stool and is a fair representative of the species.

#### **No Immunization**

No attempt is made to conduct immunizations. It is hardly practical to attempt specific immunizations to protect specimens against an unknown pathogen. We exhibit many specimens of carnivores which are experimentally known to be susceptible to canine distemper virus infection, but a break has never occurred and probably will not unless a carrier or specimen with active disease is brought into the collection (Hamerton, 1937). When an animal has completed quarantine it is placed in an enclosure in the zoo to spend the rest of its life without a change of environment and it is therefore unlikely that it will experience an infectious transmissible disease by animal contact. Unfortunately we cannot completely isolate animals from the public, food contaminants or the keeper himself; and it is these sources that are usually responsible for infectious disease: tuberculosis mycoses, *Aspergillus sp.*, *Epidermophyton sp.*, *Actinomyces sp.*, common cold (gibbons, chimpanzees, gorillas, orangs, galagos), *Neisseria sp.* (catarrhalis), *staphylococcus sp.* and *streptococcus sp.* It is the experience of most zoos that a minimum of restraint for all specimens will guarantee a longer exhibit life. Unfortunately, quarantine necessitates shifting animals and birds by the use of crates, bags and catching cages. Instead, valuable specimens are often immediately placed in their exhibit cage, especially when they are single specimens, to avoid this handling. The only danger of this method lies in the likelihood of transmitting parasite ova or infectious disease to other related animals in the same building by way of the keeper.

#### **Tuberculin Test**

Tuberculosis, usually *Mycobacterium tuberculosis*, human, in the primate is too commonly met in collections of monkeys (Schroeder 1937). The only diagnostic test for identification of any disease used on living specimens is the applica-

tion of a tuberculin test to incoming monkeys and at six months intervals thereafter (Hammerton 1935) (Schroeder 1938). The test consists of the injection of 1 mgm. of Purified Protein Derivative tuberculin (Seibert 1934) (1% Sol. 0.1 cc. = 1 mgm. P. P. D. = 0.5 gm. K. O. T.) intrapalpebrally into the upper lid near its margin. The reaction is read at 16, 36 and 72 hours, and consists of oedema, redness, or necrosis. Extent of reaction is immaterial, since all reactors are destroyed immediately. The large dose of tuberculin is often fatal to tuberculous monkeys by shock.

Parasitism is usually not treated med-

from our hay supply, because of the unwillingness of deer and related ruminants to eat stem. We now buy alfalfa U. S. number 1, extra leafy and chop it ( $\frac{3}{8}$  inch). A balanced ration based on a hundred pounds live weight, using the modified Wolfe Lehman standards in conjunction with the work from Arizona (Nichol 1938), Alaska (Palmer 1934) and Cornell University (Maynard 1935) on experimental deer feeding, is now being used. The roughage factor is considered in the preparation of these diets. Our meat is all U. S. inspected and passed bull and cow hind quarters, beef heart and kidneys. Particular exhibits make



Young chimpanzees are highly susceptible to the virus of common cold. During recuperation it is important to prevent reinfection. Hospital attendants wear masks when administering medicine.

icinally unless the infestation is heavy. We usually resort to prevention of reinfection by eliminating stools from the animal's environment as fast as passed, and insisting on dry quarters. Our bedding is dehydrated shredded sugar cane, which admirably answers this need.

#### Food Supply

The food supply is most important. We found we were experiencing a major loss

special dietary demands; roses for the parasol ants, fresh killed pigeon for the solenodon, fresh defibrinated beef blood for vampire bats, meal worms and fly larvae for marmosets, fresh cane (imported from Florida and Louisiana) and corn shoots for the Giant Panda, avocado for the birds of Paradise.

To reduce food infection to a minimum (*Salmonella* sp., *Staphylococcus* sp., *Proteus* sp.) all meat and meat products and

fish are moved from the refrigerators directly to the animals to be fed in glazed paper-lined, sterile, metal cans.

### **Vitamin D**

Because most of our specimens spend seven months indoors and many never experience direct sunlight, we feed a natural vitamin 'D' fish-liver oil. Supplemental feeding is made with fish-liver oil requisitioned to be of U. S. P. standard or better with international unitage equal to or exceeding 4,000 units 'A' and 600 'D'. (Actually our oil is a fortified shark-liver oil with a bioassayed unitage of 9,000 'A' and 660 'D'.) The oil is used in all our rations. We also use steamed bone meal, milk (fresh, canned or powdered) or refined salts (Calcium diphosphate or lactate) either separate or combined with oyster shell to properly care for the calcium phosphorus ratio. Ferric ammonium citrate is standard in some rations as a source of iron to correct or prevent anemias.

Disinfection of quarters consists in physical removal of all organic matter by the use of a commercial detergent. The area is then acidified (Costigan 1936) using N/25 HCL; and disinfection is carried out with calcium hypochlorite, 10,000 parts per million in hot solution. This method is well tolerated by all exhibits, is odorless and economical.

### **Surgery and Therapeutics**

Surgery is of minor importance in a zoological collection. In the author's experience he has seen three operable fractures in five years at a zoo in California, and three in two years at New York. Wild animals do not lend themselves well to restraint. Fatal shock is common, especially among birds. Manual restraint is avoided whenever possible. More successful simple fracture repairs have been seen where there was no surgical interference than where the best modern technique was employed. Most zoo men who find an antelope with a simple fracture place it in a darkened box stall and feed and water it with the greatest care. As a consequence they have much pleasanter fracture experiences than they would if an

attempt were made to sling the animal, reduce and cast the fracture. This of course does not apply to the occasional tractable animal, where the Thomas splint can be used to advantage. Obstetrical interference is usually unnecessary. Dystocias occur infrequently. If an animal is observed in labor, the public and, if possible, the keeper are excluded to give the dam absolute quiet and eliminate the possibility of proposed aid by the keeper. The maternal stall is made ready before the advent of labor if possible, but never attempted after labor is in progress.

### **Wounds**

Dentistry might be practiced more frequently—especially in the primate. Emergency surgery is practiced only when lacerated and puncture wounds are of such nature that their repair will materially modify the appearance of the specimen, cause loss of the tail or a leg or produce an unsightly scar. In these events the animal is destroyed. Wounds are never closed with sutures. Hemorrhage is controlled and the wound cleaned with a 0.25 - 0.5% solution liquor cresolis compound U. S. P. Shreds of tissue are removed together with hair. Good drainage is established and the wound cleaned only as often as is necessary to keep it open. Solutions of sodium perborate, potassium permanganate, copper sulphate and sodium hypochlorite are also used but do not have the excellent cleansing action of saponified cresol. Tincture of iodine is not often used and especially not where an abundance of subcutaneous fat is found. Urea has been found to be of some use, especially in "necrotic stomatitis" of snakes. Warm Epsom salt solutions are used frequently for immersing birds' feet and infected appendages of mammals.

### **Anesthesia**

The type of anesthesia used depends on the species of animal and its condition. We find barbituric acid derivatives excellent for emergencies when given intraperitoneally but very unsatisfactory where absorption of wound products has occurred with resulting liver changes. Opiates and inhalant anesthetics must

DEAN MURRAY INVITES YOU

Gentlemen:

The faculty of the Division of Veterinary Medicine join me in greetings to our alumni and other veterinary friends. We cordially invite you and your wives to attend the dedicatory services of the Charles Henry Stange Memorial Clinic on Wednesday, May 17, 1939, beginning with a six o'clock dinner in the Memorial Union.

Sincerely,

Charles Murray

Dean

CM::LM

For your convenience, you may clip and return to the "Veterinary Student":

I shall attend the Charles Henry Stange Memorial Clinic dedicatory services Wednesday, May 17, 1939. Please reserve .....tickets for the six o'clock dinner in the Memorial Union, (tickets \$1.00 each).

Signed .....

then be resorted to. Ether and chloral hydrate per rectum have been used. We are frequently asked how a big cat, lion, tiger, leopard, puma or jaguar is restrained. The modern way is to bait a shifting crate which consists of either a tin lined box or, preferably, a heavy wire or steel bound crate, with sliding end gates. The crates are usually known as "no turn" or "turn" crates. The "no turn" crate permits the operator to reach the patient's flank without permitting the animal to turn around. After carefully weighing the specimen a barbiturate is administered intraperitoneally. If the operator prefers, a small dose may be given and anesthesia completed with ether. Our choice of barbiturate is sodium pentobarbital, 29 mgm. per kilo. Birds are given an intramuscular injection. Intraperitoneal and intravenous injections are absorbed too rapidly and produce respiratory failure.

#### **Parasites**

If an outstanding parasitism is demonstrated with a constant or increasing ova count in fresh stools we administer vermifuges in the food. We use the most efficient drugs available having the least toxicity, if our patient will accept them unaltered or camouflaged. We use santonin or arecoline hydrobromide combined with a cathartic such as calomel. These drugs can be given in the animal's food without

restraint. Usually we can eliminate the parasites by keeping the animal's environment dry and free of stools and urine (prevention of reinfestation). In primates we use oleoresin aspidium for cestode infestations or in delicate specimens we use the old remedy of ground fresh pumpkin seed. A Siberian tiger will take 1,000 mgm. of santonin, 160 mgm. of arecoline hydrobromide and 600 mgm. of calomel in a single dose. No attempt is being made to be specific or cite our whole, though too limited, experience; but rather we are presenting generalizations.

The benefit derived or expected from intravenous medication with organic calcium preparations and dextrose is lost in the exhaustion experienced by the specimen following the restraint necessary to administer it. Tea and coffee are excellent stimulants. We have an axiom posted in our pharmacy over the balance which reads "The therapeutic hazard should not exceed the disease hazard."

Unquestionably the greatest single insurance against the necessity of applying radical therepeutic measures is the establishment of adequate diets.

#### **Pathology**

Every specimen, bird, reptile or mammal, that dies is delivered to the laboratory morgue (28° F-freezing but not so cold that excessive dehydration is experienced

**THE VETERINARY STUDENT**  
**IOWA STATE COLLEGE,**  
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in those specimens that are held for a long period.)

If postmortem change is not too pronounced, a complete examination is made. A group of physicians from the division of laboratories, department of pathology, under the direction of Paul Klemperer, M. D., assist with all postmortem examinations in order to make comparative pathological investigations. New York City is a paradise of laboratories and interested workers whom we speak of as cooperators. There are 24 institutions which receive material from our laboratory. If virus diseases are suspected, tissues are aseptically removed, placed in sterile glycerine (a special neutral glycerine) and sent to the Rockefeller Foundation for Medical Research, either at New York City or to the Princeton laboratories. Bacteriological studies are made in our own laboratory, and confirmation of identifications is made by other institutions. Occasionally frozen sections are made at the time of postmortem examination, but the bulk of sections are paraffin embedded and slides are prepared at the Mount Sinai Hospital Laboratory. Museum specimens are prepared from interesting forms of pathology, but an effort is made not to duplicate. It is our plan this year to keep a pictorial record of especially interesting gross pathology, using the new Kodachrome cut film  $3\frac{1}{4} \times 4\frac{1}{4}$  mounted between standard lantern slide covers. A detailed record of all findings is kept at the laboratory. (Schroeder 1937 Annual Report).

#### Death Reports

To report causes of death we attempt to follow the International list used in human medicine in a less complicated fashion. Following the group listings appearing in Mortality Statistics for 1936 U. S. Department of Commerce Bureau of Census, we list causes under the following headings:

1. Infections and parasitic diseases (1939 Hartley).
2. Diseases of the respiratory system.
3. Diseases of the digestive system.
4. Violent and accidental death.

5. All other causes including tumors (1938 Klemperer and Moschkowitz)—diseases of blood and blood forming organs, poisonings, diseases of the nervous system, diseases of the circulatory system, diseases of the genito-urinary system, diseases of bones, congenital malformations and ill-defined causes of death. For the year 1938 we exhibited 3,856 specimens, representing 1,132 species, with 979 deaths. A mortality rate of 25.3%. These deaths, however, include fatalities in all reptiles, birds and mammals that came to the park from all sources regardless of condition. The mortality rate in that group which was exhibited and survived 60 days after receipt was 14.1%. The highest mortality was in the reptile group, 43.2%. Peak fatalities follow new importations (Schroeder 1938). Other than trauma and tuberculosis, there are few specific causes of death. Poor food hygiene and dietary inadequacies are indirectly responsible for most deaths. To cite variations in specific causes the following list is given: arteriosclerosis (1930-36 Fox) (Food Allergies 1933 Schroeder), congenital malformations, destruction of the incurables and unfit, diseases of the thyroid and parathyroid, encephalitis (etiology undetermined), gout (especially visceral of birds), nephritis, rickets (Noback 1927), cage paralysis, osteoarthritis (1939 Fox), scurvy (of specimens normally thought to be able to synthesize vitamin 'C'), senility, still and dead births, sudden death (shock).

#### Summary

A Zoological Park is maintained primarily to acquaint the greatest number of people with zoological lore. To permit the economic exhibit of animals requires the diligent and judicious application of veterinary medicine. The average major zoo exhibits approximately 3,000 specimens representing 1,000 species, from the humming bird weighing 2 grams to the elephant weighing 3,000,000 grams. The most important factors that insure normal longevity rates are the intelligent rezoning or acclimatization of imported animals and the establishment of adequate diets.

# An Open Letter to the Veterinary Profession!

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No one realizes more fully than Armour and Company the important part you play in the welfare of America . . . the great job you have done in gradually stamping out the scourges of animal disease in this nation.

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**ARMOUR AND COMPANY**  
Veterinary Division, Kansas City, Kansas

\* Dr. R. D. Wall, 910 28th St., Des Moines, Ia., Armour and Company. Indianapolis; Armour and Company. Veterinary Division, Kansas City, Kansas. Fowler Brand Anti Hog Cholera Serum is also available at all Armour Branch Houses and Creameries.

Spring—1939

To be able to intelligently practice preventive medicine is more important than to be the most expert therapist. Most animals originate in the commercial animal dealers' quarters, who collect through agents abroad. Usually surgery and therapeutics must be resorted to as a result of poor management on the part of curator or keeper. Trauma is usually the result of visitor or keeper abuses. Disease usually follows poor housing, permitting drafts and rapid temperature changes, disregarding our knowledge of contact infection in related species, and further, neglecting to practice good sanitation.

The Zoological Park is a source of much valuable material for research in all the medical sciences, both veterinary and human. Adequate diet, good housing, and application of good sanitation are of paramount importance in the maintenance of wild animal collections.

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#### Dr. Failing Elected

Dr. G. S. Failing of Winona, Minn. was chosen president-elect for 1940 at the Minnesota Veterinary Medical Association meeting in January. His son, Frank, is a member of the Sophomore class.

Dr. Failing is a graduate of the Kansas City Veterinary College and has had a wide and varied professional experience. During the World War he served overseas as a 1st Lieutenant. Following his return, he engaged in general practice at Lewiston, Minnesota for about 10 years. He then accepted his present position as Winona Dairy Inspector.

Dr. Failing has been active in Public Health Work and in the Tri-State Veterinary Association, serving as president of the latter organization in 1938.

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**Welcome to the Clinic Dedication**  
**May 17**

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*The Veterinary Student*