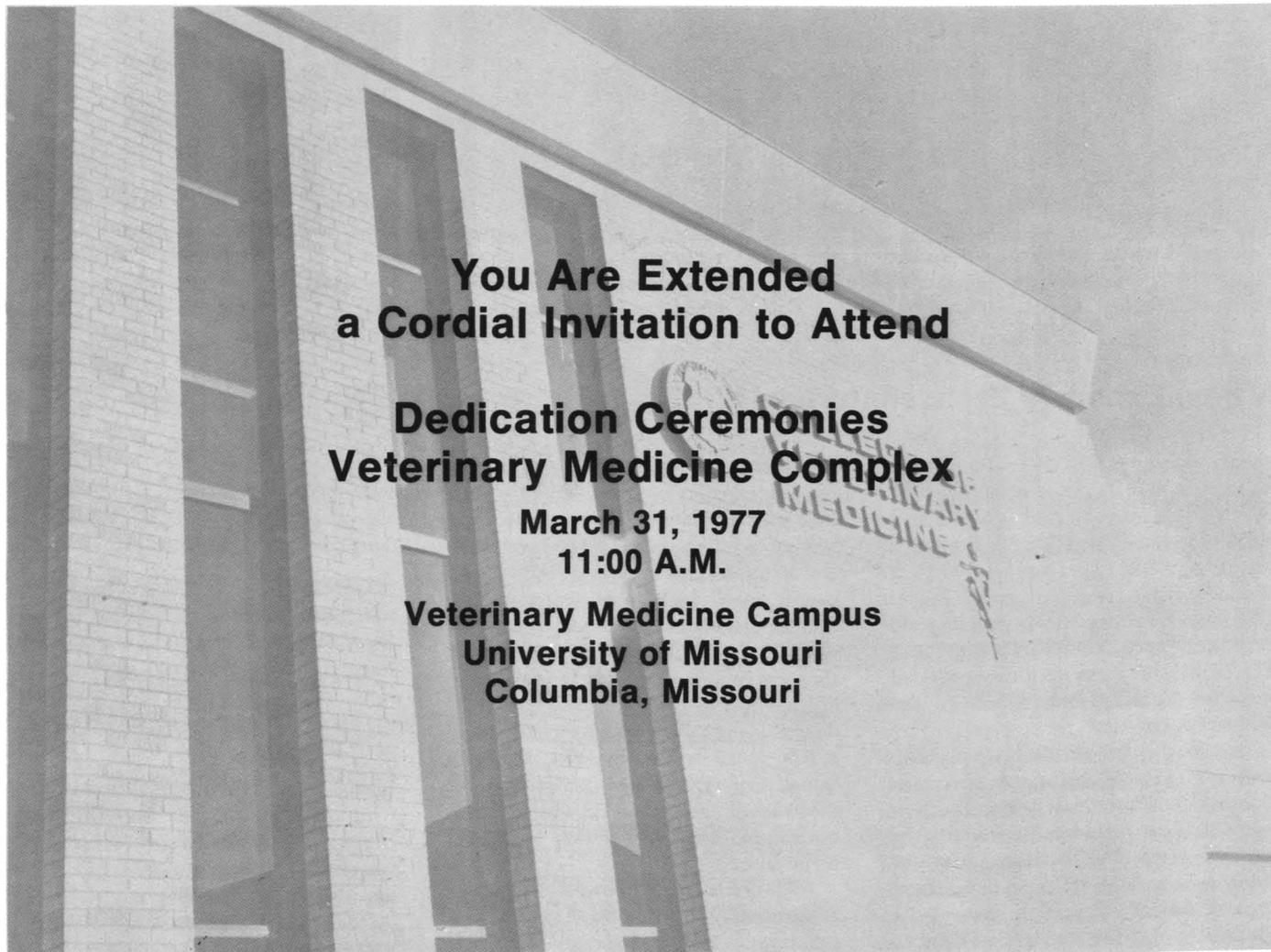


# **Veterinary Medical Review**

**College of Veterinary Medicine and UMC Extension Division**



**You Are Extended  
a Cordial Invitation to Attend**

**Dedication Ceremonies  
Veterinary Medicine Complex**

**March 31, 1977  
11:00 A.M.**

**Veterinary Medicine Campus  
University of Missouri  
Columbia, Missouri**

## **University of Missouri-Columbia**

March 31 will be a landmark day for the College of Veterinary Medicine. On that day, two new buildings will be dedicated - two new buildings that will help the College to meet current demands in teaching and research.

And on the same day will be Open House and Career Day.

All of our readers are invited to attend the dedication and the Open House. If you know a high school student interested in a career in veterinary medicine, encourage that person to attend Career Day.

See inside for details.

March, 1977, No. 99

# March 31, 1977 - A Big Day

On March 31, 1977, the College of Veterinary Medicine will host a three-in-one-day program: Dedication of the new facilities, Career Day, and Open House.

The dedication ceremonies will begin at 11:00 a.m. at the new Veterinary Medical Building. Dean Kenneth D. Weide will coordinate the ceremonies. The facility will be presented to the University by Rex Z. Williams, Vice President of the Board of Curators, and Dr. James Olson, University Interim President, will accept the facility. Featured speakers will include: Dr. E. A. Corley, Associate Dean; Dr. Harry Gorman, President, American

Veterinary Medical Association; Mr. James B. Biollot, representing the livestock industry; and Dr. William F. Bryson, President, Missouri Veterinary Medical Association. One distinguished guest will be former Governor Christopher S. Bond. The dedication will conclude with a tour of the new buildings.

Career Day will begin at 8:45 a.m. to introduce high school students to veterinary medicine. Tour guides, provided by third year veterinary students, will take the high school students to visit all of the College's facilities and look at exhibits prepared by veterinary students. Five

veterinary students will speak to the groups of high school students about various aspects of veterinary medicine. Dr. K. H. Niemeyer, Assistant Dean, and Dr. B. L. Moseley, Associate Professor, will be on hand to help coordinate Career Day.

Open House will begin at 6:00 p.m. in the new Veterinary Medical Building. The Veterinary Student Auxiliary will handle the refreshments for an anticipated attendance of 1,000 people. The third year veterinary class will provide tour guides. The exhibits prepared for Career Day will be left up for Open House.

## A Few Excerpts From History

In late summer, 1965, construction was finished on changes in Connaway Hall. In addition to Connaway Hall, the principal buildings of the College were a new clinic, completed in 1961, and two leftovers from World War II: a converted airplane hanger called the Veterinary Science Building and a modified barracks officially referred to as TD-7. All of these facilities provided space for the education of a total of 120 students at one time.

But in the fall of 1965, the enrollment increased with an incoming freshman class of 60. Within four years, The College's facilities were straining under the load of nearly 240 students. And the strain increased. In 1970, to take advantage of Federal Capitation money, the enrollment of the incoming class climbed to 65, and in 1972 the enrollment again increased to 72. To adjust to this pressure, the 'Block' curriculum for third and fourth year students was initiated. Other stopgap measures were taken but everyone in the College was becoming painfully aware that new facilities were a top priority. And the A.V.M.A. stepped in with criticism of the insufficient facilities.

Through continual urging of the College's administration and faculty, the Missouri State Legislature allocated \$400,000 in 1973 for the planning of new and expanded facilities. Dr. R. E. Brown, Professor, Veterinary Medicine and Surgery, was one of the primary planners. However, the planning for these new facilities became delayed as additional funding was being solicited from Washington. When recalling the situation

at that time, Dr. Brown said: "We could not plan two different facilities at the same time with the planning money we had, and a larger facility could not be designed with the thought in mind that we could just simply cut it back if the federal money did not materialize. We had to wait for word from the federal government and time was running out." The federal money did not materialize and plans had to be drawn up on the basis that only state money could be had. In 1974, the State Legislature appropriated \$6 million for construction, and other University offices contributed \$100,000 toward an animal incinerator.

60,000 net square feet were planned for construction - divided between two new buildings: a general classroom-laboratory-office building to join onto the clinic building, and a diagnostic laboratory. Four options had been considered in the planning and the option chosen was a compromise that permitted all four departments of the College to benefit from the increased space.

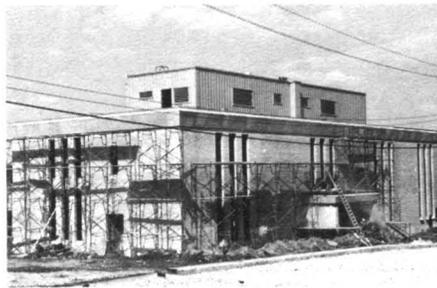
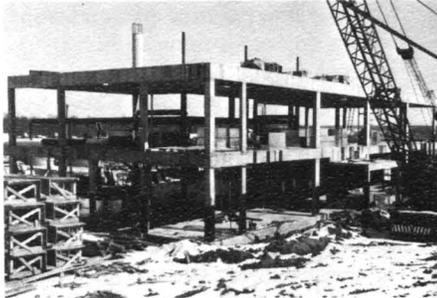
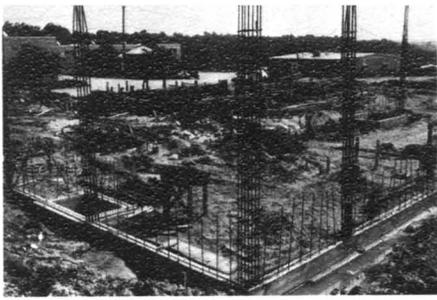
Construction began in October, 1974. The only major problem that was encountered was sinking the shaft for the elevator in the new Diagnostic Laboratory. Insufficient solid bedrock to anchor the elevator's supports was found and the shaft had to be dug much deeper than planned to meet minimum safety requirements. On the other hand, the dry weather was an asset to the construction even though it was a disaster for the County's agriculture. Minor adjustments in the plans had to be continually made - the

total net space was trimmed slightly to 58,571 square feet - and Dr. Brown remained on hand to help solve the innumerable little problems that arose.

On December 16, 1976, the College was given partial occupancy of the new Veterinary Medical building as the final stage of construction was drawing to a close. Primarily because of delays caused by the digging of the elevator shaft, partial occupancy of the Diagnostic Laboratory was delayed until January, 1977.

The new facilities are essentially a 'catch-up' to accommodate a yearly enrollment of 72 new students and to provide the space for the sophisticated laboratory requirements that are anticipated in the near future. No increase in enrollment nor expansion of the College's faculty is planned.

Moving into the new Veterinary Medical Building: from the Department of Veterinary Anatomy-Physiology are all of the offices, classes and laboratories of the 'Anatomy' part of that department; Small Animal Surgery from the Department of Veterinary Medicine and Surgery; all of the Department of Veterinary Pathology; the Veterinary Library; the electron microscope, Continuing Education and Extension, and the administrative offices. Remaining space in the Veterinary Sciences building will become physiology class and laboratory space. The Department of Veterinary Microbiology will move into Connaway Hall. And TD-7 will be razed.



*The Diagnostic Laboratory under construction: May, 1975 - February, 1976 - April, 1976.*



*New A-T room adjacent to the library.*



*New teaching laboratory.*

## Alumni Notes

A different perspective is gained on the new facilities by looking back to our 997 graduates who helped build the College.

Dr. Kenneth Niemyer, Assistant Dean, is quite proud of his class, the Class of 1955, because that class has by far the highest percentage of active alumni (83%). He challenges any class to top that percentage.

The Class of 1953 topped all other classes in contributing to the Alumni-Friends dinner. 30% of that class gave \$1200 - both figures the highest of any class.

However, the College is disappointed because of the poor response to the appeal in the November issue of *V. M. R.* for letters from our graduates. Three have written and a handful of newsletters were mailed in — all of which were read eagerly and happily. A few excerpts —

('63) Dr. William Purdy just had his new equine rhinopneumonitis MLV vaccine put on the market.

('67) Dr. James Mills moved from Arkansas to join Dr. Charles Hoover in

a practice in Seabrook, Texas.

('72) Dr. Cecil Moore is building a new clinic right behind his old one in Kirksville, Missouri. When the new one is finished, he plans to demolish his old clinic.

('73) Dr. Les Stone was the President in 1976 of the Eastern Idaho V.M.A. and he also served on the board of directors of the local humane society.

('74) Dr. Pamela Hoehn and her husband, Roger, have purchased a house in O'Fallon, Missouri, for themselves and their four children. (The youngest, Amanda, was born December 4.) Dr. Hoehn is chief of surgery for Dr. Donald Blake.

Dr. Sheldon Schwarzbrott ('75) would like to start a newsletter for the Class of 1975. Veterinarians from that class should write to him at: 403 Marine Lane, West Babylon, New York 11704.

In spite of the poor response (three letters are too few) the College *wants* to hear from you. Please write us a brief letter — we care about you.

## An 'Extra' Feature

When planning the new facilities, a number of features were proposed for installation in the new buildings. Many of these proposed features are needed for the College to stay abreast of changing educational and research needs. Unfortunately, dollars were short and these proposed features were relegated to the status of 'extras', and most could not be realized.

One of these 'extras' for the new Veterinary Medical Building was to be a closed-circuit television system. Conduits for the television's cables were installed and some production space designated but nothing else was scheduled in the budget.

The College needs this in-house educational television system and has turned to private corporations and foundations for contributions. For a system that meets most of the College's needs, \$95,000 are needed. So far, \$25,000 have been contributed — \$15,000 from the Culpepper Foundation, \$9,000 from the James Woods Foundation, and \$1,000 from Farmland Industries. These contributions are greatly appreciated and have given the College a hefty boost toward the goal of a closed-circuit television system.

# Feline Respiratory Disease

There are few syndromes quite as confusing for the cat owner - and the veterinarian - as the feline viral respiratory diseases. The veterinarian may predict to the client that his cat's disease will last for a week, and the cat may then persist in sneezing stubbornly for four to six weeks. The client may be told that the causative virus is not serious and that no lasting effects will result; however, after the initial sneezing and inappetance are over, the anxious client may be left with a cat with a chronic nasal discharge and "sniffing" for the rest of its life. One veterinarian may recommend vaccination for all the major respiratory diseases, while another will claim that the vaccines have little if any preventative effect on the various viruses. It is soon obvious to the astute cat-owning client that veterinarians seldom agree as to diagnosis, treatment or even prevention of the feline viral respiratory disease syndrome.

There are quite good reasons for this disagreement among veterinarians, of course. The feline respiratory viruses until recently were all lumped as "pneumonitis" by the practitioner, who did not have virus isolation readily available. Only lately have the viruses and their clinical signs been characterized well enough to permit even tentative differential diagnosis. The vaccines on the market are so new that there has been no time for a true "in-the-field" impression of their efficacy. And finally, the treatment of choice in the seriously affected cat remains only supportive - and supportive measures differ from veterinarian to veterinarian.

Pneumonitis, the disease which was a few years ago the "garbage-can" diagnosis made on all sneezing cats, is no longer considered to be a very important causative agent of feline respiratory disease. Only 5 to 10% of the cases of feline respiratory disease can be ascribed to pneumonitis, according to recent surveys. The latest name for the causative agent is *Chlamydia psittaci*, a cat-adapted strain of the same organism which is responsible for psittacosis in birds. It is an obligate intracellular bacterial organism which may be seen as an intracytoplasmic inclusion in affected cells. These inclusions stain blue to purple with Romanovsky stains (Wright, Giemsa) and may range up to 12 microns in diameter. The incubation period for a cat exposed to pneumonitis ranges from 6 to 10 days. The cat

generally presents with conjunctivitis which may be unilateral or bilateral. Originally the ocular discharge will be serous; later it will progress to mucopurulence. In the early stages of the disease, a conjunctival scraping may be done to check for the presence of the intracytoplasmic inclusion bodies. To do this, either the upper or lower conjunctiva is everted over the finger. The membrane is scraped with a platinum spatula, and the collected material is smeared on a slide and stained. If one is lucky (and if the disease in the presented cat is indeed pneumonitis) the large chlamydial bodies will be seen in the cytoplasm of the Wright-stained conjunctival epithelial scraping. Also seen will be mucus and many neutrophils. As the disease becomes more chronic, the nictitating membrane may become thickened with hyperplasia of lymphoid follicles.

Most cats presented will be sneezing occasionally and have a mild fever. Generally they will not be totally anorexic. Rarely, there is a mild focal pneumonia of the apical lung lobes. Since this is infrequently noted, however, "pneumonitis" as a name for this disease is obviously a misnomer. The conjunctiva seems to be the major mucosal surface affected by pneumonitis; the resultant severe conjunctivitis may be quite troublesome to the owner, since it often persists for weeks if untreated. The organism of pneumonitis is quite sensitive to both tetracyclines and chloramphenicol, however, and systemic treatment with one of these antibiotics is indicated if there is adequate reason to suspect pneumonitis. Neither of these antibiotics is without side-effects in the cat and the veterinarian must keep these effects in mind. Tetracycline may cause a drug-induced fever up to 106° in the occasional cat, while chloramphenicol is known to cause anorexia. Recently, tylosin has been touted as effective against pneumonitis, and this antibiotic may prove to be the drug of choice.

There is a very definite carrier stage of pneumonitis, and many clinically recovered cats will continue to shed the organism for months. Since the disease is so highly contagious, isolation of a proven case from other cats is indicated for at least a month after infection. This is especially important for prevention of

spread within a cattery. Prevention of pneumonitis in the cat population at large by vaccination is questionable, and many authorities do not recommend it. Cats do not seem to develop completely protective immunity following vaccination and challenged vaccinated cats will break with disease. Since the incidence of the disease seems to be so low, the cost of the vaccine to most clients versus the small amount of protection conferred on their cat, makes vaccination for pneumonitis impractical.

Of the truly viral respiratory infections of the cat, the disease caused by the feline reovirus is the least serious. Generally the respiratory tract is very mildly affected if at all, and the cat's temperature is normal. Most cats do not miss a meal. As in pneumonitis, the conjunctiva is the mucous membrane most affected by the reovirus; it is affected much less severely than with pneumonitis, however. Most commonly, the affected cat will show only a few days of serous ocular discharge and photophobia. The signs are so mild that many clients will not even consult a veterinarian. Viral inclusion bodies have been reported in this disease within the conjunctival epithelial cells but are apparently quite difficult to find. The virus is very contagious, of course, so proper precautions should be taken.

Feline pneumonitis and reovirus cause relatively mild respiratory infections in affected cats. Feline calicivirus and rhinotracheitis are comparatively much more severe, however. Each virus has been reported to be responsible for 40 to 45% of the total number of feline respiratory infections. A vaccine is available for these two viruses, and it apparently can confer protective immunity. The most recently available vaccine involves intranasal and intraocular administration of the vaccinating material. The principle of local administration of a vaccine to attempt to stimulate high levels of local secretory IgA is not new; it has been used for years in human medicine, with the major example being the oral administration of the polio vaccine. The gastrointestinal tract is the natural port of entry of the poliovirus, and a more protective response is seen with oral vaccination that with intramuscular administration. The same theory - administration via the normal port of entry with attempted stimulation of local secretory IgA - is currently in use with bovine rhinotracheitis (IBR) vaccine. At

least theoretically, antibody levels should be higher, more protective, and persist longer with the intranasal route of vaccination. Manufacturers' recommendations for a vaccination schedule should be followed religiously with the combined rhinotracheitis - calicivirus vaccine if good results are to be expected. It is recommended that cats in high-risk groups such as show cats be revaccinated every six months. Whether one recommends this vaccine at all to one's clients depends to a great extent on the individual practice and on the individual cat. In a rural area, the incidence of respiratory disease in the cats seen by a practice may be so low that it is unlikely that a pet cat will be exposed to the viruses. On the other hand, in areas where the cat population is high, the incidence of respiratory disease may also be high, and vaccination would be much more important. A sheltered pet cat who never leaves his home is much less likely to be exposed than the cat who spends a good deal of time outside roaming. Thus it is apparent that the veterinarian must assess the facts in each case in deciding whether to highly recommend vaccination for these two viruses or to present vaccination as an option that the client may decide to accept or reject for his cat. In any instance, client education is extremely important with the feline rhinotracheitis - calicivirus vaccine.

First, the client must be led to expect a mild bout of sneezing in the cat 4 to 7 days after administration of the vaccine. This is due to the fact that the viruses of the vaccine *are* modified live viruses, and occasional cats will show very mild but yet overt signs of disease as a post-vaccination complication. This mild sneezing lasts only a few days, however, and there is no shedding of virus into the environment. Secondly, the client must not leave the veterinary hospital after having his cat vaccinated for these two viruses thinking that he has protected his cat against *all* feline respiratory disease. He must understand that there are other causative organisms of respiratory disease against which his cat *cannot* be effectively protected. Yet he can be told that his cat can be expected to have reasonable protection against the two most devastating and most common (80-90%) of all the feline respiratory diseases.

Differentiating a clinical case of feline calicivirus from a case of feline rhinotracheitis definitively is impossible without virus isolation or serology. However, there are clinical points which allow the

veterinarian to tentatively categorize at least some of the cases he sees. The two viruses have very definite areas of localization when seen in their uncomplicated form.

The feline calicivirus, formerly called picornavirus, has special affinity for the lung and oral mucosa; the upper respiratory tract and conjunctiva are generally minimally affected. Typically, there is a very short incubation period of 1 to 2 days. Initially, there is a moderate fever and possibly mild serous lacrimation. More typical of the calicivirus, however, is interstitial pneumonia. Thus, rales and slight to severe dyspnea are often a part of the calicivirus infection caused by the more virulent strains of the virus. Cases caused by less virulent calicivirus strains may present with little or no pneumonia; in these cases oral ulceration is the most prominent clinical sign. Small round ulcers will be present on the tongue, hard palate, gums, and even in the nasal mucosa. These ulcers may begin as vesicles, which will rupture leaving the abraded mucous membrane. Obviously, these ulcers are extremely painful to the cat, and anorexia is a prominent clinical sign. In a calicivirus infection uncomplicated by secondary bacterial invaders, rhinitis and nasal discharge are very unusual clinical signs. In both the severe and mild cases of the disease, however, the clinical course is comparatively short. Generally, the virus will persist for only 7 to 10 days as a clinically evident infection. Following recovery, there is shedding of the virus into the environment for an undetermined period of time, however.

The clinical picture of feline rhinotracheitis is very different from that of the calicivirus infection. Rhinotracheitis is a herpesvirus, and exhibits signs and symptoms typical of herpesvirus infections in other species. Pneumonia and ulcerative stomatitis, which are cardinal signs of calicivirus infection, are very unusual in feline rhinotracheitis. Instead, this herpesvirus seems to have a decided predilection for the upper respiratory tract and conjunctiva. Cats will present with a moderate fever and severe mucopurulent nasal and ocular discharge. The severity of the conjunctivitis may lead to plugging of the lacrimal ducts with resultant keratitis sicca, ulcerative keratitis and even panophthalmitis. Since rhinotracheitis is a disease of the upper respiratory tract of cats, lung sounds are generally not present. Intranuclear inclusion bodies are characteristic of herpesvirus infections, and one may find these in nasal or

conjunctival scrapings. The incubation period of this virus is from 3 to 5 days, but the course of the disease may be quite long. It is not uncommon for clinical signs to persist for up to a month.

Another specific effect of the feline rhinotracheitis virus is seen frequently in catteries. The rhinotracheitis virus, like other herpesviruses, has a predilection for the genital tract. In nonpregnant females it may cause vaginitis. Pregnant cats infected in the third trimester of gestation may spontaneously abort. There is a very definite carrier state of feline rhinotracheitis, and carrier queens may abort repeatedly. Kittens born to carrier queens may also die as neonates with marked clinical signs of the disease. Apparently the virus causes severe placental and uterine lesions. A carrier queen may show none of the upper respiratory signs of the disease and yet persistently abort her kittens. A clinical entity which should also be considered if there is a high incidence of abortion in a cattery is the feline leukemia virus. Infertility and abortion have been associated with the leukemia virus as well as with rhinotracheitis, and it would be wise to test for the feline leukemia virus if there is a history of abortion in a cattery. The feline leukemia virus has a very definite immunosuppressive effect, of course, and a viremic cat will be more susceptible to other concurrent infections. Thus the feline respiratory viruses and other infections are common in cats affected with the feline leukemia virus. Repeated bouts of respiratory disease in a cattery, especially with abortion, would indicate the need for mass testing on the cats for the leukemia virus as well as for attempted rhinotracheitis virus isolation. Due to the severity of the feline rhinotracheitis virus, after-effects of infection are seen with some frequency. One of the most severe of these is frontal sinusitis with osteomyelitis of the nasal turbinates. The virus itself may cause necrosis of the turbinates, and secondary bacterial infection is quite common. In the cases of chronic sinusitis following severe cases of the disease, inspissated pus and mucus in the sinuses may cause a chronic nasal drainage. Treatment in these instances is necessarily surgical, with trephination of the sinuses and/or curettage of the nasal turbinates, placement of drains, and flushing with antibiotic solutions. Culturing and antibiotic sensitivity testing of material from the nasal passages is essential, and long-term treatment with antibiotics is generally necessary to effect a cure.

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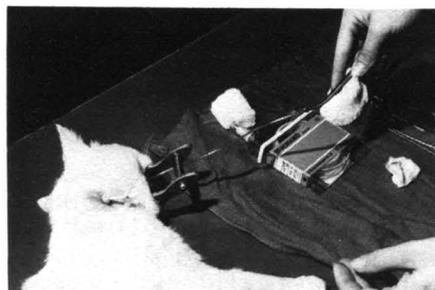
Equipment necessary for the pharyngostomy procedure. Shown is a pediatric feeding tube, size 8 French.



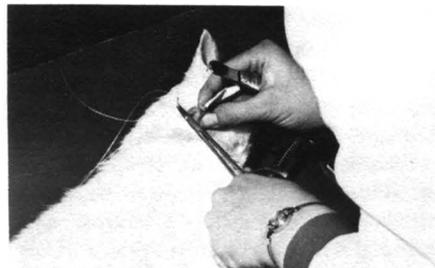
The finger is placed inside the cat's mouth behind the mandible and an incision is made through the skin and mucous membrane.



A hemostat is inserted through the mouth and out the incision. The end of the tube is grasped with the jaws of the instrument.



The tube is then drawn out of the mouth and retrograded down the esophagus.



A piece of tape is placed around the tube and a suture placed through the skin and tape. The neck is then bandaged so that the adaptor is readily available for fluid administration.

Treatment of all the feline respiratory diseases is by necessity supportive and relates to the clinical signs of the individual case. Prophylactic antibiotics are probably indicated in most instances. If the inclusions of feline pneumonitis are present in conjunctival scrapings or if clinical signs fit pneumonitis, the antibiotic of choice would be tetracycline or chloramphenicol. If conjunctivitis is present, ophthalmic ointment applied frequently is very beneficial and may prevent the ulcerative keratitis of feline rhinotracheitis. The cat with severe rhinitis will be more comfortable in a room with a vaporizer; many severely congested cats will actually sit close to the vaporizer mist. Nursing care or its lack is the most important key to the recovery or demise of a severely affected cat. Obviously, a contagious cat cannot be hospitalized by the veterinarian, so client commitment to the animal's care is exceptionally important. Careful cleansing of the eyes and external nares with moistened cotton swabs is essential several times a day for the cat's comfort.

Cats which die from effects of the feline respiratory diseases generally do so due to dehydration and anorexia. The feline appetite is influenced to a great extent by the smell of his food. For most cats, if they cannot smell, they will not eat. With swelling of the nasal mucosa, the cat loses his sense of smell and thus becomes anorexic. Weight loss and extreme dehydration rapidly ensue. Most clients do a poor job of force-feeding fluids and food to a struggling cat, and will soon give up in frustration. In many cases, placement of a pharyngostomy tube in the severely affected cat will mean the difference between life and death. The procedure is risky, of course, since anesthesia is required in an animal with already compromised respiration. The whole procedure requires less than five minutes, however, and very careful induction of light anesthesia with thiamylal sodium is generally safe. The cat should be intubated prior to placement of the pharyngostomy tube in case supplemental oxygen therapy should become necessary. A mouth gag is used to keep the cat's mouth forcibly open, and a stab incision is made behind the angle of the mandible directly over the tip of a pair of hemostats which have been passed into the mouth. The end of a pediatric No. 8 French feeding tube is then pulled through the incision using the jaws of the hemostat, and the catheter is pulled out the mouth. The capped end of the catheter is then sutured in place around

the stab incision, and the length of the catheter is retrograded down the esophagus into the stomach. The capped end of the catheter is then taped in place exactly as one would tape in a jugular catheter. The cat may now easily be hydrated and fed through the pharyngostomy tube. The client may be instructed as to fluid requirements, and a high-calorie liquid food source may be given. The major requirement for the client treating a chronic severe upper respiratory infection like rhinotracheitis is love and patience, and this cannot be overemphasized.

The diagnosis and treatment of the feline respiratory diseases is much more sophisticated today than it was even two years ago. The definite characterization of the clinical signs for each disease has made client communication and education as to prognosis and course of disease much easier. The advent of the vaccine for rhinotracheitis and calicivirus will undoubtedly decrease the number of severe infections seen. Both of these research accomplishments have made the job of the practicing veterinarian who deals with any number of feline patients much easier.

C.L. Barton, D.V.M.  
College of Veterinary Medicine, UMC

## New Polygraphs For Students

Nine new polygraphs were made available to first year veterinary students as they started the winter semester. These polygraphs are used in the laboratory sessions of the Veterinary Physiology course which is part of the first year curriculum, and are also used in other courses taught in the Department of Anatomy-Physiology. The new polygraphs can measure such physiologic parameters as blood pressure, EKG, respiratory events, muscle contraction, and rate of urine production. These machines are replacing older polygraphs which are wearing out.

Few veterinarians have access to polygraphs as sophisticated as these. However, many veterinarians encounter devices that singly employ features of these polygraphs such as EKG monitoring. Although veterinarians encounter in their practices specific physiologic events that they may not be able to measure, these events are better understood because events like them were measured and recorded by the veterinarians while they were students.

## Freeze-Drying Plants

When studying toxic plants in the classroom, veterinary students use such aids as slides and pressed plants. But most students have to go through cumbersome mental logistics to visualize a particular plant as they would encounter it in the field. A plant preserved in three dimensions with identifying features positioned exactly as they are in life would make the transition from the classroom to the field easier (and more reliable) for the students. An entire plant, just as it is found, can be preserved by freeze-drying and Dr. Lawrence Ruhr is refining techniques by which this freeze-drying can be done.

Dr. Ruhr held up a sample of his work, a bull nettle, which looked as if it had been picked just at that moment - but the date was late December and outside a freezing wind was blowing. Time seemed to have stood still for the plant from the instant it was picked last summer to months later when Dr. Ruhr held it in his hand.

To achieve that life-like state, Dr. Ruhr places the fresh plant in a freeze-drying chamber and the temperature is dropped to 0° F and the air is pumped out to leave a nearly total vacuum. The ice in each cell of the plant then sublimates to leave a dry, rigid form. After several days in the



*Dr. Ruhr is placing a few flowers in the freeze-drying chamber.*

chamber, the dried plant can be removed. The result will never wilt or rot and, protected in a case from bumps and shocks, the plant will hold its form and color indefinitely.

When new plants start to emerge in the spring, Dr. Ruhr will begin collecting in earnest. He and his major advisor, Dr. G. D. Osweiler, hope to build a collection of as many as 100 different

plants that are of importance in the Midwest. Dr. Ruhr estimates that two years of work are required to meet this goal.

Dr. Ruhr is currently a Research Associate in the Department of Veterinary Anatomy-Physiology. His interest in plants span several years; before he enrolled in the veterinary program at Oklahoma State University, he earned a bachelor's degree in Botany.

## New Veterinary Text on Rodents and Rabbits

Practitioners are receiving more and more requests to treat pet rodents and rabbits, and to serve as consultants for breeder and research colonies. And these practitioners face new problems - 'size' for one. When this editor spoke with a practitioner about a client's request to spay a hamster, the practitioner responded: "What am I supposed to use? Watchmaker's tools?"

Soon, practitioners will have a reference to turn to for the husbandry and the treatment of diseases of rodents and rabbits. Dr. John Harkness, Assistant Professor of Veterinary Medicine and Surgery, and Dr. Joseph Wagner, Professor of Veterinary Pathology, are the authors of the book, *The Biology and Medicine of Rabbits and Rodents*, currently in press (Lea and Febiger). It will be available this spring. This book will serve as a practical guide for the care and treatment of six species of small mammals: rabbits, guinea

pigs, rats, mice, gerbils, and hamsters.

This guide is intended for use by practitioners. For their purposes the book is designed for quick access to pertinent information. Because laboratory animal medicine is becoming more important in the curricula and the research efforts of many institutions, this book will also benefit veterinary students, veterinary assistants, laboratory and health technicians, and those biomedical investigators who utilize animals in research.

Much of the book is based on a M.S. thesis of Dr. Harkness that was developed as a cooperative project in veterinary medicine and education. Much of the material used in that thesis was based on the results of an extensive survey of researchers and practitioners made through the Continuing Education and Extension Offices in the summer of 1974.

This is the second practitioner-oriented text on the subject of laboratory animal

medicine. The first is by Dr. Christine S. F. Williams of Michigan State University, *A Practical Guide to Laboratory Animals*. This book has briefer descriptions of more species than the book by Drs. Harkness and Wagner.

## New Scholarship Program

The estate of Nellie F. Wells has recently donated \$50,000 to the College to establish the Frank Wells Scholarship Program. Income from the \$50,000 will be used to fund the scholarships. The recipients of the scholarship program will be named by a faculty committee appointed by the College's Dean and that committee will have the full power to set the standards and qualifications of any recipient.

# Two CE Programs Rescheduled!

The scheduled workshops, "Clinical Gastroenterology" and "Applied Renal Medicine", were cancelled because of bad weather — they are now being rescheduled as described below (please note the new dates). *This will be the only announcement and opportunity to register.*

## Clinical Gastroenterology, April 4 - 6, 1977

Program Chairman: Dr. Brent D. Jones

This seminar will deal primarily with the diagnosis (including radiology) and management of gastrointestinal disorders including parasitism. Actual cases will be presented. A review of the liver function tests, diagnostic procedure (including biopsy), and therapy of liver diseases will be covered. The diagnosis and therapy of esophageal (megasophagus, strictures foreign bodies, diverticula, etc.) and gastric disorders will be discussed including a brief introduction to the diagnostic capabilities of flexible gastrointestinal endoscopy. The diagnosis and management of chronic diarrhea, maldigestion and colonic disorders including the protoscopic examination will be covered as well as inflammatory pan-

creatic diseases, and diagnosis and therapy of insulinomas.

April 4, 1977

7:00 p.m. - 8:45 p.m. Diseases of the pancreas and esophagus.

April 5, 1977

8:30 a.m. - 12:00 noon Diseases of the stomach, and radiology of the esophagus, stomach and liver.

1:30 p.m. - 5:00 p.m. Parasitology of the esophagus and stomach, and diseases of the liver.

7:30 p.m. - 9:30 p.m. Diseases, radiology and parasitology of the colon.

April 6, 1977

8:30 a.m. - 12:00 noon Diseases and parasitology of the small intestine.

1:30 p.m. - 3:00 p.m. Radiology of the small intestine.

## Applied Renal Medicine, April 13 - 14, 1977

Program Chairman: Dr. Joe M. Carrillo

This is the second seminar in applied renal medicine offered by the College of Veterinary Medicine. The effort will be made in this seminar to emphasize everyday *basic* urological evaluation.

Incorporation of case material, individual examples and handouts will be utilized to re-enforce all material.

In addition, a surgical forum will conclude each day's presentation. Various surgical procedures and their immediate application will be discussed.

April 13, 1977

8:00 a.m. - 12:00 noon *Evaluation of Renal Function*: A brief didactic overview of three classifications of renal insufficiency; multiple case presentations to demonstrate the usefulness of placing patients these various categories. No in-depth therapy. *Urinary Sediment Evaluation I*: The cellular and biochemical (Dipstick) nature of urine frequently offers considerable information. Correlation of both components allows the clinician to arrive at reasonable differential diagnosis. Historical and physical exam abnormalities will be correlated.

1:30 p.m. - 5:00 p.m. *Urinary Sediment Evaluation II*: Multiple slide examples of various cellular and acellular components of a routine urinalysis; short case presentations with discussion. *Selected Urological Procedures I*: Basic surgical techniques; new procedures and their application to the management of lower and upper urinary disorders will be discussed.

April 14, 1977

8:30 a.m. - 12:00 noon *Urinary Sediment Evaluation II*: A unique approach to the biochemical (Dipstick) composition of the urinalysis. Sediment and routine renal function evaluations; description and analysis will provide for potential differentiation of renal and non-renal metabolic disorders utilizing complete urine evaluation alone! *The Differentiation of Acute vs. Chronic Renal Failure I*: A practical look at the historical, physical, hematological and bio-chemical data toward an end diagnosis.

1:30 p.m. - 4:30 p.m. *The Differentiation of Acute vs. Chronic Renal Failure II*: Case presentations. *Selected Urological Procedures II*: Conclusion, special surgical techniques will be stressed.

Please fill in the registration form and mail immediately to:

Continuing Education in Veterinary Medicine  
234 Veterinary Medicine Bldg.  
University of Missouri-Columbia  
Columbia, MO 65201

Please make checks payable to: University of Missouri. If you have any questions, call: (314) 882-3496.

The fees cover registration, handouts, coffee, and meals where appropriate. If enrollment is insufficient, one or both programs will be cancelled and refunds made.

### Registration Form

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Area Code & Telephone: (\_\_\_\_\_) \_\_\_\_\_

Clinical Gastroenterology Seminar, April 4 - 6  
\$70 fee; registration deadline: March 21, 1977.

Applied Renal Medicine Seminar, April 13 - 14  
\$75 fee; registration deadline: March 28, 1977.

## Veterinary Medical Review

College of Veterinary Medicine and UMC Extension Division

Editor: Barry L. Siler, 101 Connaway, College of Veterinary Medicine, University of Missouri, Columbia, MO 65201

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