

VETERINARY MEDICAL REVIEW

Reptile respiratory diseases



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

November/December 1981, N.S., Vol. 2, No. 6
and *Missouri Veterinarian*, Vol. 31, No. 3

In this issue . . . cover story, p. 4; acetaminophen poisoning in cats, p. 2; the 57th Annual Conference for Missouri Veterinarians, p. 6; and more.

Acetaminophen poisoning in cats

A new and specific antidote

Vincent St. Omer, D.V.M., Ph.D.
Veterinary Anatomy-Physiology
and Linda L. Valleroy, VMIV

You answer the telephone at your veterinary clinic. It's Mrs. Smith, whose cat is in severe respiratory distress. She says the animal has become depressed in the past four hours with episodes of meowing, and has neck and facial edema with blue mucous membranes around the mouth. Before Mrs. Smith hangs up, she adds that she gave her cat a couple of Tylenol* (acetaminophen) tablets earlier that day.

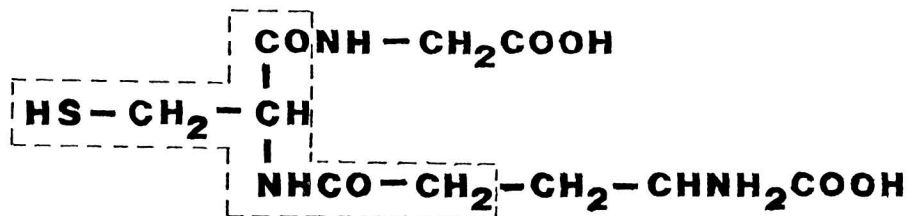
Making a tentative diagnosis of acetaminophen (N-acetyl-p-aminophenol) toxicosis, you tell Mrs. Smith her pet needs emergency treatment, and ask her to bring her cat to your clinic at once. Your past experience with supportive therapy tells you that after four hours, the prognosis of severe acetaminophen toxicosis must be guarded. All the clinical signs—severe neck and facial edema, cyanosis, depression, recumbency, and ataxia—constitute a poor prognosis and are apparent to the owner within six hours of dosing.

What makes acetaminophen poisoning so sinister is that the drug is the active ingredient in many commonly used non-aspirin analgesics and antipyretics. Alone or in combination with other drugs, it is found in many products promoted for symptomatic relief of pain, cough and colds in man. Because acetaminophen is widely available and forcefully promoted as a "safe" aspirin substitute, the lay public believes the drug is harmless. This sense of safety is evident by the yearly consumption of 20 to 60 million pounds of acetaminophen in the United States and increasing reports of pet owner-induced accidental poisonings.

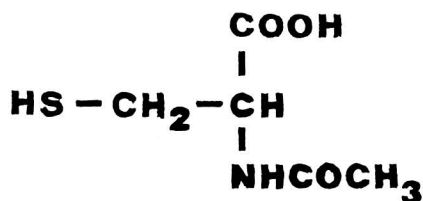
Why is this substance so toxic to cats? Acetaminophen is biotransformed primarily by the hepatic microsomal enzymes.^{1,2,3,4} In most animal species, the biotransformation of a low dose of acetaminophen involves conjugate reactions yielding a glucuronide and sulfate

Acknowledgments: Supported in part by the Society of Phi Zeta (University of Missouri Chapter) and Beecham Laboratories, Bristol, Tennessee.

The authors thank Dr. Larry Thornburg for histopathological assistance.



GLUTATHIONE (γ -GLUTAMYL-CYSTEINYLGLYCINE)



ACETYL-CYSTEINE (N-ACETYL-CYSTEINE)

The structural similarity between glutathione and acetylcysteine

while quantitatively less-important reactive but toxic metabolite is rapidly inactivated by preferential conjugation with hepatic glutathione (γ -glutamylcysteinylglycine) and subsequent conversions to cysteine and mercapturic acid conjugates.^{1,2,3,4} All conjugational metabolites are pharmacologically inert. The capacity of the feline liver to form glucuronide and sulfate conjugates of this drug is relatively limited.³ As a consequence, in acute feline acetaminophen toxicosis, a greater portion of the drug is metabolized via the glutathione pathway. Endogenous hepatic glutathione is quickly exhausted.² This hepatic exhaustion of glutathione will result in the accumulation of toxic metabolites responsible for the methemoglobinemia in cats.^{3,4,5} The methemoglobinemia, manifested as cyanosis,^{4,5,6} is responsible for the decreased oxygen transport ability of the blood. The acute and often fatal hepatic necrosis seen in man,^{1,2} dog⁷ and rat^{7,8} does not occur in the cat.^{4,6} No acetaminophen-induced hepatocellular necrosis was observed on histologic examination of livers and kidneys from more than 20 cats.^{4,6}

Clinical research experience shows that current supportive and symptomatic treatments (e.g., parenteral fluids, antiemetics, vitamin K, ascorbic acid) are

unreliable and ineffective. It is inadvisable to use antihistamines in any supportive therapy regimen as they increase the iatrogenic toxicity.⁴ Our research efforts indicated to us that treatment should, therefore, be aimed primarily at replenishing the glutathione reserves of the liver cell. Unfortunately, the penetration of glutathione itself into liver cells is poor.⁷ The search for a specific and effective antidote was also one to find a way of supplying the cat with a "glutathione-like" drug. Acetylcysteine (N-acetyl-L-cysteine), a compound similar to glutathione (it chemically constitutes the central portion of the glutathione molecule), but without its drawbacks, was effective in treating acetaminophen overdose in mice⁷ (Figure 1).

We carried out a series of trials where several cats were acutely intoxicated with large doses of acetaminophen (650, 975 or 1200 mg per cat within four hours).^{4,6} Oral treatment with acetylcysteine was begun four or six hours after initial intoxication. The treatment was continued at four-hour intervals for a total of four treatments. Acetylcysteine therapy (140 mg/kg body weight per dose) begun four hours after the initial acetaminophen overdose was 100 per cent effective in preventing death in cats given 650 mg of the toxicant, but

Brand Names of Some Acetaminophen-Containing Products Available in the United States

APAP	Empracet	Sedapap
Aceta	Esgic	Sinacon
Anuphen	Excedrin	Sinarest
Arthalgien	Febrigesic	Singlet
Bancap	Gaysal	Sinubid
Capital	Liquiprin	Sinulin
Coastalgiesic	Maxigesic	Sinutab
Codalán	Midrin	SK-APAP
Codimal	Minotal	Sunril
Colrex	Nebs	Supac
CoTylenol	Ornex	Tempra
Darvocet-N	Parafon Forte	Trind
Datril	Pavadon	Trin-DM
Demerol-APAP	Percogesic	Tussagesic
Dialog	Phenaphen	Tylenol
Dolene	Phrenilin	Valadol
Dolmar	Proval	Vanquish
Duadacin	Repan	Wygesic
Duradyne	Rhinex	X-Otag

only 50 per cent effective at the 1200 mg dosage.⁴ Acetylcysteine (280 mg/kg body weight per dose) administered concomitantly with parenteral fluid was 67 per cent effective in preventing death when given six hours following a toxicant dosage of 975 mg.⁶

Based upon our clinical experiences with different antidotal regimens, we recommend the following treatment for acetaminophen toxicosis in small animals, especially cats: acetylcysteine (140 mg/kg body weight per os for early diagnosed toxicosis and 280 mg/kg body weight per os for severe or late diagnosed toxicosis) and sterile physiologic saline (100-125 ml subcutaneously) administered at four-hour intervals for at least four treatments. Activated charcoal, unless administered within a few minutes of intoxication, should be avoided because of its potential adsorptive capacity for acetylcysteine. We also recommend purchasing acetylcysteine in powder form (98 per cent purity) from a chemical company and using it as a 14 per cent solution in distilled water. A more convenient, expensive and readily available product is the proprietary drug Mucomyst* (an aqueous solution of acetylcysteine).⁴ Dosage at the rate of 2.8 mg/kg for a 10 per cent solution or 1.4 ml/kg for a 20 per cent solution would be equivalent to the 280 mg/kg powder dosage we recommend.

Laboratory evaluation of the effectiveness of the antidotal therapy is not essential.⁴ Although antidotal therapy is associated with a return of increased serum glutamic-pyruvic transaminase and methemoglobinemia values toward normal, only the methemoglobin value is a reliable prognostic indicator in the cat.⁴ Accurate estimation of acetaminophen in the plasma is of diagnostic value but is useless as a prognostic indicator since the toxic me-

tabolite comprises less than 5 per cent of the total metabolism.⁶

Usually the alert practitioner will be able to diagnose and begin treatment within six hours of severe toxicosis. The antidotal usage of acetylcysteine will result in a good to excellent prognosis.

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Datebook

January 10. Continuing Education course: "Practical Oncology," at the College. For more information on this year's continuing education courses, call (314) 882-7854.

January 12-March 4. Continuing Education course: "Laboratory Animal Technician Training," at the College (an eight-week course).

January 17. Continuing Education course: "Genital Injuries and a New System for the Breeding Soundness Exam," at the College.

January 21. Visiting lecturer: Dr. Richard Ott of Washington State University on "Feline Virus Infections," 4 p.m. in the College's Teaching Hospital Auditorium.

January 23-24. Missouri Veterinary Medical Association convention, at the Ramada Inn in Jefferson City.

February 5-6. Continuing Education course: "Bacteriology," at the College.

February 7. Continuing Education course: "Equine Ophthalmology and Dermatology," at the College.

February 11. Continuing Education course: "Bovine Reproduction," at UMC's Memorial Union.

February 11. Visiting lecturer: Dr. Peter Elsdon of Colorado State University on "Embryo Transfer as a Veterinary Service," 8 p.m. in the College's Teaching Hospital Auditorium.

February 15-18. Intermountain Veterinary Medical Association convention at the Las Vegas Hilton. The College's alumni reception will be at 6:30 p.m. February 15 in the Hilton's conference rooms 9 and 10.

February 22. Continuing Education course: "Diseases of the Liver," at the College.

February 28. Continuing Education course: "Endocrine Diseases," at the College.

July 19-22. American Veterinary Medical Association convention in Salt Lake City, Utah. The College will host an alumni reception and make plans for its 1982 alumni luncheon. Watch this space for details.

Reptile respiratory diseases

Educating clients is half the battle in treating scaled pets.

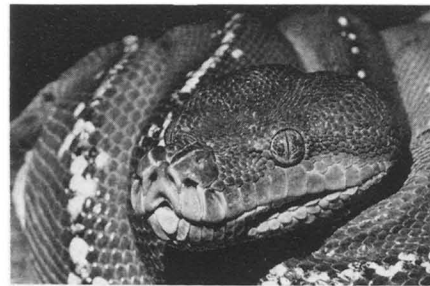
R. Eric Miller, D.V.M.
Veterinary Resident
St. Louis Zoological Park

If your veterinary practice includes small exotic animals, then reptiles such as lizards, turtles, tortoises, crocodylians and snakes inevitably become regular patients. Respiratory diseases in these patients rank right behind malnutrition and poor husbandry as the reason for patient presentation. With the client properly educated, the treatment of these scaled and shelled pets can be very rewarding.

Reptile respiratory diseases, whether bacterial, parasitic, mycotic or viral, nearly always are preceded by problems in environmental management. As a general rule, most pet reptiles thrive best in 75 to 85 degrees Fahrenheit, in a draft-free enclosure. The owner and, if necessary, the veterinarian, should consult a reptile husbandry book for proper diet and care of the individual species. (See review sources on Page 5.)

The clinical signs of respiratory disease in the early stages are sluggish behavior and/or failure to eat. Later, the animal becomes dyspneic. Reptile lungs are prone to "pooling" pneumonias, as they basically are reticulated sacs that drain poorly when filled with fluid. Reptiles lack a cough reflex; expiration is passive, and the ciliated respiratory epithelium stops at the glottis—all barriers to the effective outward movement of fluid and debris. Because snakes lack a soft palate, the fluids expelled appear to be coming from the corners of the mouth. Nasal discharge alone is a sign of rhinitis and may not be associated with pneumonia. In addition to "mouth-bubbling," the dyspneic snake may hold the anterior one-third of its body off the ground. Aquatic turtles frequently will "list" to the affected side while swimming, an imbalance created by the consolidated lung.

Diagnosis need not be complicated. The mouth should be examined to determine the presence of a foreign body or parasite (trematodes and pentastomids) that could cause gaping. If desired, a tracheal swab culture can be taken. In snakes, the glottis is particularly accessible if the mouth is gently held open with padded culture swabs or tongue depressors. In cases where consolidation of the lung already has taken place, radiology may be of some



Respiratory diseases are common causes of health problems in snakes. They usually can be traced back to problems in environmental management.

Photos courtesy of St. Louis Zoo

prognostic value. (Remember that most snakes generally have only one lung—the right; boas and pythons are more primitive and have both lungs.) Cytology and blood counts rarely provide a great deal of useful information.

The nature of the treatment depends upon the diagnosis. Respiratory conditions most commonly are bacterially caused. Most reptile organisms of normal flora and of pathogenic nature are "hot" gram negatives; e.g., *Pseudomonas sp.*, *Aeromonas sp.*, *Klebsiella sp.*, *Citrobacter sp.*, etc. Treatment usually begins with a select group of antibiotics. The slow and temperature-dependent metabolism of reptiles requires significantly lower antibiotic doses than mammals. For bacterial pneumonias, gentamycin and chloramphenicol have been used extensively. In snakes, gentamycin doses of 2.5 mg/kg/72 hours at 24 degrees Celsius (75 degrees Fahrenheit) plus 2.2 ml Lactated Ringer's subcutaneously to avoid renal toxicity have

proven satisfactory (10 mg/kg/48 hours in turtles). Chloroamphenicol may be dosed at 40 mg/kg/24 hours for snakes at 24 degrees Celsius (75 degrees Fahrenheit). Other antibiotics have been used with generally decreased effectiveness: tetracycline, 50 mg/kg twice daily at 22 degrees Celsius (avoid IM route to prevent tissue damage—administer IV or orally); tylosin, 25 mg/kg once daily either orally or IM; and ampicillin (Polyflex), 3-6 mg/kg once daily to twice daily IM or subcutaneously. Lung mites are more difficult to treat. A Shell "No-Pest Strip" hung in a 10-by-10-by 10-foot room with the pet's cage can be an effective control measure.

A viral pneumonia (paramyxovirus) has been reported recently in one snake species. Fungi are reported infrequently, but *Aspergillus sp.* has been cultured, as has *Mucor sp.*, from an epidemic in a crowded crocodile pool.

Continued on Page 5

Dr. Hahn receives patent for improved oxygen electrode

The College's interim associate dean has been granted a patent for his improvements on an oxygen electrode.

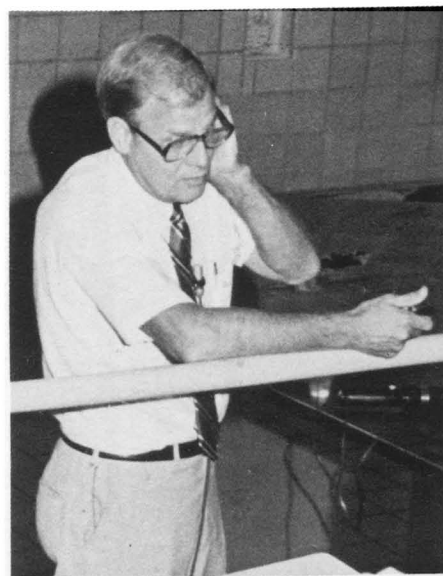
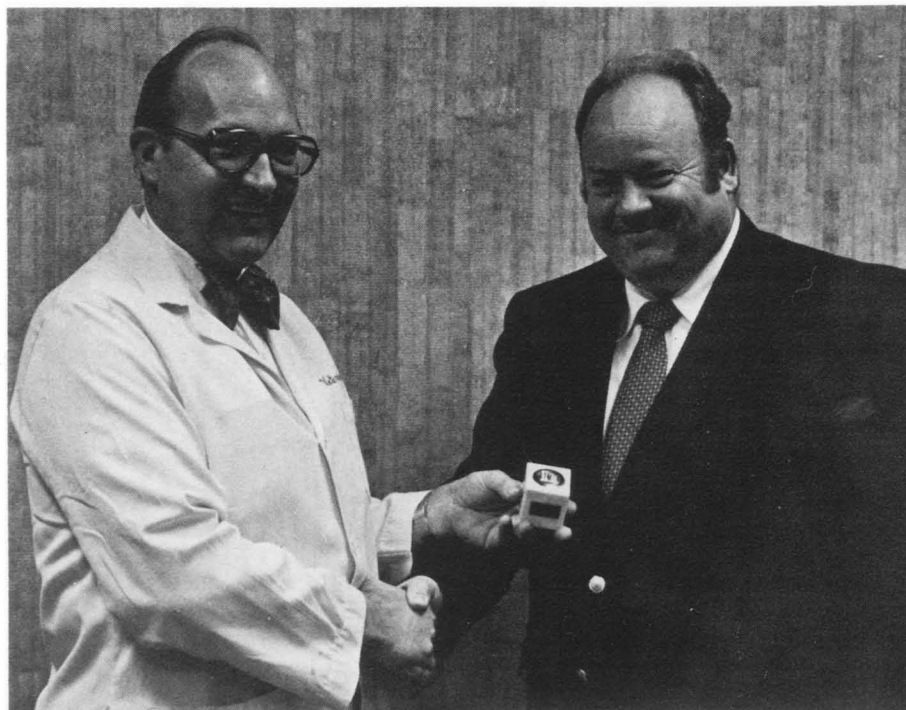
The patent, assigned to the University's Board of Curators, is for Dr. Allen Hahn's improved oxygen electrode, which provides consistent measurements of oxygen concentration for at least 72 hours, and is resistant to "poisoning" by certain ions or other biological components.

Dr. Hahn, a professor of veterinary medicine and surgery and a research investigator at the University's Dalton Research Center, worked on the project with Michael Nichols of Dalton Research Center, Ashok Sharma of UM-Rolla's Materials Research Center, and Eckhard Helmuth of UM-Kansas City's chemistry department.

Oxygen electrodes are devices for measuring oxygen concentration in air, liquid or other substances. The electrode's metal surface acts as a conductor of ions in a battery circuit, forming an electrical pathway. Oxygen dissolved in the substance goes through a reduction process, creating a current whose strength is proportional to the oxygen concentration in the substance.

Previous electrodes used a platinum surface that remained stable for only four to eight hours, until the chemical reaction stopped and the electrode was "poisoned." The Missouri group added an ultra-thin layer of a specially prepared propylene polymer to the electrode's surface. This new layer, about as thick as a cell wall increases the electrode's stability to 72 hours.

The research team's long-term goal is to implant a more permanent device in the body that will return signals on its oxygen content, for use in physiological studies.



Professionally speaking . . .

Speakers visiting the College this fall included Dr. Ned Raun (left photo) of Winrock International and Dr. Horst Leipold (right, above photo) of Kansas State University. Dr. Raun was in Columbia to explain Winrock's programs, especially its food agriculture programs in developing countries. "Beef isn't always the principal product in these cattle systems," Raun said, "milk is. Our projects often have to serve a dual purpose." Dr. Leipold, shown here with anatomy-physiology chairman Dr. Robert McClure, was the College's first visiting lecturer for the 1981-82 year. The veterinary pathologist spoke on congenital defects in cattle, asserting that many abnormalities are induced or exacerbated through careless breeding. Environmental factors are overlaid as the cause of many defects, he said, adding that they can be controlled through management.

Don Connor photos

Reptile medicine

From Page 4

Above all, client communication is important. Most reptile owners are knowledgeable, and with training, can administer the antibiotic injections. Explain to clients that external signs in the reptilian patient frequently are preceded by irreversible internal pathology. Unfortunately, veterinarians usually see reptile respiratory patients in a terminal condition where death comes despite all medical efforts. Predisposing environmental and nutritional practices should be changed and veterinarians can instruct clients on these requirements. For example, raising the enclosure temperature by the use of a light bulb or heating pad should be carefully supervised to prevent thermal burns.

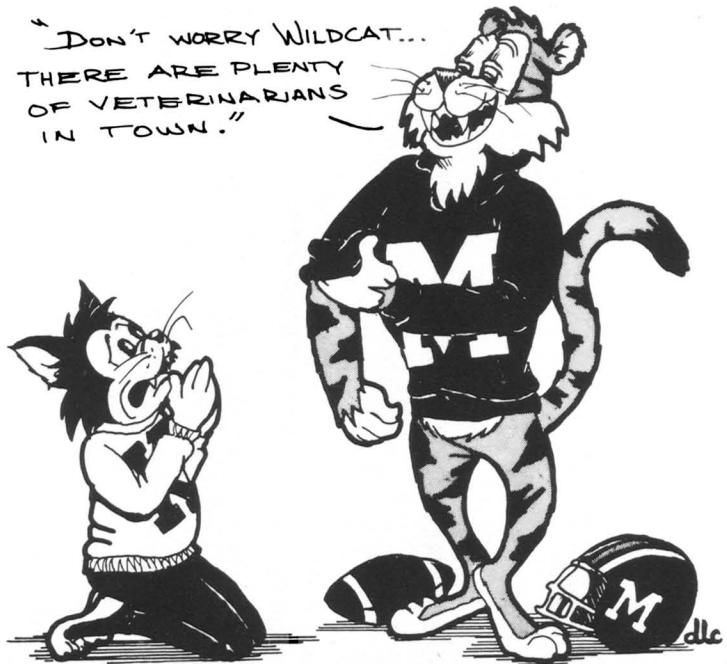
Such instructions, while often tedious to dispense, result in a client who returns for more preventive care on the next visit.

The successful treatment of the reptilian patient is rewarding to veterinarian and owner alike and can lead to the prevention of further recurrences.

Review sources

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2. *Husbandry, Medicine and Surgery in Captive Reptiles*; Frye, Frederic L. VM Publishing. 1973.
3. *Veterinary Biology and Medicine of Captive Amphibians and Reptiles*; Marcus, Leonard C. Lea & Febiger. 1981.
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The 57th Annual Conference



The conference weekend began well for Missouri Tiger fans, with MU's 58-13 shellacking of the Kansas State Wildcats October 10. As the 'Cats limped back to friendlier territory, conference attendants settled down to more serious pursuits of knowledge, with a few lighthearted breaks for fun.



Assistant Dean Kenneth Niemeyer shares a laugh with Dr. Arthur Case at the Annual Conference. Dr. Case, who retired this year as an emeritus professor, was given a book of letters written by friends, colleagues and former students.



The Osage River Band provided the entertainment at the luau that capped the first day of the Annual Conference at Columbia's Ramada Inn.

Don Connor photos

Conference offers potpourri of topics

More than 230 veterinarians attended the 57th Annual Conference for Missouri Veterinarians October 11-12, making it one of the best-attended conferences in recent years.

Featured speakers Dale Nelson, William Donawick, and Richard Halliwell covered a wide variety of small- and large-animal topics, while College faculty presented mini-topic discussions in their

specialty areas.

Dr. Nelson, of the University of Illinois, lectured on the diagnosis and treatment of stifle lameness in cattle, and on digestive tract problems in cattle, as well as offering practical suggestions on farm fracture repairs.

Dr. Donawick, of the University of Pennsylvania, covered teat-damage treatment for cows, and fluid, electrolyte and acid-

base therapy in large animals. He also gave several talks on wound management, with guidelines on suture types and when to use them, staples as suture alternatives, and the healing process.

Skin diseases were Dr. Halliwell's subject, with discussions of the rational approach to skin cases, feline dermatology, pyodermas, autoimmune skin diseases and thyroid problems.

for Missouri Veterinarians

Dr. McGinity honored with service award

Missouri veterinarians honored one of their own October 11 when the College presented the Distinguished Service Award to Dr. Joseph T. McGinity.

Dr. McGinity, a professor of veterinary medicine and surgery, was lauded for his 29 years of service to the University and to veterinary medicine by University Provost Ronald Bunn, who presented the award.

An expert in herd health management and bovine medicine, Dr. McGinity has taught in the College's food animal clinic since 1952 and is the former director of that clinic. He has been honored by the University many times—as the 1970 winner of the Norden Teaching Award, the 1974 winner of the College's Alumni Award of Merit, and the 1978 winner of a UMC Faculty-Alumni Award.

Dr. McGinity received his D.V.M. degree from Kansas State University in 1949. He holds a 1962 M.A. from the University.



University Provost Ronald Bunn, left, congratulates Dr. Joseph McGinity after presenting him with the College's 1981 Distinguished Service Award.
Don Connor photos

Veterinary medicine portrayed in bronze sculpture

The veterinarian—healer of creatures great and small—is the subject of a bronze bas-relief now on display in the Dean's Office of the College.

The 2-by-3-foot bronze work was donated to the College's 57th Annual Conference for Missouri Veterinarians. The Friends commissioned artist Ruth B. Goetze of Kansas City to sculpt "The Veterinarian" as a portrait of the profession.

Formed as a fund-raising group several years ago, the Friends of Veterinary Medicine is dedicated to furthering the goals of veterinary medicine, primarily through gifts to veterinary schools. As part of its latest money-raising venture, the group is selling smaller reproductions of "The Veterinarian" in bronze and aluminum. Bronze 18-by-12-inch copies are selling for \$200, aluminum copies for \$150, until December 31. In 1982, the price will go up \$50. Orders may be sent to the Friends of Veterinary Medicine P.O. Box 582, Columbia, Mo. 65205. For further information, contact Ben Riley at the College, (314) 882-3361.



Kansas City artist Ruth Goetze stands by "The Veterinarian" with Dr. Leroy Atkinson of St. Louis, a member of the Friends of Veterinary Medicine Board of Directors. Mrs. Goetze sculpted the bas-relief, which the Friends presented to the College during the Annual Conference.

Faculty update

Dr. V.K. Ganjam

Dr. V.K. Ganjam has joined the College's Department of Veterinary Anatomy-Physiology as a professor of endocrinology.

Dr. Ganjam, 41, comes to Columbia from Auburn University, where he was director of Diagnostic Endocrine Services. Educated in India, he earned his F.A.Sc. degree in chemistry and biology from Andhra University in 1956, his B.Sc. in zoology from S.V. University in 1958, and his B.V.Sc. in veterinary medicine from S.V. University in 1962. In 1965, he received an M.S. in endocrinology from Washington State University, and earned his Ph.D. in endocrinology from Oklahoma State University in 1970. He spent two years at McGill University in Canada doing post-doctoral work.

Prior to his Auburn appointment, Dr. Ganjam taught at the University of Pennsylvania for seven years. He has worked as a research assistant at Washington State, Oklahoma State and McGill, as well as an assistant lecturer at Andhra.

Dr. Ganjam's primary areas of research are studies on the endocrinological aspects of infertility in domestic animals, the role of mammalian epididymis in sperm maturation, and aspects of steroid hormone biosynthesis and metabolism in normal and diseased states.

He is a member of the American Physiological Society, the Society for the Study of Reproduction, the American Association for the Advancement of Science, the Endocrine Society, and Phi Zeta and Sigma Xi honor societies.



Dr. Harold Stills

Dr. Harold F. Stills Jr. is now working at the University's Sinclair Research Farm as an assistant professor in veterinary pathology.

Dr. Stills, 30, comes to the College from the Bowman Gray School of Medicine at Wake Forest University, where he was an instructor in comparative medicine. He is a graduate of Baldwin-Wallace College in Berea, Ohio, and holds a D.V.M. degree from Ohio State University. He also is a Diplomate of the American College of Laboratory Animal Medicine.



He has done post-doctoral work in comparative medicine and experimental pathology at Wake Forest. Dr. Stills also has done work in primate parasitology at the University of California-Davis, laboratory methods in virology at the Center for Disease Control, and comparative pathology and lab animal pathology at the Armed Forces Institute of Pathology. He has been an associate veterinarian at three animal hospitals in Maryland, and has completed the U.S. Army Biomedical Laboratory's laboratory animal medicine training program.

He is a member of Phi Zeta, the American Veterinary Medical Association, the Ohio Veterinary Medical Association and the American Association for Advancement of Laboratory Animal Science.

Dr. Alexander Stern

Dr. Alexander Stern has joined the College's Department of Medicine and Surgery as a resident in small animal surgery. He replaces Dr. Kathy Digilio, who completed her residency in August.

Dr. Stern, 33, has served as a relief veterinarian in Los Angeles since the summer of 1980. No stranger to Missouri, he received his B.S. degree in biology from the University of Missouri-Kansas City in 1971. He then attended the University of Zurich in Switzerland, where he earned his D.V.M. degree in 1976.

Before working as a relief veterinarian, Dr. Stern spent a year and a half as an associate in a Los Angeles emergency clinic.



Dr. Susan Gibson

Dr. Susan V. Gibson recently was appointed as a research associate in the College's Department of Veterinary Pathology.

Dr. Gibson received her D.V.M. degree from the University of Georgia in 1978. She also holds a B.S. in zoology from there, which she received in 1973. She has spent the past three years as a clinical veterinarian for the Delta Regional Primate Center in Covington, La.

She is a member of the American Veterinary Medical Association, the American Association for Laboratory Animal Science, the Association of Primate Veterinarian Clinicians and Phi Beta Kappa.

Dr. Sergio Rodriguez

Dr. Sergio D. Rodriguez of Portales, Mexico, has joined the College's Department of Veterinary Microbiology as a research associate.

Dr. Rodriguez comes to Columbia from the National Institute of Animal Research in Mexico, where he was a researcher for the International Hemoprotozoan Diseases Project. He also has worked as a technician for the virology department of Mexico's National Center of Animal Health, as a poultry farm manager, and as an assistant professor of immunology and virology in the School of Veterinary Medicine at the National University of Mexico.

He holds a doctorate in veterinary medicine and zootechnics from the National University of Mexico.

Dr. Gary Allen

Dr. Gary K. Allen has joined the College's Department of Veterinary Microbiology as a research associate.

Dr. Allen is a 1981 graduate of Mississippi State University College of Veterinary Medicine. He also holds a B.S. in biochemistry from Mississippi State, which he earned in 1977.

Two generalists certified in newest specialty board

Drs. Robert Miller and James Thorne have been certified as Diplomates and charter members of the newest veterinary specialty board for generalists, the American Board of Veterinary Practitioners.

Only 45 of 97 veterinarians passed the ABVP examination. Drs. Miller and Thorne were among the four food-animal practitioners who were certified.

Both men are associate professors of veterinary medicine and surgery at the College. Dr. Thorne is the director of the Teaching Hospital's food animal clinic.

Dr. Elmore joins theriogenology board

Dr. Ron Elmore, a professor of veterinary medicine and surgery at the College, has been elected to a three-year term on the board of directors of the Society of Theriogenology. The society elected officers at its recent meeting in Spokane, Washington.

Missouri Veterinarian

Dr. Richard Frame honored at alumni luncheon

Dr. Richard W. Frame, a 1964 graduate of the College, was honored with the 1981 Alumni Citation of Merit at the 57th Annual Conference for Missouri Veterinarians October 11.

Dr. Frame, who practices small animal medicine at Claycomo Animal Hospital in Kansas City, has been a member of the Alumni Association "almost forever," he says. He also is the vice president of the Missouri Veterinary Medical Association and is an active member of the American Veterinary Medical Association, the Missouri Examining Board for Animal Technicians, and the Maple Woods Community Col-

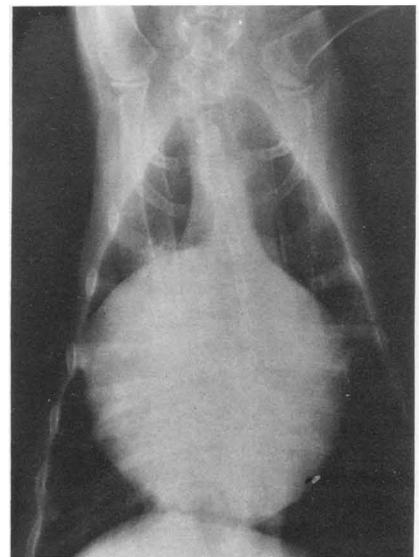
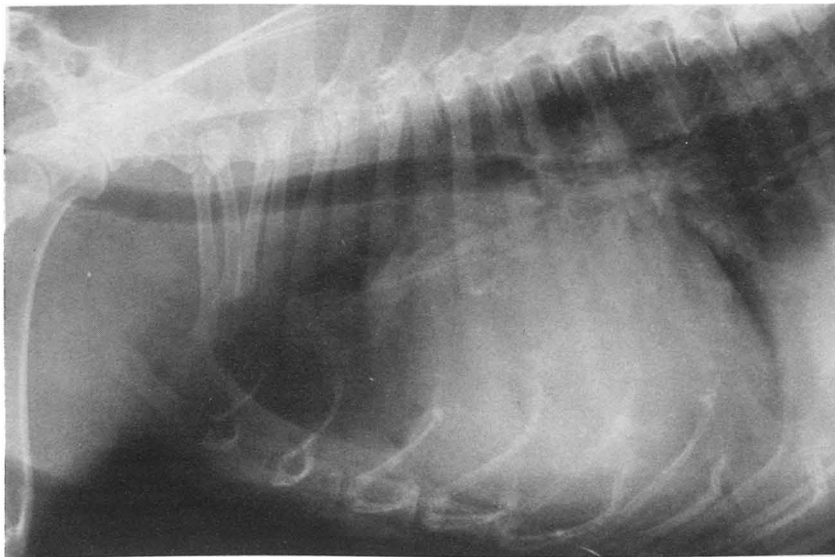


Dr. Emmett McCune, right, offers the statuette of the Lee Rolf Memorial Award to Dr. Richard Frame of Kansas City, who was honored as the outstanding College alumnus of 1981. Dr. Frame also received the University of Missouri Alumni Association Citation of Merit.

Don Connor photo

lege Animal Health Technology Board, as well as several community and church organizations in Kansas City.

Dr. Frame holds three degrees from the University of Missouri: a 1959 B.S., a 1961 M.S., and a 1964 D.V.M.



What's your diagnosis?

History

An 11-year-old spayed female German shepherd was referred to the Veterinary Medical Teaching Hospital with complaints of vomiting, diarrhea, weakness and abdominal tenderness. There had been a decline in attitude and willingness to play over the past year with an increase in panting since one month prior to admission. Weight loss had been noticed, especially during the last month.

The dog had been on prednisolone, 5mg/day, for hair loss and hip prob-

lems. She also was receiving triiodothyronine (Cytobin - Norden Laboratories) for hair loss and penicillin and ampicillin for a high white-blood-cell count.

Physical examination

The physical examination revealed an emaciated, panting, slightly dehydrated animal with a tense abdomen, anasarca, and dry, scaly skin. There was a decrease of heart sounds on auscultation. An electrocardiogram was within normal limits. A neurological examina-

tion on admission revealed weakness in the rear limbs and a decreased pupillary response to light.

A complete blood count and serum chemistries were normal except a low total protein (5.0 mg/dl) and a high potassium (6.2 mEq/L).

Survey thoracic and abdominal radiographs were taken and a cardiogram was done.

What's your diagnosis?

Answer on Page 10

Dean's Corner



Most of you are aware that we are in the midst of our Annual Continuous Giving Program. You, as alumni and friends, have been very generous the past five years. The College has been able to refurbish the small-animal and large-animal receiving areas, some of the small-animal examination rooms, and has added a large-animal seminar room. In addition, some of your donations have been added, as requested, to student scholarship funds. Those of you who have given unrestricted contributions have given us the flexibility needed to help fund additional projects and equipment.

During the next couple of years, the College Development Fund Committee has embarked on a fund drive that will purchase a much-needed electron microscope for the College. We anticipate raising up to \$150,000. That's quite a bit of money. We know there are alumni and friends who give every year, and we appreciate that. There-

fore, this appeal also must reach those of you, especially the alumni, who for some reason never have given a contribution back to the College. You may feel that you owe the College nothing, that you earned your education, and paid for it. However, won't you please consider what the education you received has allowed you to do? In all honesty, would you be as financially well off as you are if you were not a veterinarian? Give it some thought.

I also would appeal to you to interest your friends and clients to consider putting us on their gift list. If you find someone with an interest in the welfare of animals, and is considering a contribution for the betterment of animal health, please have them contact the College.

We are in a position to offer any of you trust funds, a retirement program, or a tax shelter if you should find yourself in a situation that would require any of those options.

We need you to remember us!

Sincerely,

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

Alumni events

The College has had a very successful year for alumni events.

Both the reception and lunch held during the AVMA meeting in St. Louis were well-attended. A total of 122 alumni, families and friends attended the luncheon.

The second Annual Alumni Day, held in conjunction with the Nebraska football game, was attended by a total of 103 alumni and their families. We hope everyone enjoyed the seminar on "Selected Orthopedic Techniques," the spouses' seminar on microwave cooking, the brunch and the football game. We intend to do it again next year!

In memorium

Two College alumni have died recently: Dr. Theophil H. Brune and Dr. Elmer H. Shaw.

Dr. Brune, who operated a mixed practice in Warrenton, Mo., was a member of the Class of 1952.

Dr. Shaw, who had a mixed practice in Thayer, Mo., was a member of the Class of 1968.

Friends may contribute to the UMC College of Veterinary Medicine Memorial Fund. Contact Dr. K.H. Niemeyer at the College, or call (314)882-3554, for more information.

Diagnosis

From Page 9

Radiographic impression

The examination of the thorax indicated a greatly enlarged heart. On the ventral dorsal projection, the heart appeared essentially round. Some evidence of pleural fluid was present, particularly on the lateral view. There also was some evidence of early hilar pulmonary edema, which was symmetrical in nature. The abdominal films indicated moderate enlargement of the liver. The spleen appeared engorged and somewhat enlarged. There was a generalized loss of serosal detail throughout the abdomen.

These radiographic changes were compatible with pericardial effusion or generalized cardiomegaly. The cardioangiogram was performed to delineate the size of the chambers of the heart in order to rule in or rule out canine idiopathic congestive cardiomyopathy. The cardioangiogram indicated the chambers of the heart were within normal limits for size and shape.



Radiographic diagnosis

Pericardial effusion. Some of the possible causes of pericardial effusion include neoplasia (both primary and metastatic), trauma, pericarditis associated with uremia, congestive heart failure, hypoproteinemia, overhydration, peritoneopericardial hernias, and obstruction of the venous and lymphatic drainage of the myocardium.

The laboratory examination of a pericardial tap concluded that the cytology

was consistent with a carcinoma, but reactive mesothelial cells could not be ruled out.

Prognosis

The prognosis for recovery was poor. The dog was sent home on furosemide (Lasix - National Laboratories), 2mg/1b BID for seven days, then 2mg/1b SID for life. She should be maintained on a low-salt diet with adequate rest and moderate exercise.

Susan Graves, VMIV

ANIMAL RIGHTS

Take time for a walk in the woods. You may rediscover nature, and our profession's responsibility to all creatures.

John Bloszies, VMIII

I've been vacationing. Ahhhh, the good life. Getting away from it all and doing a little camping. Nothing but clean air and greenness.

COMMENT

Nature in all her splendor. After a few weeks of this, I start to relax, unwind, and philosophize. I entertain thoughts which come too rarely in the fullness of usual times.

And I'm scared and saddened.

I see real dangers and, as I wrestle with this depression, I hope to solicit your help. At the very least, I feel it is my responsibility to warn you. At best, I might sway some potentially powerful allies.

The issue is animal welfare.

("What now?" you ask, "Another bleeding heart?" Give me just a minute.)

As veterinarians, we are (or will be) expected to "do right" by our patients. I hope none of us would be in this field in the first place if not for a sincere interest in and affection for animal life. But I think our focus sometimes is a bit too narrow. We think only of our responsibilities to companion and food animals—the ones trapped by domesticity. We forget about the majority of life forms which haven't allowed themselves to be caught in man's spell.

Oh sure, you easily can dismiss these creatures. ("Sorry, but we're not allowed to work on wild animals." "Who's going to pay for this if I do surgery?") There are valid reasons for not getting involved. You safely can concentrate only on inbred poodles and high-strung thoroughbreds, but you do a great disservice to your own kind in the process.

How so? Because we are not alone. Nature has given us more than just cats and dogs, cows and horses. The wealth and abundance of life forms on this planet is staggering. You have only to spend a day in a wilderness area to appreciate nature's complex matrix—a splendid fabric of life of which we are

just one thread. I fear too many of us have forgotten the basic joy of walking through the woods.

This more varied environment is one our ancestors lived with for tens of thousands of years. It was home. Only during the last 1 percent of *Homo sapien's* time on this planet have we become estranged from this heritage. We have left our mud huts for more sterile abodes, bringing our tamed beasts with us. Yet the bounty remains out in nature.

Cousins to the dog still howl at the moon. The lynx still prowls. Magnificently adapted herbivores, more efficient and less demanding of the environment than *Bos taurus*, still roam the land. What is our responsibility to these creatures? Why bother to care at all?

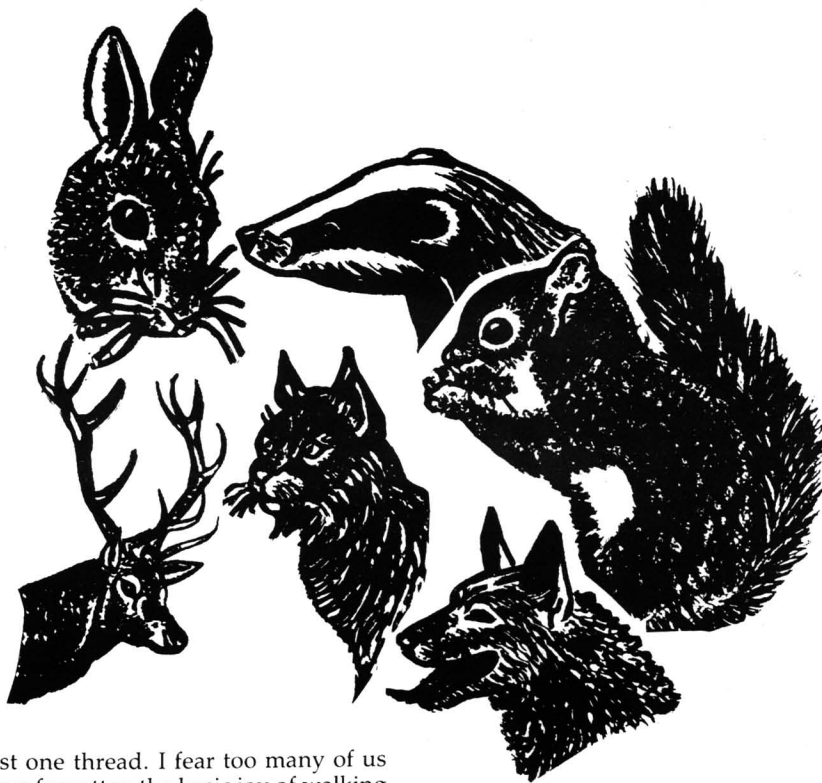
I believe we may need this planet more than it needs us. We need the forest for watershed and oxygen, paper pulp and solitude. The genetic wealth stored in the wilds may have to be tapped by hungry future generations. Proper husbandry of national wildlands eventually may provide answers to as-yet-unseen problems. Wild life defines us. Our species is contrasted and compared to all others on the planet. For reasons like these, the forest becomes more than just a (necessary) oxygen source. The deer is more than

just a meal.

We needn't wait until some future pressure appears to rediscover these treasures or accept the responsibility of their care. All of us, by virtue of our education, should have adequate understanding of animal life. We should be aware of the interdependency of an animal with its environment. We all know the importance of light, temperature, stress, etc., on our patients. Clients are educated routinely about their animals' metabolic and behavioral needs.

If we are this enlightened, we may see real value in what Thoreau called "wildness." We need to preserve the environment to save these creatures. Their well-being serves as a barometer of the fitness of our environment.

While you may choose never to treat a wild animal, I hope you will do whatever else you can to insure their health. Our collective knowledge of biology and our traditional role as friends of the beasts creates a natural platform from which to express our views. I urge each of you to become sensitized to environmental issues and try to improve the quality of the environment.



Alumni Association Lifetime Members

1950

Conrad, Marshall D.
Evans, James H., Jr.
Hartley, Jesse L.
McCrea, James C.
Pilcher, Harold W.
Seelbach, James R.

1952
Miles, David N.

1953
Bryson, William F.
Hibbs, C. M.
Higgins, Theodore

Kent, Kyle C.
Robertson, Hersel

1954
Fischer, George F.
Freese, Leo J.

1955
Blake, F. Donald
Flint, Ernest W.
Fredman, John D.
Holt, Leland H.
Niemyer, Kenneth
Prather, James K.
Randolph, James R.
Stone, Nelson L.

1956
Bilyea, George Dan
Blenden, Donald C.
Fuchs, Robert H.
Holman, John E., Jr.
Johnson, Gerald L.
McCune, Emmett L.
Russell, Leon H., Jr.

1957
Henry, William R.
Rings, Reed W.
Stark, Glenn K.

1958
Barnett, Richard S.
Hayden, Harold E.
Kuhn, Emil F.
Martin, Charles E.
McEuen, Gerald L.
Middleton, Charles
Nordyke, Lester D.

1959

Garwood, Glenn E.
Hertzog, James E.
Meredith, James R.
Perry, John M.
Wade, Ronald Glenn
Wilson, James C.
Woods, Taylor H.

1960

Antelman, Morton
Dickson, Sherman
Oshry, Michael L.

1961

Cato, Bill Richard
Creed, James E.
Hooper, Billy E.
Jones, Walter N.
Kinkead, J. Carter
Linsenhardt, Robert
Michel, William E.
Payne, Darrell C.
Rhoades, John D.
Taylor, Jewell R.
Thorne, James G.
Watson, Cyril E., Jr.
Weaver, Ray E.
Wood, Richard L.

1962

Bennett, Lee R.
Hennessy, John A.
Jenkins, Hal L.
Jury, George W.
Lauhoff, Bernard J.
Moblely, Donald R.
Moseley, Bonnard L.
Snider, Edward L.
Taylor, Richard F.
White, Donald W.

1963

Cooper, James C.
Hatten, Kenneth E.
Phelen, David
Tharp, Robert Lee
Townley, Merrill M.
Walker, John V.
Warren, John Glen

1964

Hibbeler, Philip E.
Hunter, William C.
Ranney, Royal W.
Rolf, Chris H.

1965

Hamby, Homer L.
Schmidtke, Richard
Vater, John Donald

1966

Collier, Raymond D.
Donnelly, Eugene J.
Gerstner, Melvin L.
Robinson, Allen G.

1967

Hill, Gaylen G.
Reinhold, John E.
Smith, George H.

1968

Carrier, James D.
Garton, Norman Lee
Gillig, Larry T.
Griffith, H. H.
Kuhn, Roger C.
Nave, James E.
Ricketts, Van B.
Trimmer, Harold T.
Yates, Waybern D.

1969

Engel, Harold, Jr.
Holbein, Oliver K.
Tharp, Paul L.
Vroman, Kenneth

1970

Adams, John G.
Bouchard, David C.
Brands, Jerome H.
Clark, Thom M.
Couchman, Jerry R.
Ebert, R. C. II
Greenwald, William
Hackler, Russell W.
Hunter, Samuel M.
Koch, John Markus
Rucker, Nolan C.
Ruecker, Frederick
Thornhill, Jerry A.

Weaver, Dennis Joe
White, Kenneth E.

1971

Barnett, Robert E.
Byergo, Forrest S.
Hodoval, Leland F.
Kester, Richard M.
Lane, Robert T.

Lock, Theodore F.
McDuffee, Terry, R.

Newton, Terry E.
Phillips, Ely E.

Simpson, James E.

1972

Brown, Philip R.
Conway, Robert W.
Gengler, William R.
Hagee, James H.
Long, James R.

Morrow, Leslie L.
Schaeffer, R. G., Jr.
Transano, Eddy J.

1973

Dietzel, Allyn V.
Kammerlohr, M. A., Jr.
Sprouse, Harland G.
Verner, Lewis N.

1974

Adams, Samuel Hayden
Britt, J. O., Jr.
Clark, John Nowell
Dolginoff, Mark A.
Howard, Joseph N.

Kent, Richard Kyle
Mertens, T. J.

Messick, William K.
Peters, David K.

Umphlet, Randall C.

1975

Bain, James L.

Brown, Arnold M.
Lenz, Thomas R.

Meyer, Gregg R.
Ross, Paul Edwin

Schwarzbrott, Sheldon
Scorse, Linda Shilling
Wood, L. Dale

1976

Blackwell, Ronald B.
Brooks, Norman L.
Deppermann, Gary W.
Lary, Randall R.

Logan, Michael J.
Matthews, C. Lee

Morgan, Earl W.
Nelson, Larry D.

Nelson, Paul E.
Sifferman, Roger L.

1977

Dela Cruz, Ignacio T.
Duemler, John C., Jr.
Eber, Jerry Ray
Martin, Charles A.
Wessler, Alan R.

1978

Keller, R. Lynn
Moblely, Thomas E.
Stark, Douglas R.
Weddle, Gary D.
Wilt, Vincel M.

1979

Kwochka, Kenneth W.
Whitney, Marlyn S.

1980

Crooke, James A.
Cupps, David E.
Deptula, Catherine L.
Rife, John N.

1981

Higgins, Mark T.

Missouri Veterinarian
Vol. 31, No. 3 (1981)

Editor.....Sue Graves
Managing Editor.....Kathy Casteel
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Veterinary Medical Review

College of Veterinary Medicine
and Cooperative Extension Service

Editor: Kathy Casteel
W-203 Veterinary Medicine Building
College of Veterinary Medicine
University of Missouri-Columbia
Columbia, MO 65211

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