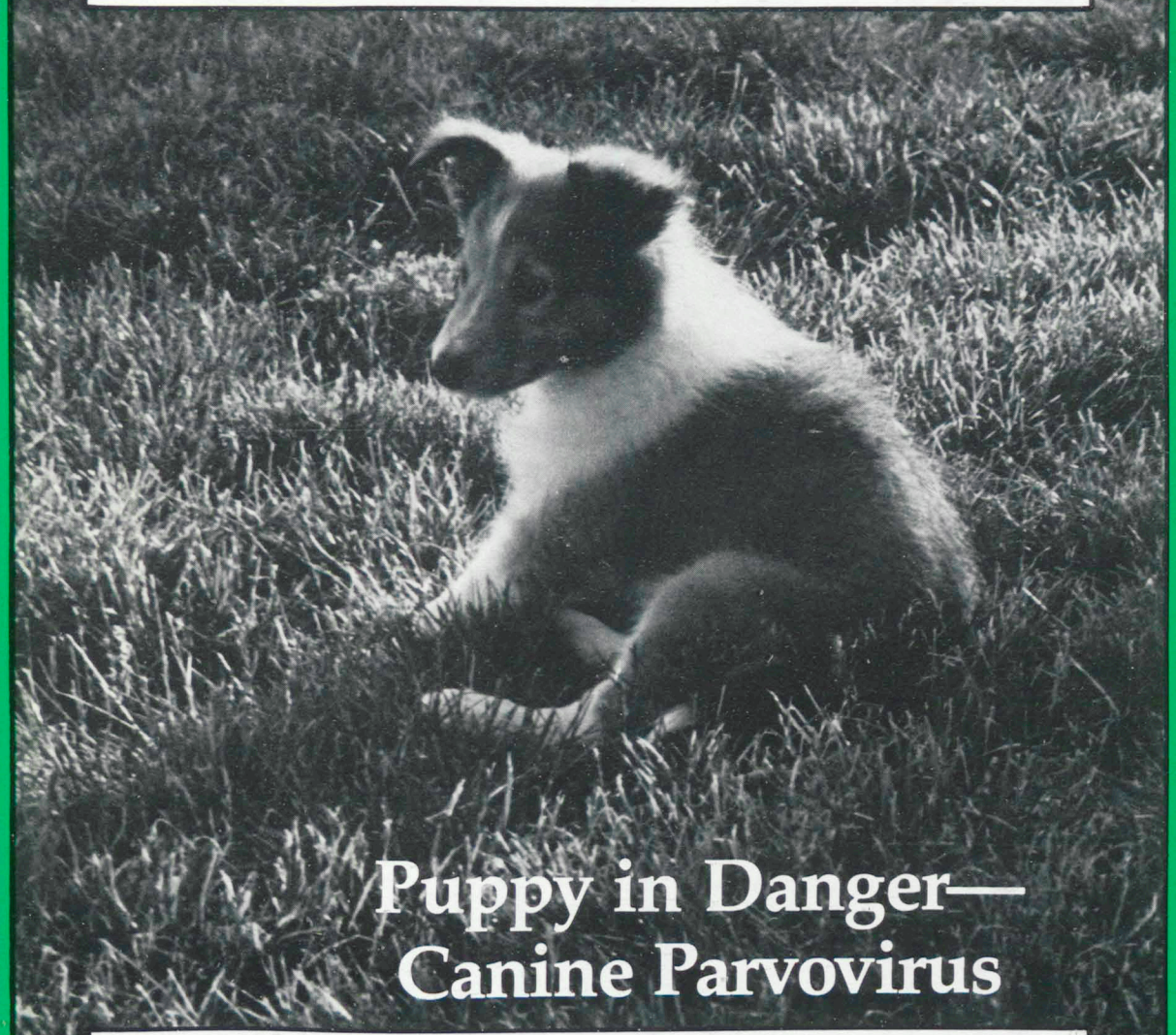
VETERINARY MEDICAL REVIEW



Puppy in Danger— Canine Parvovirus

University of Missouri-Columbia
College of Veterinary Medicine and
Cooperative Extension Service

November/December, 1980, N.S., Vol. 1, No. 5
and MISSOURI VETERINARIAN, Vol. 30, No. 3

Reduced Dose of Strain 19 for Brucellosis Control

Careful Handling Needed

Anne Chadwick
State Veterinarian's Office

October 15 marked the initiation of another phase in Missouri's brucellosis eradication campaign. On that date veterinarians began using a reduced dose of Strain 19 vaccine on last spring's heifer crop.

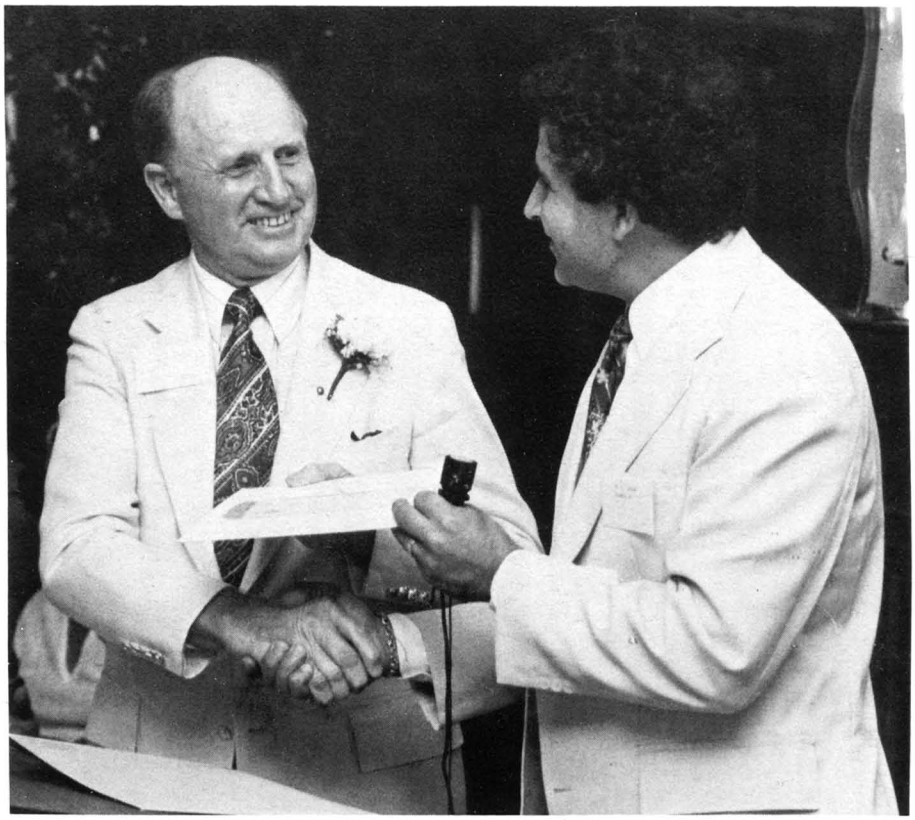
Research conducted at the National Animal Disease Center in Ames, Iowa indicated that diluting Strain 19 to one billion live cells per 2 cc. dose significantly reduced the side effects and persistent titers associated with the unlimited number of organisms present in the standard 5 cc. dose. Cutting the dose also allowed for an extension in the vaccinating age from the previous two to six months to four to twelve months (120 to 330 days).

With a whole year's supply of Missouri heifers at stake, state animal health officials decided to take immediate advantage of the research and implement a new vaccination program. Before launching the new program, the Missouri Department of Agriculture and USDA sponsored a series of required seminars for practitioners in five different locations. Veterinarians earned five academy credits for participating in the sessions, which dealt with changes in the Uniform Methods and Rules, completion of forms and detailed procedures on handling the reduced dose vaccine.

Dr. Taylor Woods, state veterinarian, reports the seminars were well attended and that practitioners should now be well prepared to carry out the new program. "I don't think we can stress enough the importance of careful handling of the vaccine. Since it is only good up to an hour after diluting, we can't have a practitioner throwing a partially used vial in the back of his truck and then using it on the next client's animals. It should be carried in a cooler with ice packs."

The number of Missouri herds under brucellosis quarantine showed no signs of decreasing this fall, with 218 restricted on the last day of September, an increase of 11 herds over the previous month.

Ed. Note: Although the U.S. Animal Health Association has recently suggested that a 1 cc. reduced dose of Strain 19 may be used by veterinarians, the State Veterinarian's Office (MDA) still recommends that Missouri veterinarians use the 2 cc. dose. Dr. James Badger said on November 13 that ample supplies of diluent remain available in Missouri for the 2 cc. dose.



Dr. Bojrab (right) presents Dr. Jensen (left) a gift certificate as a token of appreciation from veterinarians, faculty, students and friends for Dr. Jensen's work and unexcelled teaching in veterinary ophthalmology.

Dr. Jensen Honored at Special Dinner

More than 100 people came to honor Dr. Harlan Jensen at a dinner held for him September 6 at Columbia's Country Club. Following thirteen years of service, Dr. Jensen retired from the College where he worked as a specialist in veterinary ophthalmology.

Dr. William F. Jackson, past president of the American Veterinary Medical Association, presented a biography of Dr. Jensen following dinner. Another special guest that evening was Dr. Glen Severin, veterinary ophthalmologist at Colorado State University.

The University had extended special recognition to Dr. Jensen by awarding him the title of Professor Emeritus of Veterinary Medicine and Surgery.

Dr. Jensen received his DVM degree from Iowa State University in 1941. He had worked 26 years in private practice. He is a Diplomate of the American College of Veterinary Ophthalmology. In 1967, he joined the faculty at UMC, and was awarded his PhD degree by this institution in 1972.

Important Dates to Remember

Annual MVMA Meeting - January 25-27, 1981. Lodge of the Four Seasons, Lake Ozark, Missouri. The College will have an alumni-friends booth.

Intermountain Veterinary Medical Association Meeting - February 16-19, 1981. Las Vegas Hilton, Las Vegas, Nevada. We will have an Alumni Reception Monday, February 16, 1981, 6:00 p.m., Room E, Las Vegas Hilton.

AVMA Meeting - July 20-23, 1981. St. Louis, Missouri. There will be an Alumni Reception as per usual. In addition we plan to have a Missouri Alumni Luncheon. Check your program for time and place.

Large Animal Area Improved— And Still Improving

Two-Year Effort Underway to Upgrade Facilities

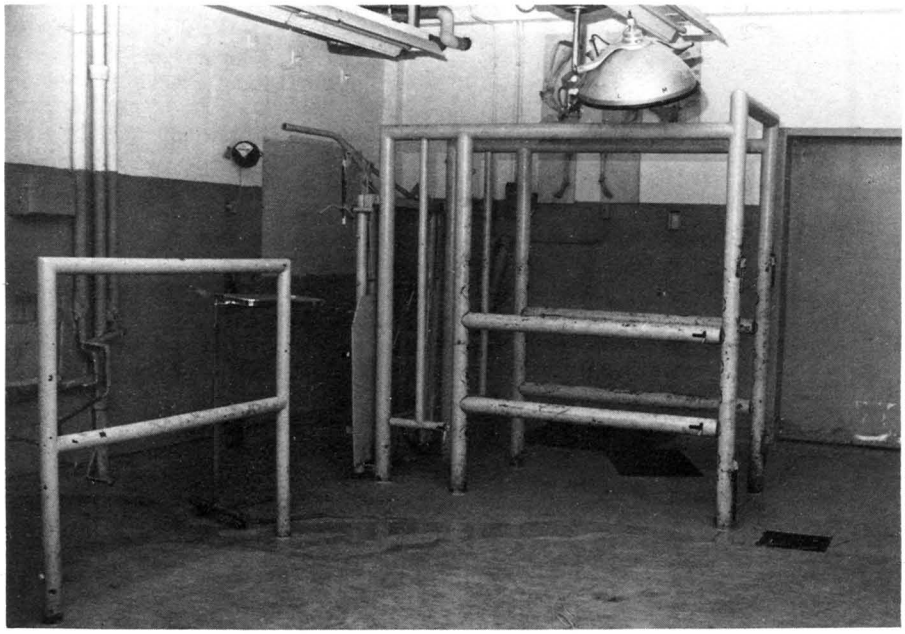
Last year the College of Veterinary Medicine Development Committee launched a two-year fund-raising drive to bring in donations specifically to improve the large animal area of the College's Teaching Hospital.

In the first year of the drive, more than $3,300 was donated by alumni and friends of the College specifically for this project. These dollars went to a new floor in a surgery room and to convert the space formerly occupied by the pharmacy into a seminar room for students enrolled in the theriogenology and large animal medicine and surgery blocks.

For the second—and last year—of this fund-raising drive, an additional $3,300 is sought to refurbish the reception office in the Large Animal area and to adapt space into a waiting room for clients.

An exciting bonus in these facilities improvements has been the addition of a bovine rotating surgical table (see accompanying story below).

Improving the Large Animal area is the third project organized by the College's Development Committee. The first in 1976 raised funds to furnish the College's Student Lounge and the Alumni-Friends Conference Room. For the second project, the Development Committee chose refurbishing of the reception area and examining rooms of the Small Animal area of the Teaching Hospital. Generous donations have resulted in making an important part of the Teaching Hospital a pleasing and reassuring place for clients to bring their pets. The first two projects, as well as the third in progress, have done much to enhance the image of the College in the eyes of not only the clients but the students and faculty as well.

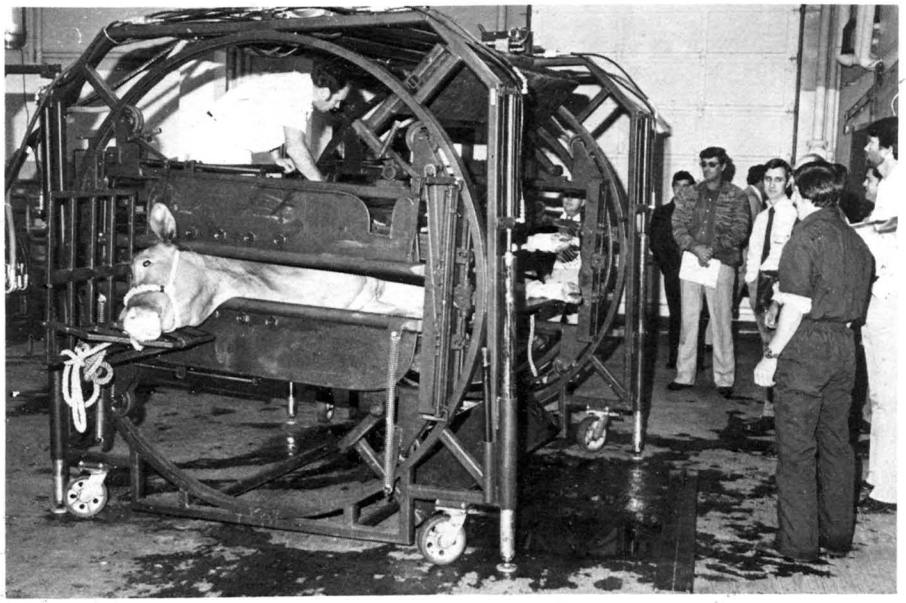


New floor in Large Animal surgery area.

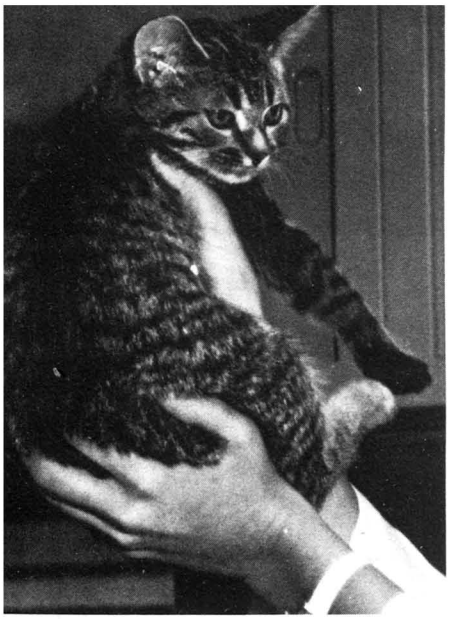
College Installs New Surgery Equipment

A bovine rotating surgical table has been placed in the Large Animal area of the Teaching Hospital at the College. The table, made by Tri-Plex Company of Haven, Kansas, will enable veterinary clinicians to handle their bovine patients with greater safety, ease, and flexibility than with conventional large animal surgical tables.

The new rotating surgical table has a passive restraint system with which the patient may be held as in a loading chute. Once the patient is "in" the table, the patient may then be laterally turned in a full circle—rather than just 90° as in conventional tables. The Veterinary College purchased the table in June, 1980.



Dr. James Thorne demonstrates the new rotating surgical table for a group of veterinarians attending the Annual Conference.



Viral Enteritides of Dogs and Cats

Veterinary Medical Diagnostic Laboratory Can Make a Meaningful Histologic Interpretation—But Only If Guidelines Followed.

Dean L. Basel, DVM
Dept. Veterinary Pathology

Numerous viruses have been identified as causing enteritis in domestic animals. In this article we shall be concerned with comparing canine parvovirus (CPV), canine coronavirus (CCV), and feline panleukopenia virus (FPV). Emphasis will be placed on morphologic lesions as related to prognosis and the valve of a histopathologic diagnosis.

Canine Parvovirus and Feline Panleukopenia

In 1978-79 parvovirus was isolated from a number of dogs with severe enteritis. The lesions produced by this virus were similar to those observed with the parvovirus infection of cats (feline panleukopenia). This recent CPV isolate is distinct from the canine minute virus (another parvovirus) isolated previously from the feces of normal dogs. Since 1978, CPV infection has been reported across the United States, and in Canada, Europe, and Australia. Most CPV and FPV infections occur in puppies and kittens which are 8-16 weeks old; however, older animals may contract these diseases as well.

The CPV, like its closely related feline virus counterpart, primarily affects rapidly proliferating cells in the crypts of Lieberkuhn. Normally, intestinal crypt cells divide, differentiate, and migrate up villous basement membranes to replace epithelial cells lost by normal attrition. Loss and replacement are in balance. When infected by parvovirus (either CPV or FPV), most crypt cells are damaged; the cells of the villous epithelium are still lost but fewer cells are replaced. Eventually, the few remaining crypt cells hypertrophy and flatten in an attempt to cover the same surface area. Crypts may become distended with sloughed epithelial cells. The villi become shortened due to lack of epithelial cell replacement and collapse of lamina propria.

In normal intestine, villous cells have predominantly an absorptive function. Diarrhea in FPV and CPV infection is primarily due to loss of villous cells which results in a decreased intestinal absorptive capacity. The increased amount of unabsorbed ingesta remaining in the gut lumen and fermentation of this material by intestinal bacteria act osmotically to draw additional fluid from the lamina propria into the lumen. Concurrently, the damaged epithelium allows an excessive amount of fluid (sometimes frank hemorrhage) to escape into the lumen from the lamina propria.

Kittens infected *in utero* by FPV often have cerebellar hypoplasis. To date, this has not been observed in puppies with CPV infection. Parvovirus of dogs may cause acute myocarditis and congestive heart failure in young pups. These lesions may be caused by *in utero* infection. The cardiac syndrome apparently does not occur simultaneously with the enteric form. Why the virus shows a predilection for myocardial cells in one case and for intestinal epithelial cells in another is uncertain.

Destruction of germinal centers of lymphoid tissue is observed with both CPV and FPV infection. Necrosis is evident in the Peyer's patches, mesenteric lymph nodes, and white pulp of the spleen. The virus infects rapidly proliferating lymphocytes in these tissues.

With a predilection for mitotically active cells, one would expect that CPV and FPV would infect bone marrow cells. A peripheral panleukopenia is documented in both viral infections, but bone marrow samples are rarely received from suspect cases and histopathologic changes in bone marrow preparations have not, as yet, been described.

Canine Caronavirus

Coronaviral infections cause enteritis in many species. In the early 1970's a coronavirus was isolated from dogs with severe enteritis. This CCV probably causes a significant number of canine enteritis cases.

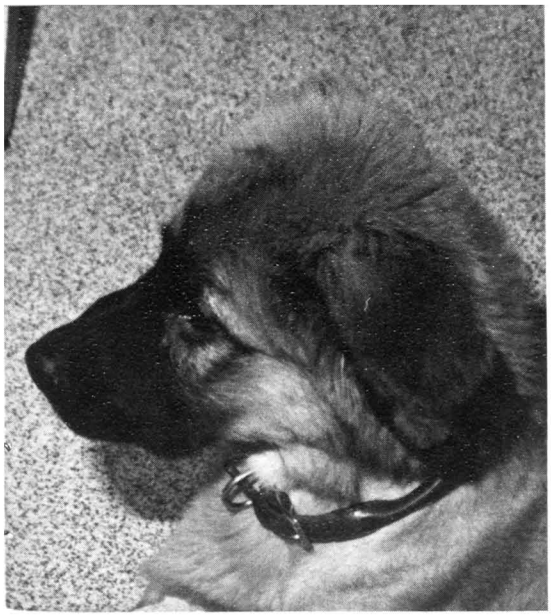
Canine coronavirus is similar in action to certain coronaviruses of other species such as those which cause calf scours and transmissible gastroenteritis of swine. The CCV and other coronaviruses primarily destroy villous epithelial cells (as opposed to destruction of crypt cells in parvovirus infections). Much epithelium may be lost, and villi become fused and shortened. The crypts in most uncomplicated cases remain undamaged. Crypt cells undergo hyperplasia in response to excessive loss of villous epithelium.

Experimentally induced CCV infection is relatively mild. The occurrence of more severe field cases is probably due to secondary bacterial infection or another concurrent virus infection. As with CPV, diarrhea appears to be largely due to loss of villous absorptive capacity.

In comparing feline panleukopenia and canine parvovirus disease to that caused by CCV, the differences in viral tropisms affect the prognosis. In the former two infections the cells responsible for epithelial replacement are destroyed. Consequently, recovery will be prolonged as regenerative capacity of intestinal epithelium is severely diminished. Following coronavirus infection, if the animal survives the initial diarrhea and if no secondary infection occurs, replacement of epithelial cells and hence recovery from disease should be more rapid since the crypt cells are still intact.

Since parvoviruses destroy lymphoid and bone marrow precursor cells, the host's defense mechanisms are severely compromised. This cell destruction contributes to a poorer prognosis for FPV and CPV infection in contrast to CCV and other coronaviral infections in which a severe panleukopenia does not occur.

Due to the severity and acute onset of CPV and FPV infections many cases are confirmed only at necropsy. Many formalin fixed samples from veterinarians suspecting CPV infection are received every week at the UMC Veterinary Medical Diagnostic Laboratory. In order to obtain the most meaningful interpretation from histologic examination, the following guidelines may be helpful:



1. Submit two or three small (1 cm long) sections of small intestine from several locations. This will assure representative sections as characteristic lesions may not be seen in all segments of gut.
2. Submit (also) representative sections of spleen, mesenteric lymph node and left ventricle of the heart. The cardiac and enteric forms may presumably occur simultaneously, although to date this has not been documented.
3. In submitting sections of gut, open them longitudinally so the mucosa is exposed for rapid fixation. Often tissues are received in which the mucosa is inadequately fixed. Since this is where the definitive lesions are located it is very important that the mucosa be well preserved.
4. Supply an adequate history with the specimens. It is very helpful in equivocal histologic cases to know what signs the animal was showing. Include age, number affected, where animal was acquired, possible exposure sources, clinical pathology data, type of diarrhea if any, etc. Simply stating "check for parvo" is not an adequate history.
5. Obtain specimens as soon after death as possible. Post mortem autolysis of gut epithelium occurs within minutes and soon obliterates any diagnostic features.

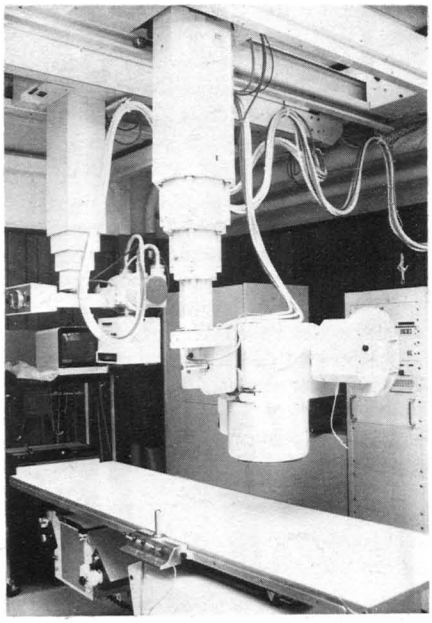
By following these guidelines, the histologic interpretation you receive will be more definitive. Even then, some cases may not be resolved. The only truly definitive method of confirming which viral infection one is dealing with is to check for sero-conversion or to isolate the virus itself. Hence, one will often see on reports the phrase "consistent with". This means the lesions seen were characteristic for that disease but are not necessarily pathognomonic.

New Radiology Instrumentation Now Operating

New radiology instrumentation has been purchased, installed, and tested for the College's Teaching Hospital. Patients are now being radiographed and students are being taught with this up-to-date equipment. Associate Dean E. A. Corley, who is also a radiologist, said that the instrumentation enhances the College's radiology capability while at the same time making any radiology procedure safer for the patients as well as students and staff.

Two new X-ray machines have been installed by C.G.R., Inc. These machines are powered by a 1000 watt, three phase generator. The equipment includes grid control, high speed rotor drive, automatic radiation control, and anode heat calculator. Expanded use of fluoroscopy and cinematography are now possible with new imaging devices that have hook-ups for television monitors and videocassette recorders.

Total cost for this new instrumentation, including installation and remodeling of the radiology area, was $323,000. Culminating four years of effort, last December College administrators and faculty identified funds for upgrading the College's radiology capabilities. The old instrumentation, some of which was surplus from the UMC School of Medicine, had been plagued with repair costs of as much as $15,000 a year. In addition, film costs had been higher than normal due to an excessive number of retakes required.



This X-ray machine along with the one in the other picture are powered by the same 1000 watt, three phase generator. Equipment includes grid control, high speed rotor drive, automatic radiation control, and anode heat calculator.

Students and technician position patient before making a radiograph. The new instrumentation has made work faster and safer for everyone in radiology.

Annual Conference

The 56th Annual Conference for Missouri Veterinarians, held October 12-13, 1980, gave the 208 practitioners attending a well-rounded program. Sponsored by the College of Veterinary Medicine, the UMC Extension Division and the Veterinary Medicine Alumni Association, this conference presented a well-rounded program with six outside speakers.

Dr. Robert Hudson, Professor of Large Animal Surgery and Medicine from Auburn University spoke on "Physical Examination of Bulls for Breeding Soundness" and "Penile Deviations". Dr. William Moyer, Associate Professor of Surgery at the New Bolton Center of the University of Pennsylvania presented "Shoeing Abnormalities—How to Recognize and Correct Them". Dr. Jerry Thornhill from Purdue University presented "Acute Renal Failure". Dr. James Badger, Jr., of the State Veterinarian's Office, and Dr. William Raithel, Director of Missouri's Bureau of Veterinary Public Health, updated conference attendees on rabies and brucellosis respectively.

Dean Weide addresses the banquet attendees.

College faculty completed the conference with such topics as "Porcine Eperythrozoonosis", "Equine Endometrial Biopsy", "Canine Viral Enteritis", and "Regional Anesthesia of the Canine Foreleg".

At the conference banquet on the evening of October 12, University of Missouri President, Dr. James Olson, presented the College's Distinguished Service Award to Dr. Arthur Case (see accompanying story).

This conference was also well attended by the College's faculty and students.

Dr. Case Receives Award

University President James Olson (left) congratulates Dr. Arthur Case (right) and presents to him the Distinguished Service Award.

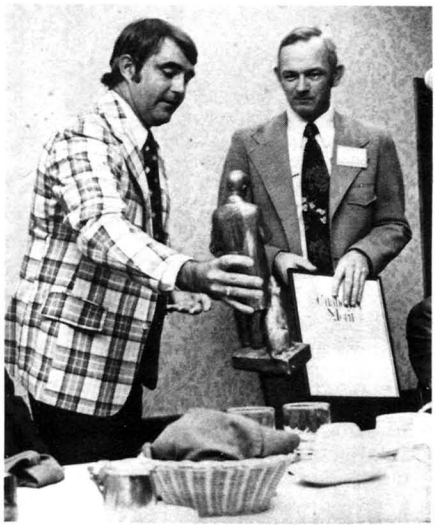
Dr. Arthur A. Case was presented the College's Distinguished Service Award by Dr. James Olson, University of Missouri President, during the October 12 banquet of the 56th Annual Conference for Missouri Veterinarians.

Dr. Case was recognized for his outstanding service to the College from 1947 to this year when he retires. Brought here in 1947 from Ohio State University, Dr. Case became Acting Chairman and Acting Director of Clinics, a post he held until 1950. During this time, Dr. Case started the teaching hospital program at the College, which has served as a practical laboratory for all veterinary students. During these first years, he taught classes in parasitology and general veterinary science, physiology, pharmacology, and therapeutics in addition to his administrative duties. Until 1965, Dr. Case had taught almost every aspect of clinic work except theriogenology.

During the drought period in 1954 and 1955, Dr. Case developed an interest in toxicology, especially studies of drought conditions and toxic plants. Since 1965, he has concentrated on toxicology, and has become a respected expert in the field of poisonous plants. In 1972, Dr. Case became a Diplomate of the American College of Veterinary Toxicologists, of which he is also a charter member.

In addition, Dr. Case is a charter member of more than eight other organizations. He is a member of 16 professional organizations and 15 general scientific groups.

Dr. Case had received his DVM degree from Kansas State University in 1942. From that same institution he received his BS degree in 1937 and his MS degree in 1942. Following graduation from veterinary school, Dr. Case went to work at Ohio State University as an instructor of veterinary pathology. He remained with Ohio State University until his appointment to the University of Missouri.



Dr. Phillips (left) presents the Lee Rolf Memorial Statuette along with the Alumni Citation of Merit to Dr. Ken Vroman (right).

Citation Goes to Dr. Vroman

Dr. Elry Phillips presented to Dr. Kenneth Vroman the Alumni Citation of Merit and the Lee Rolf Memorial Statuette. This presentation was made following the Alumni Luncheon of the 56th Annual Conference for Missouri Veterinarians.

Before making the presentation, Dr. Phillips listed some of Dr. Vroman's accomplishments which included his currently being Secretary-Treasurer of the Missouri Veterinary Medical Association, his being active in the West-Central Missouri VMA and now President of that group, his sponsoring the MVMA museum in Jefferson City, and his being active in civic work in his community. Dr. Vroman received his DVM degree in 1969 from the University of Missouri-Columbia, and he now practices in Fayette.

Dr. Elry Phillips is President-Elect of the Missouri Veterinary Medicine Alumni Association. He graduated from UMC with a DVM degree in 1971, and he practices in Joplin.

Referring to Dr. Vroman's willingness to participate in professional organizations, Dr. M. "Chip" Kammerlohr, Immediate Past President of the Veterinary Medicine Alumni Association, said: "Ken does it with a smile and a courteous work. He unselfishly takes his own time to devote to organized veterinary medicine."

Malaria Research Comes to the College

Malaria Research May Provide Improved Understanding of Similar Diseases in Animals

The College is the new home of one of only a handful of research teams in the United States working on control of human malaria, a blood disease affecting nearly one billion people in the world. This October Dr. Theodore J. Green moved his laboratory with tissue cultures and laboratory technicians from Parke-Davis Research Laboratories in Detroit, Michigan, to Columbia, Missouri.

Dr. Green's malaria research will be funded with a new, $654,926 contract from the Agency for International Development. With this three-year contract, Dr. Green is directing his research to finding and testing a vaccine to prevent malaria.

In developing this vaccine, Dr. Green and his team will isolate, purify, and characterize antigens of the infective agent which is grown in cultures derived from human red blood cells. The vaccine resulting from this research will prevent disease by activating an immune response in humans. Due to elaborate procedures used in vaccine development along with precautions necessary for testing, Dr. Green said that it will be several years before a vaccine is possibly ready for use.

Dr. Green's malaria research will be aided by his collaborating with researchers at Missouri's Veterinary College who are now working on babesiosis, a blood disease of cattle very similar to malaria, and anaplasmosis, another cattle disease found in Missouri.

In view of this collaborative effort, Dean Kenneth Weide stated: "Joint research efforts on these and similar blood diseases of animals provide the mutually beneficial relationships between man and animals that often lead to significant control methods for important diseases. We are hopeful that Dr. Green's knowledge and future research will provide a better understanding of similar diseases in animals, important to the state of Missouri."

Dr. Green, who has a Ph.D. degree in immunoparasitology from Ohio State University, stated that discovery of a vaccine would dovetail very well with the other two means of malaria control currently in use.

Human malaria is a debilitating disease of people who live mainly in tropical and subtropical regions of the world. Medical scientists recognize four basic types of malaria, each caused by a different species of the infective agent, *Plasmodium*, a form of protozoan. Dr. Green and his team are concentrating their efforts on falciparium malaria, the most dangerous of the four varieties of the disease.

For decades, malaria has been controlled to some extent by mosquito eradication. However, thoroughness of such control is subject to the politics in each country. In addition, continued use of some pesticides such as DDT has brought about populations of mosquitos that are resistant to such pesticides.

Once a person has become infected with malaria, the infection can be controlled with medications. Like the mosquito populations, though, drug-resistant strains of the infective agents have come into existence through long-term use of these medications.

Ophthalmologist First Visiting Lecturer

Dr. Glen Severin was the first Visiting Lecturer at the College this academic year. A widely regarded ophthalmologist, Dr. Severin presented, "The Differential Diagnosis and Treatment of Ocular Discharge" on September 4. Dr. Severin is on the faculty at Colorado State University, and he is a Diplomate of the American College of Veterinary Ophthalmology.

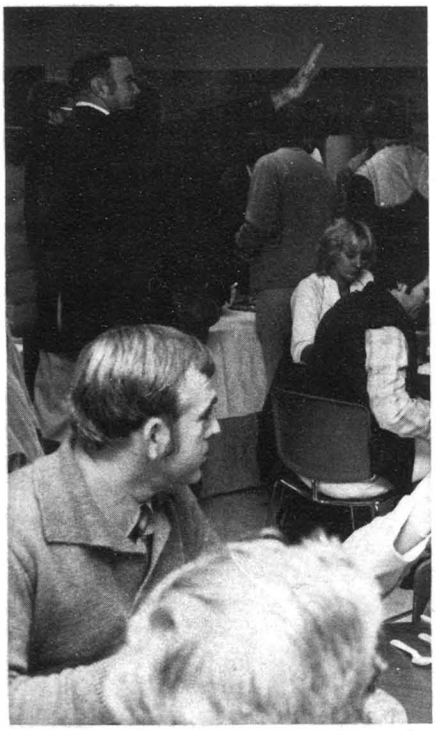
This presentation was sponsored by the Visiting Lecturers Committee of the College. Tentatively scheduled for February 12, 1981, Dr. Francis Mulhern of the Animal Health Program, Interamerican Institute of Agricultural Sciences, will speak on regulatory veterinary medicine. On April 1, 1981, Dr. Lloyd Davis, University of Illinois, will speak on clinical pharmacology. For more information, please contact: Dr. Larry Morehouse, Veterinary Medicall Diagnostic Laboratory here at the College.

Missouri Veterinarian

Dean's Corner

1st Annual Veterinary Medicine Day

Football tickets being distributed to those attending the First Annual Veterinary Medicine Day held October 4.



(Right) Participation was great!

This was a help yourself brunch. After the brunch, everyone went to see the Missouri-Penn State game.

This year for the first time the College of Veterinary Medicine held an Alumni Day. The day was devoted to veterinary alumni and their families. The festivities started at 9:30 a.m., October 4, in the Veterinary Medicine Building with a seminar, one for veterinarians and another for spouses and children. This was followed with a brunch and then everyone was off to the Missouri-Penn State football game.

We had many compliments from those who participated and we intend to have another Veterinary Medicine Alumni Day next year.

Tentatively, the date is set for October 24, 1981 which is the Nebraska game. We will reserve 100 tickets and a block of motel rooms. More information will be coming your way next summer.

Sincerely,

Kenneth H. Niemeyer, D.V.M.
Assistant Dean for Student and Alumni Affairs

Great Alumni Race Over

The great race is over. The Class of 1961 has won the lifetime alumni membership drive hands down. Final results - Class of 1961 - 13 life members, Class of 1962 - 9 life members. Congratulations to the Class of 1961 and special congratulations to their courageous leader, Dr. Billy Hooper!

Dr. William F. Raithel

Dr. Raithel (Class of 1964) died November 4, 1980, of an apparent heart attack. He had been Director, Bureau of Veterinary Public Health, Missouri Department of Health, and an Adjunct Associate Professor, Department of Veterinary Microbiology.

Coping with Canine Parvovirus Enteritis

Kurt Laves, VMIII

Canine parvovirus (CPV) enteritis, a flu-like disease found throughout the United States since 1977, is on the upswing in mid Missouri. In the College's Teaching Hospital, we currently see several cases a day. Mortality rate observed here is between 30% and 40%, inversely proportional to the dogs' age, general condition, and white blood count.

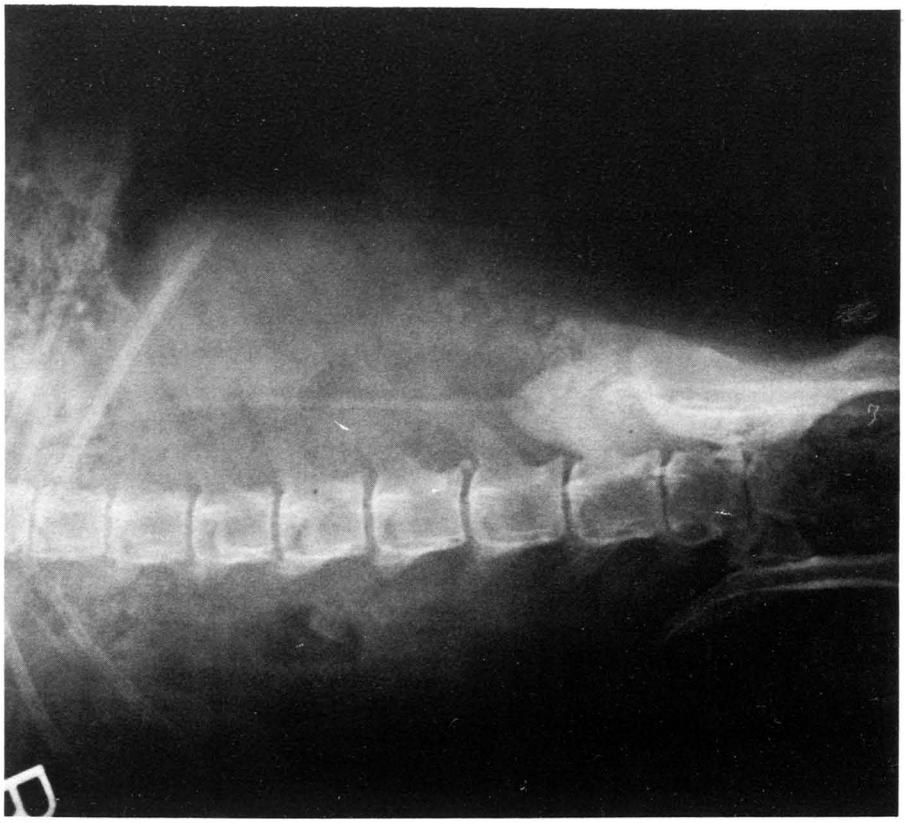
Chief clinical signs (remembering this is an enteric disease when seen—sudden death in puppies from myocarditis caused by CPV infection usually has no accompanying gastrointestinal signs) are vomiting, a near liquid and bloody diarrhea, dehydration, variable fever, constitutional signs of depression, lethargy and anorexia, and a marked decrease in the white blood count (WBC), a neutropenia with toxic neutrophils. This WBC is what we in the Teaching Hospital use to initially differentiate "parvo" cases from other dogs showing vomiting and diarrhea, and this allows quick isolation of "parvo" suspects.

Treatment of CPV enteritis is symptomatic. Prompt, proper fluid and electrolyte deficit replacement is of the utmost importance, combined with careful management throughout the duration of signs. Antibiotics may be used to help prevent bacterial overgrowths and septicemia. Kaopectate[R] and Pepto-Bismol[R] may be used to curb vomiting and diarrhea; anti-emetics may be enlisted if vomiting persists.

The type of diarrhea caused by CPV infection has not been established, so specific anti-diarrheal treatment is uncertain. In the Teaching Hospital, Darbazine[R] and Lomotil[R] have been used with good results in some cases.

Spread mainly through fecal-oral transmission, CPV enteritis is very contagious among dogs. Cages, clothing, shoes, and used instruments are all potential mechanical vectors. The CPV is very resistant to environmental conditions. Chlorine bleach is the only known disinfectant capable of destroying the virus; we use a 30:1 dilution in cleaning areas of possible contamination.

Immunization recommendations: Vaccinate puppies at eight weeks of age, and revaccinate in two to four weeks, then every six months. At this time, we recommend that all dogs be vaccinated.



What's Your Diagnosis

A client presented to the College's Teaching Hospital a ten-year-old male setter-mix dog approximately 45 minutes after the animal had been hit by a truck. The dog was in shock, displaying pale mucous membranes, lethargy, and a "galloping" rhythm to the heartbeat. He would stand but not walk. There was instability to the left stifle, and an EKG showed premature ventricular contractions and ventricular tachycardia. Clinicians noted a bloody discharge from the prepuce. The dog was catheterized and a blood-tinged fluid was collected.

Laboratory data taken the day patient was admitted:
HCT on blood sample—13%
HCT on catheter specimen—18%
BUN — 150;
glucose — 84
osmolality — 345
Na^+ — 146
K^+ — 5.0
SAP — 24
SGPT — 85

Abdominal paracentesis
PCV — 2.5%
BUN — 125

Abdominal radiograph — as shown.

Regarding the bloody discharge from the prepuce, and from what you see in the radiograph and laboratory data, what's your diagnosis? Answer—last page.

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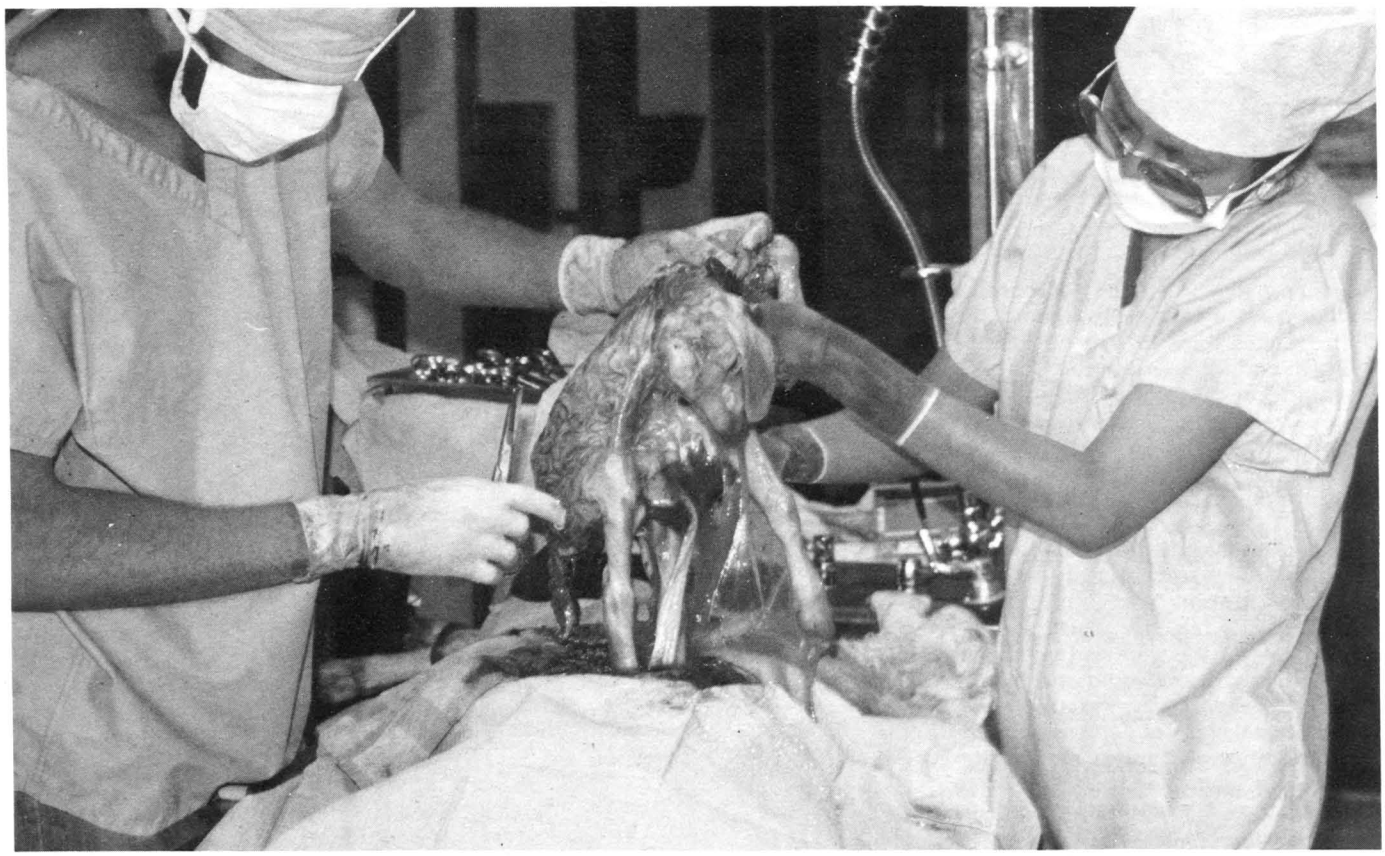


New life–Dr. John Ellis performing a cesarean section on an injured goat.

The author surgically places a vaginal telemeter in a pregnant mule deer. Assistants are members of the Navajo Fish and Wildlife Service, which was trying to determine the cause of the falling fawn crop.

New mingling with the old. A pickup and a station wagon parked by a traditional hogan.

Dr. Dan Downing floats teeth. Horses are important to the Navajos, both in work and as a hobby for the wealthy. The Indians feel that preventative medicine is important for their horses' welfare.

Native American Project: Veterinary Medicine Among the Navajos

Catherine Ruddy, DVM (Class of 1980)

The cow chewed ravenously on the hay we had offered. The fellow extern standing next to me smiled and shook her head with the remark: "This is so different. In New York I saw the fat cow syndrome. Here my most common diagnosis is malnutrition. Look at this case! These people have six cows, all in calf, and they feed all six of them one-third bale of hay a day. How can anything survive on that? Yet, when I talk to these people, it is all they have."

Yes, I thought, raising livestock is quite different here on the Navajo reservation. A Missouri cow probably would not have even cycled, let alone have carried a calf on that diet.

The Navajo reservation is the largest Indian reservation in the United States, encompassing more than 16 million acres, from rugged mountains in the south to dusty plateaus with spectacular rock formations in the north. Reservation land generally supports sparse plant growth like pinion pines or sage, and a little grass. The Navajos mainly use this land as range for grazing sheep, goats, and some cattle, generally Hereford.

The importance of tradition can often be seen. Hogans, round wood and mud huts, still dot the countryside—often with four-wheel-drive trucks parked next to them looking like objects out of the space age. In this matriarchial society, women still make the major decisions.

The veterinary program for the Navajos operates from the Animal Science Center of the Navajo Community College campus, a college of four hundred men and women located 70 miles north and west of Gallup, New Mexico, at Tsaile, Arizona. (Don't go rushing to your map—the area is so remote that even Rand-McNally neglects its mention.)

At Tsaile two full-time veterinarians, Dr. Dan Downing and Dr. John Ellis, along with a very important support staff, perform in an environment very different from the average private practice. Variety certainly describes their work.

There are the elderly Navajos who lead a tough existence grazing their animals on this spare land. These people often appear in traditional garments, such as bright, long skirts, and beautiful silver and turquoise jewelry. When doing business with them, one must remember that women make the decisions. Often these old people do not speak English, making communication with them an important problem. One becomes very dependent on the staff members who know the language—a language differently structured from Indo-European languages, difficult to pronounce, and only recently put into writing. (During World War II, the Navajo language was used for a code in transmitting messages, and the enemy never broke that "code".)

Living an even narrower existence than the elderly are the people of the "sheep camp", a small town of closely-housed people whose livelihood relies completely on sheep herding in a small area. Even the simplest veterinary procedures are prohibitive in cost for them. This situation leads to the "imaginative" approach to veterinary care, thinking of ways to do the most for the *least* expense. Teaching preventative medicine and simple treatment techniques is a must.

Navajos are one of the most adaptable and progressive tribes. They have acquired many trades such as lumbering, mining, and of course, tourism. In contrast to the poor are those Navajos who own shiny new four-wheel-drive pickups pulling horse trailers.

For those who have gained wealth, horses are often a hobby. Quarterhorses, Appaloosas, and the "Navajos", a riding-draft horse combination, are popular breeds. The Indians often use their horses in herding and occasionally in cutting work. Almost a prestige symbol, these animals are usually well cared for. But there is still the "range" segment of the horse population. Such an animal may come in for veterinary treatment when it has not been handled by humans for months or years. This situation keeps the veterinarians humbled as well as risking life and limb.

Navajos often just brand their animals and then turn them out on the range. This leads to a problem, hit-by-car cattle and horses. When I have seen the injured vehicles, however, I usually decide the animals had won. Nevertheless, treating fractures inexpensively in large animals is a challenge. (Fortunately, the vehicles are usually allowed to rest in peace.)

Much of the small animal medicine is "local", associated with people attending the college or who are on the staff. Here is a hint of the average private practice. Vaccinations and neutering are often-performed procedures. But as one moves away from the college, infectious diseases such as distemper, infectious canine hepatitis, and feline panleukopaenia take an increasing toll. Pets with these diseases are often presented for treatment.

The Navajo Fish and Wildlife Department sometimes requests veterinary services, which includes post-mortem examinations and diagnostic work. During my externship, I and another extern worked with members of the Navajo Fish and Wildlife Department for a day trapping mule deer in some remote canyons in an effort to determine causes of a declining fawn crop. We spread a thousand-foot-wide net, and a helicopter herded deer into it. We hand captured the animals and sedated them with Rompun[R].

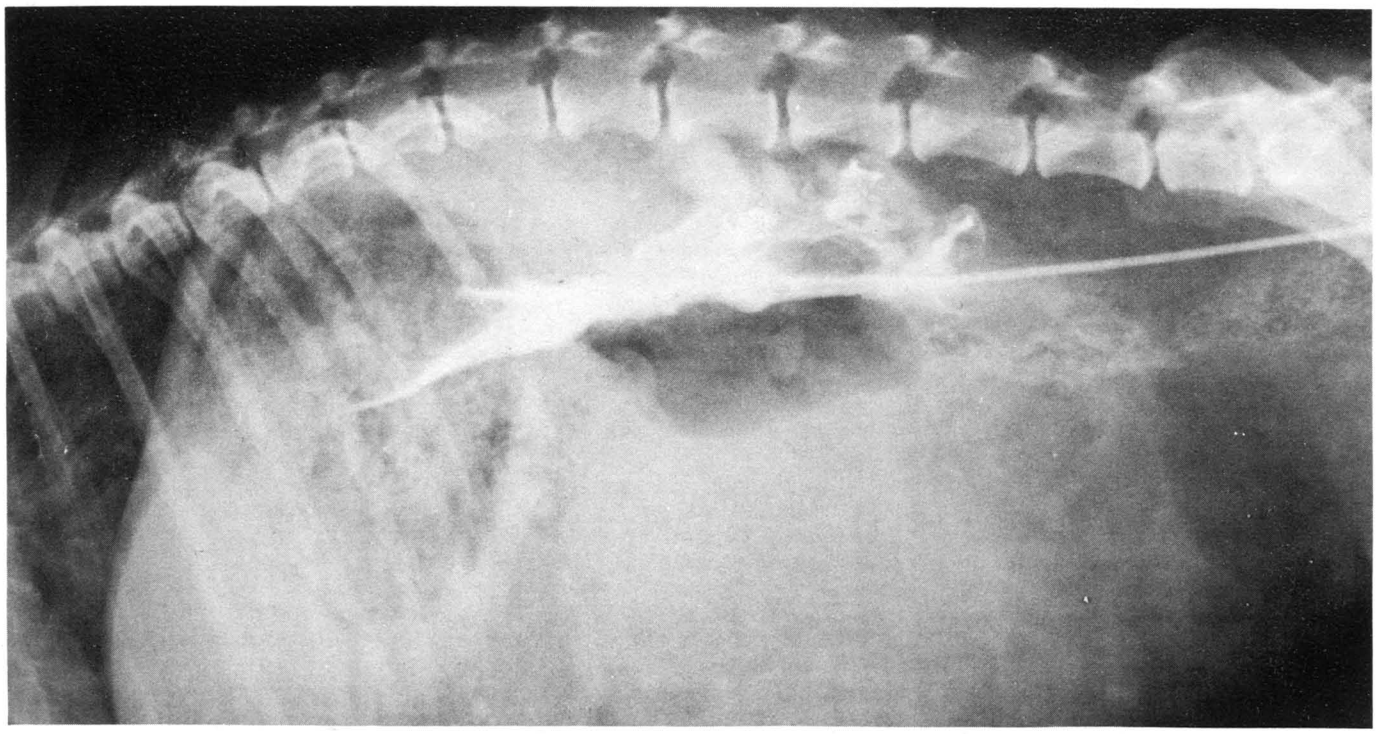
I rectally palpated the does for pregnancy. This was my job because my partner forgot her gloves and there was not water. We then ear tagged all deer. If we found a pregnant doe, we placed a collar telemeter on her neck and sutured in a vaginal telemeter. When the doe fawns, the vaginal telemeter is expelled and begins signalling. This enables a tracker to catch and tag the fawn.

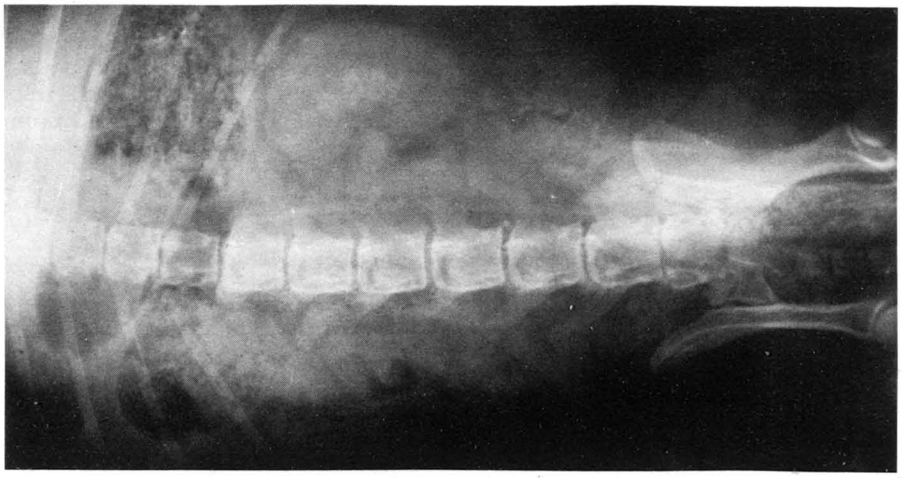
We also drew blood samples from the deer for diagnostic serology, such as blue tongue titers. Looking back on this experience, it appears that as with domesticated animals malnutrition is a major problem in deer.

In addition to clinical work, education is a major effort at the Animal Science Center. Veterinary paramedical students are trained to assist in treating patients, thus helping to relieve the severe shortage of veterinarians on the reservation. The students undergo a two-year program designed to give not only a good background in clinic work but also some training in basic pathology and physiology as well as preventative medicine.

Classes for lay people are presented at Tsaile, too, and at the branch campus at Shiprock, New Mexico. At these classes communication is difficult because many of the people do not speak English. It is interesting to watch someone when trying to explain how to pull a calf must resort to translators, drawings, and sign language.

Life has changed much for the Navajos since their contact with Western civilization. But much remains to be done in improving the health of their animals.





What's Your Diagnosis—Answer

By means of IVP and cystogram, clinicians determined that the cranial end of the urethra had been torn from the trigone of the bladder. Surgery was performed, and the end of the urethra was sewn back in place to the bladder. Because it contained a large hematoma, the prostate was removed. However, the dog died several days following surgery due to heart injury associated with the accident.

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