VETERINARY MEDICAL REVIEW

Wheat scab toxins threaten livestock

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

July/August 1982, N.S., Vol. 3, No. 4
and Missouri Veterinarian, Vol. 32, No. 2

Wheat scab toxins

A threat to Missouri livestock

Gary D. Osweiler, D.V.M., Ph.D.
Veterinary Medical Diagnostic Laboratory

Wheat scab, caused by certain genera of *Fusarium*, is capable of producing two toxins most commonly. These toxins are:

a) Zearalenone (F-2 toxin, Giberella toxin), estrogenic in nature and similar to zearalanol (Ralgro), a commonly used anabolic agent (growth promotant) in cattle.
b) Vomitoxin (Deoxynivalenol, DON, refusal factor), which, in sufficient amounts, can produce vomiting in swine, or at higher levels partial or complete feed refusal.

There is no way to predict the amount of these toxins from looking at or culturing the wheat. Levels can be determined quantitatively by chemical analysis at the Veterinary Medical Diagnostic Laboratory, University of Missouri (314-882-6811).

Sampling of harvested or bin-stored grain is extremely important in determining an accurate amount of toxin. The following sampling guidelines are suggested. We realize this is not easy nor always possible.

a) At harvest, sample direct from the combine hopper. After one or more rounds of the field, empty the entire hopper into a truck or wagon. Pass a cup through the moving grain stream every 20 to 30 seconds in order to get 10 to 15 samples from each hopper. Mix these samples thoroughly and keep back 5 to 10 pounds from each hopper. This procedure should be repeated several times in the field as harvest progresses. All hopper samples can be mixed together or each can be analyzed separately. A 5- to 10-pound sample from the entire field is considered adequate for laboratory analysis.
b) Bin-stored grain. This is a more difficult sampling problem. Ideally, the entire bin should be emptied and transferred to another container so that repeated samples from the moving auger stream can be collected. The individual cup samples collected should be thoroughly mixed and a 5- to 10-pound sample submitted for analysis. An alternative to the somewhat impractical total bin sampling is to use a grain probe sampler collecting a minimum of 6 to 10 samples from each 1,000 bushels of storage. *Remember, the more samples taken from more areas in the bin, the better the estimate of toxin concentration.*
c) Field Sampling. This generally is not recommended. If it must be done, collect 6 to 10 plants from each of many areas of the field in an organized grid-like pattern. Mix these to make a composite sample.

Feeding of contaminated stored grain. Concentrations rarely will be uniform, so some variation is expected if small portions are taken from a large bin. Make every attempt to mix grain or feed thoroughly, especially if average analysis was high at the initial sampling.

The scab toxins generally are not considered highly lethal or devastating to health. They may affect animal performance. Each will be discussed separately based on research and experience about their effects.

Zearalenone:

Early results indicate that most samples have low levels of zearalenone. Thus far, few samples have contained more than 0.5 parts per million (ppm).

Female pigs appear to be most sensitive. From 1 to 2 ppm in the total diet may cause signs of estrus in some young female swine. There is vulvar swelling, straining and sometimes prolapse. Levels in excess of 2 ppm are considered highly likely to induce estrus signs in young pigs.

Research at UMC has shown that as little as 10 ppm zearalenone will cause anestrus for up to 90 days if fed to gilts or sows of breeding age. At this level, nearly all sows are affected. Thus, it is likely that even 2 to 3 ppm in the ration may cause problems in some herds or portions of a herd. Since zearalenone is an estrogen, it is not expected to cause abortion in swine during the last trimester of gestation. At present, we recommend to *use no zearalenone containing feed in rations for breeding swine.*

For cattle, little research has been done on zearalenone. Studies conducted at the University of Minnesota showed no effects on the heat cycle length in dairy cows fed up to 50 ppm zearalenone in their grain ration exclusive of hay. However,

Continued on Page 3

Cover photo: Scabby wheat is characterized by prematurely white spikelets in the middle or top of the heads. The affected kernels are chalky-colored and shriveled, with some pink discoloration.

Don Connor photo

Wheat scab toxins

From Page 2

virgin dairy heifers fed the equivalent of 12.5 ppm zearalenone in total diet had low conception rates. Based on available data, we currently are suggesting that no more than 5 ppm zearalenone be allowed in total diet for non-lactating cattle or virgin heifers. A small amount of zearalenone may be passed in milk, although toxin residence time in the animal is short.

Broilers and turkey poults have tolerated up to 200-400 ppm zearalenone with no significant effects. Zearalenone had no effect on reproductive performance of mature chickens.

Vomitoxin:

Principal effects of vomitoxin are in swine. Low doses of 2 ppm in feed may cause vomiting.

Feed refusal varies depending on the level in feed. At approximately 4 ppm there is a 20 percent reduction in feed consumption. At 40 ppm, the refusal rate of feeder pigs is 90 percent.

There is little evidence of toxicity from oral exposure, since high concentrations are refused by pigs.

Very limited studies with cattle indicate approximately a 60 percent refusal rate in calves offered corn containing 250 ppm vomitoxin. This work and our own experience supports the commonly held belief that cattle tolerate much more vomitoxin than do hogs.

General considerations:

With planning and good judgment, most of the affected crop probably can be used.

We presently are unaware of any regulatory guidelines for these toxins. The recommendations given are based on livestock performance.

Analyses at the Veterinary Medical Diagnostic Laboratory will require two to four days to complete. Cost is $20 to identify both toxins.

Test feeding may be an alternative means of evaluating moldy grain for these toxins. Suggested test animal is a 50-60 pound female swine. Feed at least 10 to 20 pigs for at least 7 to 10 days. Watch for vomiting, feed refusal, poor weight gain and swollen genitalia or signs of heat.

References available upon request.

Wheat scab Q and A

Einar W. Palm
State Extension Plant Pathologist

Scab of wheat, a fungus disease caused by species of *Fusarium (F. graminearum, Gibberella zeae)*, affects wheat almost every year to some extent. The fungus is very common. It is the same fungus that causes Gibberella stalk and ear rot in corn; it also affects barley, oats, other cereals and grasses.

Scab of wheat became a serious consideration in 1981 because it reached epidemic proportions in most wheat-growing areas in Missouri, except the Delta. It was the greatest scab attack in two or more decades. It was also prevalent and destructive in Kansas, Nebraska and Illinois. There also were higher-than-normal scab incidents in Iowa and Minnesota.

Why so much scab? The severity of the scab disease was a result of a large acreage of susceptible wheat, an abundance of the fungus inoculum in wheat fields, and environmental conditions that supported widespread infection and development—continuous wet weather from pollination and on.

Wheat following wheat, or wheat after corn, have the greatest chances of scab infection. The fungus that causes scab developed on crop residues of wheat, corn and certain grasses. Field infections came mainly from spores produced in the crop residues. Wind-borne spores were disseminated within fields and to other adjacent fields. (We had reports of wheat after soybeans with scab infections—more than likely wind-borne from other wheat fields.)

How did it look in the field? Scab was recognized in the field on the heads when one or more spikelets turned prematurely white in the middle or top of the heads—or sometimes the entire heads. The heads looked bleached as compared to the healthy green heads. The affected parts of the heads died prematurely, and the spikelets were sterile or poorly filled. The kernels were chalky-colored and shriveled and some had pink discoloration.

What about marketing wheat? Since test weights have been in the mid-50's or lower, considerable wheat has been graded as U.S. 3-5 or even lower. Damaged kernels (which include scab) have been relatively high in some lots. That also has brought the grades down.

The lower grades usually will be relegated to feed purposes rather than for milling. Therefore, a lot of wheat in Missouri is destined for livestock feed this year.

What about feeding? The scab fungus can produce certain mycotoxins in the field. Scab infected wheat *may* or *may not* contain varying levels of mycotoxins (toxins produced by fungi) but there is always a possibility of their presence. The two most important toxins produced by the scab fungus are vomitoxin and zearalenone (detailed in Dr. Osweiler's article).

What about human consumption? The implications of the *Fusarium* toxins are not clear for human consumption. Reports of illness have not been documented in the United States even though scab occurs in wheat-growing areas every year. Severely affected grain usually will go into animal feed. Cleaning prior to milling should remove most infected kernels. Adverse effects to humans are rather remote, in our opinion.

What should clients do about scab-infected wheat?

1. The quality of the wheat—test weight and damaged kernels—usually will determine whether the wheat can go for milling or if it will have to be used for feed.
2. This year's wheat should not be mixed with that from previous years. That could complicate marketing.
3. Dry down the wheat as quickly as possible to below 15 percent moisture. This will help to inhibit storage mold development. There are other fungi that can reduce quality, and there are some that can produce toxins in storage (e.g. *Aspergillus flavus*—aflatoxin, *Penicillium* species, several other *Fusarium* species)
4. Store wheat at a moisture content of about 13 percent. Storage molds and insect infestations can occur under high moisture. Certain toxins also can develop or increase in storage.
5. The scab fungus can cause seedling blights. Therefore, seed wheat should be carefully cleaned and treated with a fungicide prior to planting this fall.
6. Severe scab this year does not mean that it will be a problem in next year's crop. As indicated, the fungus is a common resident of crop residues of wheat or corn. Baling or burning the straw will remove some of the inoculum. Plowing rather than using minimum tillage may help to turn under some of the potential inoculum this fall if wheat is to go back to the field.
7. The incidence or severity of scab next year will depend mainly on the weather conditions next year—from flowering and the days following.

Pulmonic stenosis

Surgical correction is recommended to prevent right heart failure.

Dudley McCaw, D.V.M.
Everett Aronson, D.V.M.
Department of Veterinary Medicine & Surgery

The most common congenital cardiac anomaly in dogs is pulmonic stenosis, an obstruction that prevents normal blood flow from the right ventricle to the pulmonary artery. The obstruction usually is caused by a malformed pulmonic valve, but also can be caused by a stricture in the right ventricular outflow tract (subvalvular) or, least commonly, a stricture in the pulmonary artery (supravalvular). English bulldogs, fox terriers, and chihuahuas seem to be predisposed to pulmonic stenosis.

The condition usually is detected on routine examination when a puppy is presented for vaccinations. The owners are unaware of any problems and report no abnormalities; however, syncope occasionally will have been noticed.

On auscultation, a high-frequency crescendo-decrescendo murmur is heard. It is an ejection murmur that occurs during systole (between first and second heart sounds). It is usually loudest on the left side of the thorax, near the sternal border, but sometimes may be loudest on the right cranial thorax near the sternum.

An electrocardiogram may be normal, but usually the electrical axis is greater than 120 degrees (right-axis deviation). This is because the obstruction of blood flow from the right ventricle produces a greater work load for the right ventricular muscle. To compensate for this, the cardiac fibers of the right ventricle hypertrophy. This produces greater electrical activity on the right side, thus shifting the mean electrical axis.

Radiographic diagnosis

Radiographically, animals with pulmonic stenosis generally demonstrate right-sided heart enlargement, a pulmonary artery bulge on the ventral dorsal projection, and a normal vascular lung pattern. Figure 1 is a lateral radiograph of the thorax showing the typical appearance of the heart and pulmonary vasculature of a young dog with pulmonic stenosis. There is elevation of the carina, increased sternal contact of the heart, loss of the cranial

Continued on Page 5

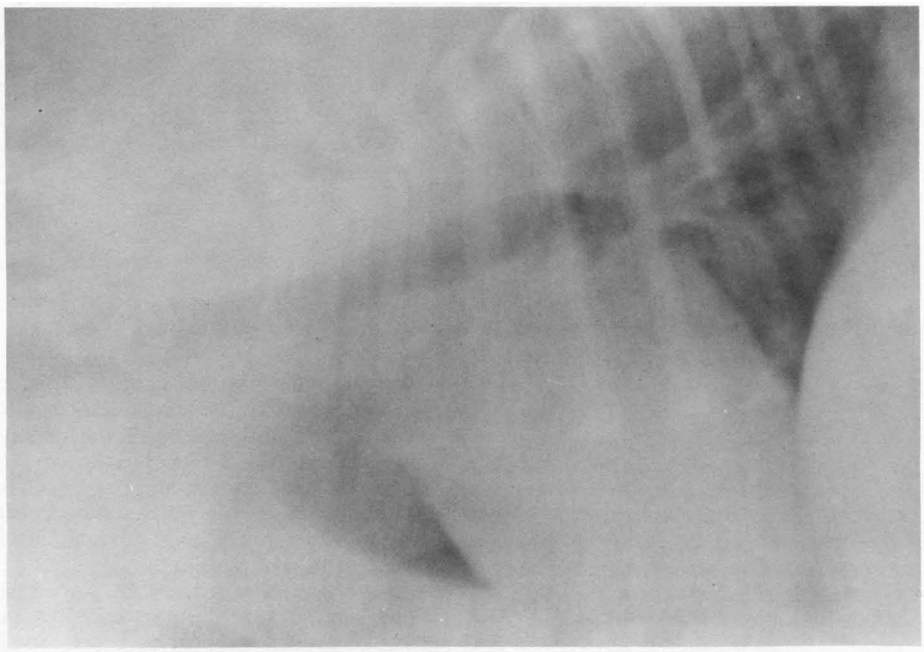


Figure 1: Lateral thoracic radiograph of a dog with pulmonic stenosis. Note the elevated carina, increased sternal contact of the heart, loss of the cranial waist, and increased width of the heart.

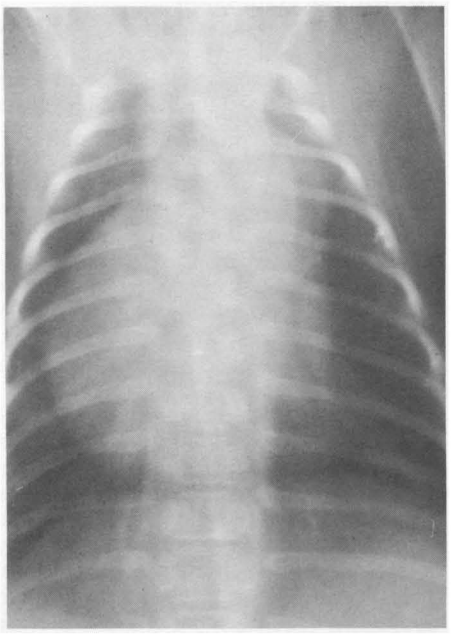


Figure 2: Dorsal ventral thoracic radiograph of a dog with pulmonic stenosis. Note the inverted "D" shape of the right ventricle, and the pulmonary artery bulge.

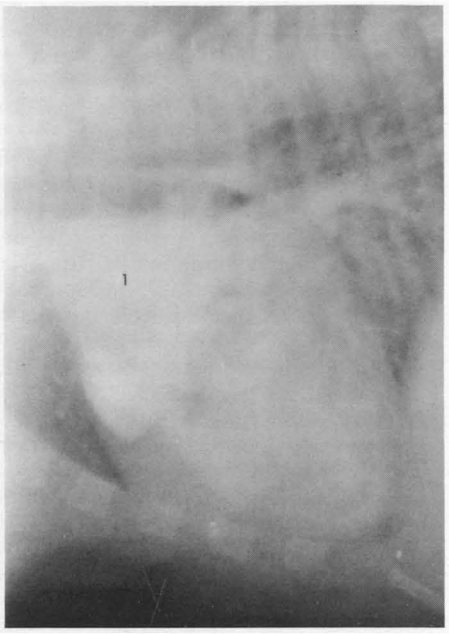


Figure 3: Non-selective angiogram. Note the contrast media in the post stenotic dilation of the main pulmonary artery, 1.

Pulmonic stenosis

From Page 4

waist and increased width of the heart, all signs of right-sided heart enlargement. The pulmonary vasculature is within normal limits.

Figure 2 is the ventral dorsal radiograph of the same dog as in Figure 1. It demonstrates right-sided heart enlargement, as the right ventricle has the characteristic inverted "D" shape and its borders almost lie against the right body wall. A pulmonary artery bulge is noted at the one o'clock position on the cardiac silhouette.

To confirm the diagnosis of pulmonic stenosis, a non-selective angiogram was performed. Figure 3 shows the first radiograph of the series, taken almost immediately after the injection of contrast media. It demonstrates contrast media in the pre vena cava, right atrium, right ventricle, and the main pulmonary artery. The main pulmonary artery is markedly dilated distal to the pulmonic valves, characteristic of the post-stenotic dilatation of the pulmonary artery seen in animals with pulmonic stenosis.

Treatment

Although most dogs are asymptomatic when pulmonic stenosis is first detected, they will become symptomatic if not treated. Affected dogs will begin to show signs of right heart failure between the ages of 6 months and 3 years. After constant overworking of the right ventricle, the cardiac fibers eventually decompensate. The most common signs of right heart failure include hydrothorax, ascites, and weakness. The hydrothorax and ascites are caused by increased hydrostatic pressure and slow blood flow in the caudal vena cava.

Since most affected dogs eventually will show clinical signs, treatment is recommended. Surgery to enlarge the constricted area usually is indicated. This can include cutting away hypertrophied muscle, connective tissue bands, or widening constricted valves. Enlarging the constriction by opening the pulmonary artery and using Dacron mesh to fill the defect sometimes is indicated. Another alternative is to insert a conduit from the right ventricle to the pulmonary artery distal to the constriction, thus providing another route for blood to flow.

Early definitive diagnosis and surgical correction is recommended in pulmonic stenosis because most dogs will develop right heart failure if not treated.

Continuing education programs scheduled for 1982-83

The Office of Veterinary Continuing Education & Extension has scheduled 26 courses for the 1982-83 year. *Veterinary Medical Review* readers also will receive a detailed calendar of program announcements from the CE office this summer. For further information on the College's continuing education program, call (314)882-7848.

September 1: Swine Health Day. Open to veterinarians, producers and the general public.

September 17-18: Joint Diseases and their Surgical Corrections.

September 22-23: Necropsy Techniques.

September 29-30: Animal Control Officers Workshop. Open to animal control officers, veterinarians, and the general public.

October 9: Cancer Management.

October 10-11: 58th Annual Conference for Missouri Veterinarians.

October 10-11: 1st Annual Conference for Animal Health Technicians.

November 4-6: Veterinary Endoscopy.

November 6: Basic Thoracic Radiology.

November 11: Caged Bird Management.

November 14: Equine Reproduction.

December 2-3: Surgery Update.

December 10-11: Ruminant Nutrition.

January 7-8: Small Animal Health Technicians Workshop.

January 13: Skin Tumors of Cats & Dogs.

January 14: Clinical Approach to Equine Respiratory Problems.

January 15: Equine Health Day. Open to veterinarians, owners and breeders, and the general public.

February 6: Bovine Reproduction.

February 11: Primary Advances in Critical Care.

February 24: Special Radiology Procedures.

March 4: Drug Workshop for Technicians.

March 7: Liver Diseases.

March 12: Canine Health Day. Open to veterinarians, owners and breeders, and the general public.

March 16: Turkey Health Day. Open to veterinarians, producers and the general public.

March 20: Swine Disease Update.

April 6: Dermatology.

April 16-17: Soft Tissue Surgery.

Datebook

August 19-29. Missouri State Fair in Sedalia. The College will have a booth in the Agriculture Building featuring contributions of veterinary medicine to our society.

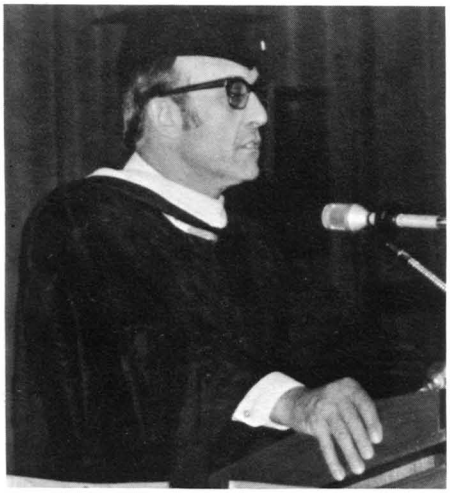
October 9. Class reunions for 1957, 1967 and 1977 graduates, Ramada Inn (precedes Annual Conference).

October 13-15. Symposium on Computer Applications in Veterinary Medicine, Mississippi State University College of Veterinary Medicine, Mississippi State, Mississippi.

October 14. Visiting Lecturer: Dr. J. J. Callis of Plum Island Animal Disease Center will speak on genetically engineered vaccines at 8 p.m. in the College's Teaching Hospital Auditorium.

October 16. Alumni Day at the UMC Alumni Center, 9:30 a.m. to 4:30 p.m. Morning seminars will include "What Is Your Diagnosis?" by Dr. C. B. Chastain (for alumni), and "I Am Your Almanac" by Dr. Bonnard Moseley (for spouses and children). Other events include a brunch and Missouri's Homecoming game against Iowa State. Information will be mailed to alumni concerning prices (football tickets may only be bought in conjunction with the seminar fee). A block of motel rooms at the Ramada Inn have been reserved. Check your alumni mailings for deadlines.

Commence



Missouri agriculture director James B. Boillot
Don Connor photo

Agriculture director addresses largest class of graduates

The College's largest class yet graduated to doctors of veterinary medicine May 15 in Hearnes Center as the College observed its 33rd Academic Convocation.

The 75 new graduates joined 1,351 other alumni, making a total of 1,426 veterinarians to graduate from here.

James B. Boillot, director of the Missouri Department of Agriculture, addressed the Class of 1982. Boillot spoke on a wide range of issues affecting veterinary medicine, agriculture and government regulation.

Dr. Charles W. Monsees, president of the Missouri Veterinary Medical Association, administered the Veterinarian's Oath to the graduates.

The investiture by Assistant Dean Kenneth Niemeyer and Associate Dean Harold Garner, assisted by Dr. Joseph Bojrab and Dr. Robert McClure, capped the graduates' four years at the College.

Dean Willard Eyestone also recognized the eight residents, four interns and 13 graduate students completing their educations this year.

Dr. Harry Berrier's appointment as associate professor emeritus of pathology was announced.

Other guests at the convocation included UMC Provost Ronald Bunn, Associate Dean of the Agriculture College William Pfander, and Veterinary Medicine Alumni Association President Dr. Elry Phillips.

Class of 1982

Doctor of Veterinary Medicine Summa Cum Laude
Nicholas Joseph Pisoni

Doctor of Veterinary Medicine Magna Cum Laude
Lane Leroy Clarke
Jacqueline Lee Moeller

Doctor of Veterinary Medicine Cum Laude
Douglas Lee Brunk
Alice Lynn Gaertner
Randall McClelland Spragg

Doctor of Veterinary Medicine

Paul Edward Adams
Ronald Duane Armstrong
James Craig Bendickson
Christopher William Bleifuss
Michael Leroy Boyd
Patricia Ann Bradford
Jane Frances Brawley
Candy Denise Burton

Stephen Francis Callahan
Nancy Ann Campbell
Gregory Charles Chapman
Annette Andrews Childs
Douglas Brooks Cleveland
Christine J. Crosley
Richard Swan Davis

John Clark Dee
Reed Allen Dimmitt
Kerry Jo Dobson
James Edward Dougherty
Marlene Diane Drag
Robert William Engelman
Randall Gene Ezell
Bennett David Fagin
David Joseph Frueh

M. Susan Graves
Donna Eileen Haake
Kim Barton Heise
James Richard Heth
Timothy Leland Holt
William Lee Huls
Joseph Edward Janes
Penny Coleen Kelso
Khristina Diane Kirkland
Matthew Jerome Krautmann

Kurt Steven Laves
Frank Robert Lenzenhuber
Mark Paul Loehnig
Mark Joseph Lux
Samuel Kent Lynch
Mark Joseph Martinez
Margaret Irene McMahon
Cort V. Mohr

Thomas Dempsey Parker
Michael Burl Pfander
Christopher Kent Pieper
Pierre Francois Pratte
Ronald Douglas Ragan
Mark Wilson Ranney
John Brian Rethman

Joseph L. Rodier Jr.
Rafael Ricardo Rodriguez
Marc Howard Ross
Byron Vinson Rucker
Sherry Kay Russell
James Kenneth Schuessler
John Warren Shull
Robert Kent Smith
James Ray Swearengen

Peggy Ann Tetrick
Christa Maria Tolksdorf
Phillip Gregory Trokey
Kay Sheryl Jones-Tung
Linda Lou Valleroy
Susan Catherine Verace
Stan Gene Wallace
Jenifer Carol Whiteside
Michael David Williams
James Clay Wilson

Dr. Berrier appointed to emeritus status

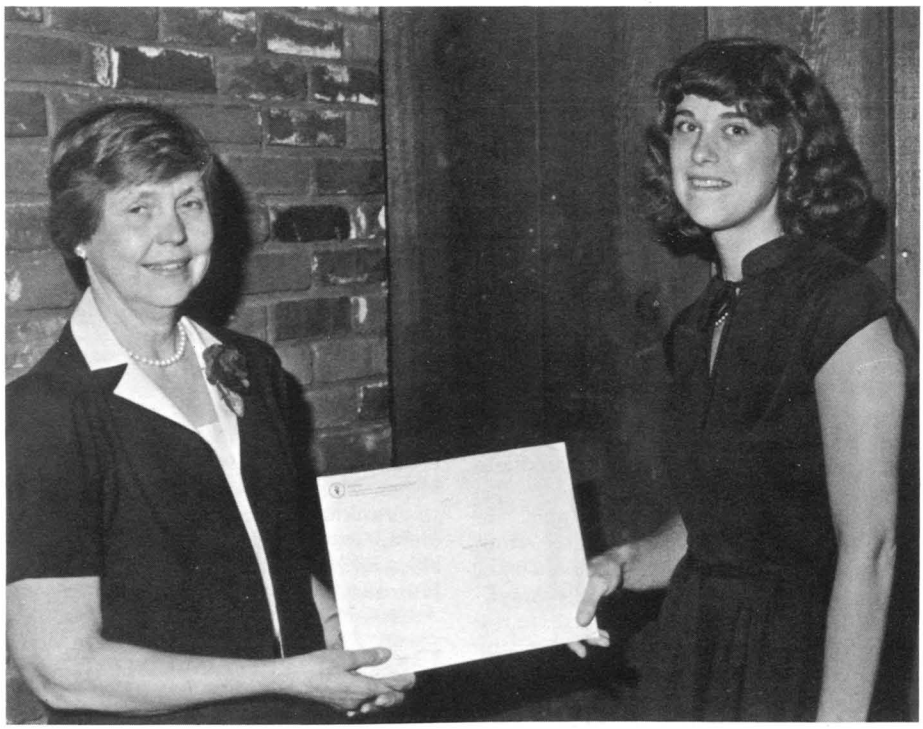
Dr. Harry H. Berrier was appointed associate professor emeritus at the College after 34 years of service during commencement activities May 15.

In recognizing Dr. Berrier's long years of service to the College, Missouri and his country, Interim Dean Willard Eyestone noted his military career, his many inventions, and books he has authored. Dr. Berrier also is quite well-known for creating Show-Me Bar-B-Q Sauce.

Dr. Berrier came to the then-fledgling School of Veterinary Medicine in 1948 as an assistant professor of pathology. He became an associate professor in 1952 and switched to the Diagnostic Laboratory as a clinical toxicologist in 1970.

An agriculture graduate of the University of Missouri, he received his D.V.M. from Kansas State University and his M.S. in veterinary pathology from Missouri. He has held a one-year fellowship at the National Science Foundation, and since 1968 has served as the medical service liaison officer between the U.S. Air Force and the University of Missouri.

Dr. Berrier has patented several surgical and laboratory instruments he invented, and has written numerous books and articles on various areas of veterinary medicine. He is a member of Phi Zeta, Gamma Sigma Delta and the American Society of Veterinary Clinical Pathologists, and is a Fellow of the American College of Veterinary Toxicologists. He is listed in the 1975 edition of "Who's Who in the United States."



Betty Eyestone, left, presents the AVMA Auxiliary Award to Jenifer Whiteside, who was honored at the awards banquet for her contributions in advancing the prestige of the College of Veterinary Medicine on the UMC campus.

Don Connor photo

Students honored at annual banquet

More than $36,000 in awards and scholarships were presented to 48 veterinary students at the College's annual Honors Convocation Banquet May 13.

The 35 awards included a new one this year for epidemiology, honoring the memory of the late Dr. Lloyd Selby, who taught at the College until his death last August. Richard Linn received the first Selby award.

The recipients were honored for scholastic abilities, leadership and clinical proficiency in all areas of veterinary medicine taught at the College. The banquet was sponsored by Upjohn.

Dr. Dale honored with Norden teaching award

Dr. Homer E. Dale, professor of veterinary anatomy-physiology at the College, has been awarded the 1982 Norden Distinguished Teacher Award.

Dr. Dale was selected by the College's students to receive the award sponsored by Norden Laboratories of Lincoln, Nebraska.

The award-winning professor has taught at the University of Missouri since 1951, coming to Columbia from appointments at the University of Wisconsin, Texas A&M, and Iowa State College. He holds a D.V.M. and an M.S. in physiology from Iowa State, and a Ph.D. in physiology from Missouri. For six years, he served as chairman of the College's Department of Veterinary Physiology and Pharmacology, before it was merged with the anatomy department. In 1967, Dr. Dale was the Porter Visiting Professor at Tuskegee Institute.

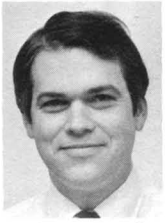
He has authored 60 scientific publications since 1952, and has advised 15 graduate students in physiology at UMC.

This is the second time the Norden honor has fallen to Dr. Dale. He also won the award in 1965.

Faculty update

Dr. Elmore appointed interim associate dean

Dr. Ron Elmore has replaced Dr. Harold Garner as interim associate dean of research and graduate studies at the College.



Dr. Garner stepped down to devote more time to teaching and research at the Equine Center and Dalton Research Center.

Dr. Elmore, 35, an associate professor of veterinary medicine and surgery, has taught theriogenology at the College since 1973, when he began a residency here. He holds undergraduate degrees from Greenville College in Illinois, and the University of Illinois. He also received his D.V.M. degree from Illinois and an M.S. from the University of Missouri. He is a Diplomate of the American College of Theriogenologists. He is a member of the board of directors of the Society of Theriogenology.

He also assumes the title of interim assistant director of the Veterinary Medicine Agricultural Experiment Station.

Dr. Fred A. Mann

Dr. Fred A. Mann has joined the Department of Veterinary Medicine and Surgery as an intern in the small animal clinic.

Dr. Mann, 25, is a 1982 graduate of Ohio State University's College of Veterinary Medicine, where he was class president for the past two years. He also attended Morehead State University in Kentucky and studied veterinary technology. He has worked for two veterinarians in Flatwoods, Kentucky.

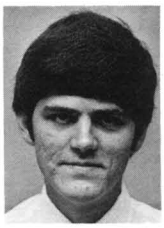
Dr. David L. Panciera

Dr. David L. Panciera has begun an internship in small animal medicine and surgery at the College.

Dr. Panciera, 25, graduated at the top of his class this year from Oklahoma State University College of Veterinary Medicine. He also holds a B.S. in zoology from Oklahoma State. He has served a preceptorship in a mixed veterinary practice, and an externship in the pathology department at Cornell University. Dr. Panciera also attended the Olafson Pathology Review Course in 1981.

Dr. Nicholas J. Pisoni

Dr. Nicholas J. Pisoni has joined the Department of Veterinary Medicine and Surgery as an intern in the Small Animal Clinic.



Dr. Pisoni, 24, graduated at the top of his 1982 class with a perfect "A" average from the College. While a student here, he received a Curator's Scholarship, Physiology Award, Phi Zeta Award, Merck Manual Award, Ebert Award in small animal medicine, and Murphy Scholarship Award. He has spent preceptorships at the St. Louis Zoo and the Tucson Humane Society.

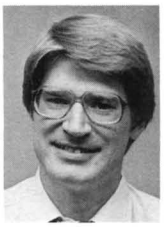
Dr. Elizabeth P. Thompson

Dr. Elizabeth P. Thompson has joined the Department of Veterinary Medicine and Surgery as an intern at the Equine Center.

Dr. Thompson, 27, is a 1980 graduate of the University of Georgia's College of Veterinary Medicine. She attended the University of North Carolina as a chemistry/zoology student before entering veterinary school. While in veterinary school, she was awarded for proficiency in large animal medicine and surgery. Since graduation, she has operated an equine practice in Bluefield, Virginia.

Dr. Douglas S. Ward

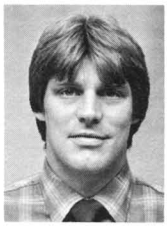
Dr. Douglas Ward has begun an internship at the College in equine medicine and surgery.



Dr. Ward, 29, comes to Columbia from his native Great Falls, Montana, where he worked in an equine and small animal practice. A 1980 graduate of Colorado State University's College of Veterinary Medicine, he also holds a B.S. in zoology from Montana State University. He served an eight-month internship in a racehorse practice in Raton, New Mexico, right after graduation from veterinary school.

Dr. Patrick B. Tate

Dr. Patrick B. Tate has begun an internship in small animal medicine and surgery at the College.



Dr. Tate, 25, is a 1982 graduate of Louisiana State University's School of Veterinary Medicine. He attended the University of Southwestern Louisiana as an animal science student before entering veterinary school.

Faculty Development Awards granted

Three faculty members at the College have received Faculty Development Awards from the University.

Dr. Robert Youngquist and Dr. Terry Blanchard received a $1,350 award to develop facilities, equipment and expertise for teaching artificial insemination to veterinary and animal science students. Dr. Youngquist is an associate professor, and Dr. Blanchard an assistant professor, in the theriogenology section of the veterinary medicine and surgery department.

Dr. Ann Kier received a $985 award so she can attend a Cornell University symposium in preparation for her American College of Veterinary Pathology exams. Dr. Kier is an assistant professor of veterinary pathology.

Pathologist receives research honor

Nancy Olson, an instructor of veterinary pathology, has received the Superior Achievement Award for Research from the University's Graduate Student Association.

Olson supervises the College's clinical pathology laboratory.

Correction

Because of misleading information given to *Veterinary Medical Review*, the May/June issue incorrectly named Dr. M. J. Bojrab as the recipient of a $3,500 American Kennel Club grant for the project, "Use of Isobutylcyanoacrylate Tissue Adhesive in Fixation of Small Cortical Bone Fragments." The correct investigators for that project are Dr. James L. Tomlinson, assistant professor of veterinary medicine and surgery, and Dr. Alex M. Walker, resident in small animal surgery.

Missouri Veterinarian

Dean's Corner

Class	1979	1980	1981	1982
Job opportunities per student	5.7	6.3	6.8	5.0
Job interviews per student	3.1	3.2	4.4	3.1
Job offers per student	5.0	4.2	2.7	2.5
Avg. salary	$16,970	$17,686	$19,537	$20,745

Most of us are concerned about job placement for recent graduates. For several years we have conducted a job survey of our graduating senior class. We have compiled figures for the past four years.

Most of our graduates enter clinical practice, although we find them slowly beginning to enter other areas of the profession. Some stay in academics, others look toward industry and the public sector of the profession.

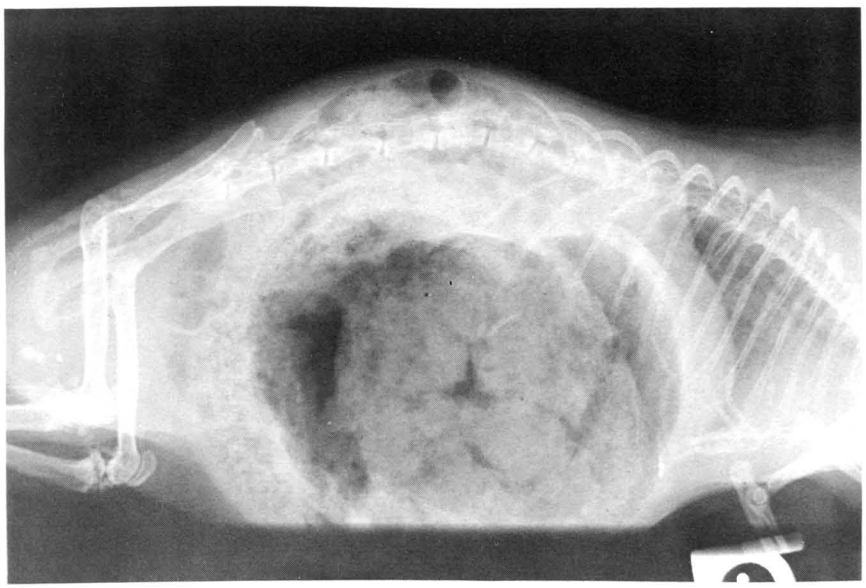
We have no idea how graduates of other colleges have been placed, but our graduates are able to find positions.

What does the future hold for graduates? I suppose when this country became mechanized the same question was asked. Veterinary medicine always has been a versatile profession. We probably will see veterinarians entering fields that were not thought of in the past. Fields with biologists now predominate. More public health and industry scientists will be veterinarians. We need to encourage our graduates to enter untraditional fields. If we can do that, we should hope for a good future for veterinary medicine.

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

In memoriam

Dr. Donald Blake of St. Louis died May 22. He was a member of the College's Class of 1955.



What's your diagnosis?

A 5-year-old female guinea pig was presented at the UMC veterinary teaching hospital for anorexia and depression. There was no significant past medical history. The animal had fallen from a couch the day before. She had not eaten since then.

Physical examination revealed a markedly distended left abdomen. The heart rate was 120 beats per minute; the respiratory rate was 90; and the body temperature was 93 degrees F.

Lateral and ventral dorsal radiographs were ordered.

What's your diagnosis?

Answer on Page 11

Inside the Humane Society

A caring staff, dedicated to animal welfare

Barbara A. Eichler, VMIV

First day as an intern at the Humane Society of Missouri in St. Louis:

I come face-to-face with a rather tall, vigorous woman with a German accent—Dr. Suzanne Saueressig, Chief of Staff, but known to all simply as "Chief." She smiles warmly in welcome and begins a tour of the facilities. The next thing I know, I'm running to keep up with her as we bustle through exam rooms and wards, offices and labs and surgery suites, up stairs and down, until I'm not quite sure where I am or how I got there! And all along the way, the Chief introduces the new intern to smiling, friendly people, at least a thousand or more (or so it seems), and each one has a question or comment for the Chief. Amazingly, this woman immediately knows exactly what they want and answers the barrage of inquiries promptly. With a smile, she's dashing off to some other part of this vast maze known as "the shelter."

The grand tour over, the Chief introduces me to one of the staff veterinarians (more than likely a re-introduction), who for the rest of the day shows me the ropes and answers questions about the paperwork and protocol involved in seeing and admitting patients. Of course, the paperwork is not as heavy as that in the small animal clinic at the University, but there's enough to make me wonder whether I'll get the hang of the system by the time the internship is over! Everyone is so helpful and understanding, though, dispelling fears for the moment.

By the end of the afternoon's receiving hours, I start to wonder just how many clients they see in the morning here. Four of the staff veterinarians and myself see patients, while five or six clinic assistants run from one exam room to another, weighing patients, running samples to the lab, and cleaning up. The stack of patient records in the "to be seen" slot never seems to decrease, and I begin to believe the entire population of St. Louis owns at least one pet that needs veterinary attention! Perhaps veterinary colleges should include physical fitness in their curriculums.

By 7 p.m., things have slowed down immensely, and evening treatments have begun. Dr. Saueressig finds me in one of the wards, tagging along after the staff veterinarian. With a knowing smile, she asks if I am tired. "Well, maybe a little." She says go home. After a grateful goodbye to the Chief, everyone hails goodnight as I head for the front door. Tomorrow, I'll match names with faces.

As time goes by, I start getting to know all of the people that make up the staff of the Humane Society. Best of all, I know much more than just names. In a very short time, I have many new friends. Though there is a great variety of backgrounds and experiences, every employee of the Humane Society is concerned about the care and welfare of animals. This deep concern and appreciation for animals is reflected in the gentle but firm restraint administered by clinic assistants, the special attention ward attendants give hospitalized patients, the veterinarians' great care and client education, the follow-up instructions secretaries and front-desk attendants give owners, and of course, the Chief's never failing to make sure there is food and water for the abandoned cats outside the shelter who still are too timid to approach.

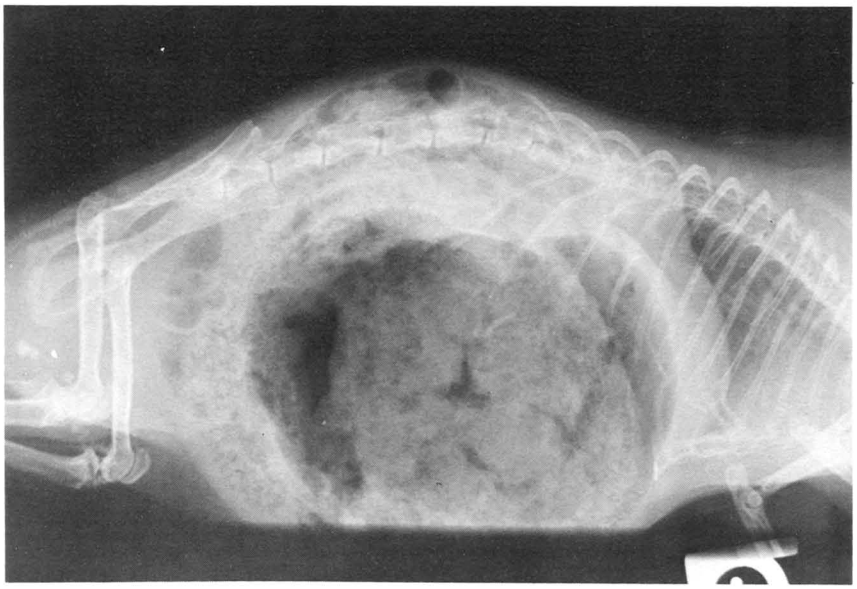
In the time I spent as an intern, the Humane Society staff demonstrated three very important doctrines that all veterinarians should try to adhere to:

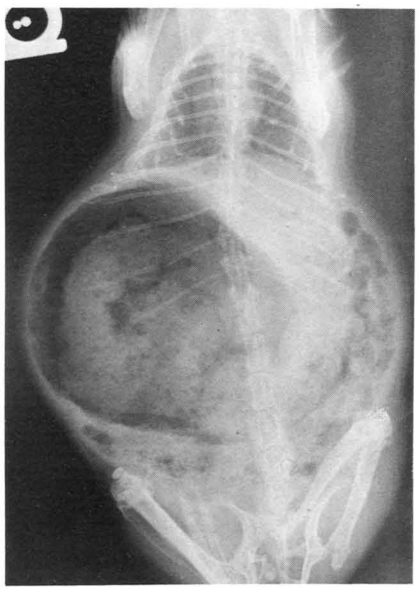
1. To provide excellent veterinary care to all patients, regardless of when or how they are presented.

2. To fervently try to educate pet owners about things they should do at home to improve their pets' quality of life.

3. To provide the above services to the public at a reasonable cost to the client, with enough efficiency to alleviate excess spending of client dollars on unnecessary or unwarranted practices.

To me, these are the principles on which our profession was founded. And I would like to publicly thank the Humane Society of Missouri-St. Louis for showing me these beliefs are still alive and well, out in the "real world."





Diagnosis

From Page 9

Radiographic report

A markedly food-filled stomach is noted on the lateral and ventral dorsal radiographs. Caudal displacement of the small bowel, large bowel and urinary bladder are noted on the lateral radiograph. Cranial displacement of the liver and diaphragm are noted.

Diagnosis

Severe gastric dilitation.

Treatment

A stomach tube was passed, and the stomach was lavaged with warm isotonic saline. The animal was warmed with hot-water bottles, and treated with vitamin C and chloranphenicol palmitate orally for seven days.

Greg Hassel, VMIV

Pitman-Moore donates $500 to SCAVMA

Chip Whitlow, left, of Pitman-Moore presents a $500 check to Jeff Will, vice president of the student chapter of the American Veterinary Medical Association. The company contributes annually to the activities of SCAVMA.

Don Connor photo

Memorial Fund Scholarship

Dr. Richard Taylor (62), a practitioner from Fayette, Missouri, is shown presenting the College of Veterinary Medicine Memorial Fund Scholarship to Roxanne Damon during the annual Honors Convocation Banquet.

The scholarship is made possible by contributions of family, friends, and classmates of those graduates who have passed away. Some families have asked that contributions be made to the Memorial Fund in lieu of flowers.

Those graduates so honored are placed on the Memorial Scholarship Honor Roll, which hangs in the hall of the Veterinary Medicine Building.

Don Connor photo

Ten students named to Who's Who

Ten students at the University of Missouri-Columbia College of Veterinary Medicine have been named to the 1982 Who's Who in American Universities and Colleges, a national register of outstanding campus leaders.

Selection is based on academic achievement, community service, leadership in extracurricular activities and future potential.

The students, all members of the Class of 1982, are: Ronald Armstrong, Douglas Brunk, Lane Clarke, Susan Graves, Jacqueline Moeller, Michael Pfander, Nicholas Pisoni, Randall Spragg, Jenifer Whiteside, and J. C. Wilson.

Missouri Veterinarian
Vol. 32, No. 2 (1982)

Editor .....Greg Hassel
Managing Editor.....Kathy Casteel
Faculty .....Drs. E. Brown & R. Miller

Missouri Veterinarian is published three times yearly by the students of the College of Veterinary Medicine, University of Missouri-Columbia. Opinions and comments not credited to specific persons are those of the publication staff and are not necessarily those of the College of Veterinary Medicine.

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

Return Requested

Supported in part by the UMC Extension Division
University of Missouri is an equal opportunity institution