

VETERINARY MEDICAL REVIEW



End of Winter Problem— Malnutrition

*New Addition Inside—
Missouri Veterinarian*

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

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Beef Cow Malnutrition— An End of Winter Problem

Malnutrition In Beef Cow Herds Is Not a Simple Case of Underfeeding.

Gene M. Zinn, DVM, PhD
Dept. Veterinary Medicine & Surgery

One of the more common problems associated with beef cow-calf production is that of malnutrition. Normally, it occurs toward the end of the winter feeding period and is accentuated by parasites, low quality roughages and winter stress factors such as cold weather, wind, rain, snow and mud.

Parasite burdens have the net effect of increasing body requirements plus increasing disease susceptibility. These are mainly accomplished by:

- 1) reduction of absorptive capability
- 2) removal of blood and tissue fluids
- 3) absorbing the host's nutrients

There is little precise information as to the overall effects of parasite burdens on nutritive requirements. However, it can be considerable, especially on animals that have marginal intakes so far as protein and energy are concerned.

In general, most of the late winter malnutrition associated with beef cow

herds is that of an energy deficit. These animals usually have a history of being fed a low quality roughage without any other supplementation (i.e. range cubes, lick tanks, grain, etc.) and present a gross appearance of having greatly distended abdomen due to excessive rumen fill. Further examination reveals poor fleshing over the ribs and withers, prominent hip and pin bones, lackluster (dull) hair coat, a relative poor physical condition and a lackadaisical attitude.

The total feed consumption of cattle depends, to a great deal, upon the quality of the roughage being fed. For example, cattle consuming good quality legume hays can be expected to have a daily dry matter intake of 2.5-3.0 percent of body weight. However, where poor quality grass hay is involved, the daily dry matter intake falls to 1.0-1.5 percent of body weight. This reduction is due to an increased rate of passage through the digestive tract.

However, malnourished cattle will generally stuff themselves with the low quality roughage which shows up as a greatly distended abdomen. They physically can not consume more roughage,

so the feeding of more low quality material is of no avail.

However, in conjunction with low energy rations, there is often a concomitant protein deficiency. The first symptom of a protein deficiency in ruminants can be a reduced feed intake. This is caused by a decreased level of rumen fermentation that, in turn, results in a reduced feed consumption. This reduction in feed intake further aggravates the problem of insufficient energy intake.

In considering energy and protein needs for beef animals in the late winter, it should be noted that most of these animals are usually in the last third of pregnancy or else nursing young calves. When the demands for energy and protein at these stages are compared to the demands of the middle third of pregnancy, we find the following:

- 1) Cows in late third of pregnancy (450 kg-992 lbs)
 - a. Energy (ME) - need 18% more
 - b. Protein (total) - need 23% more
 - c. Dry matter - need 20% more
- 2) Cows nursing calves - average milking ability - first 3-4 months post partum - (450 kg-992 lbs)
 - a. Energy (ME) - need 33% more
 - b. Protein (total) - need 120% more
 - c. Dry matter - need 38% more

A comparison of energy and dry matter requirements are very similar. These become important in winter stress conditions due to a decline in dry matter digestibility. Remember that roughage quality may limit the dry matter intake so that listed increases may not occur.

A graphic comparison of *Percent Increase* of energy, protein and dry matter requirements versus *Animal Stages* is shown in Figure 1.

Winter stress conditions include cold weather, wind, rain, snow and mud. These are interrelated factors and have the net effect of increasing the animal's energy requirements. In addition, Canadian researchers have shown that prolonged exposure to cold reduces the dry matter digestibility of the ration. For example, calves fed a ration of equal parts alfalfa hay and rolled barley experienced a reduction in dry matter digestibility from 70 percent to 61 percent. This represents roughly a 13 percent reduction in dry matter digestibility. For animals on a marginal diet energy wise, this represents a disastrous reduction.

Usually, malnutrition in beef cow herds is not a simple case of underfeeding. It generally occurs where the nutrient intake is too close to the actual requirements and then, when accen-

cont., p. 3

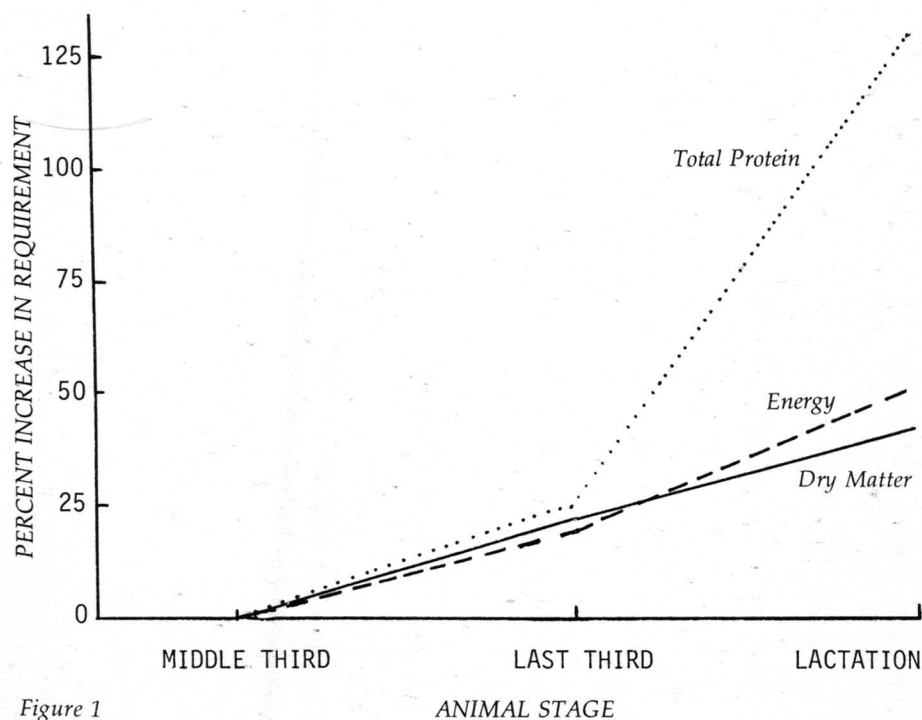


Figure 1

Malnutrition, cont.

tuating factors come into play, the animal is on a substandard diet.

A correction of the problem lies in increasing the energy and protein intake. This can be accomplished by feeding grain, often in rather large amounts. For animals that are severely affected, the addition of 4.55 kg (10 lb) of corn to the ration is indicated. (This needs to be done slowly to prevent grain overload.)

The energy and protein added to the ration by 4.55 kg (10 lb) of corn (as fed basis) will provide a 450 kg (992 lb) cow with the following percent of calculated daily needs:

1. Middle third of pregnancy
 - a. Energy (ME) - 101%
 - b. Protein (total) - 103%
2. Last third of pregnancy
 - a. Energy (ME) - 87%
 - b. Protein (total) - 82%
3. Cows nursing calves - average milking ability - first 3-4 months post partum
 - a. Energy (ME) - 74%
 - b. Protein (total) - 46%

As a rule of thumb, this amount of corn will be sufficient although supplemental protein may have to be provided.

References:

1. Church, D. C., et al.: *Digestive Physiology and Nutrition of Ruminants*. Vol. 2, 1971.
2. Church, D.C., et al.: *Digestive Physiology and Nutrition of Ruminants*. Vol. 3, 1972.
3. Church, D.C.: *Livestock Feeds and Feeding*. 1977
4. Ensminger, M. E. and Olentine, C. G.: *Feeds and Nutrition - Complete*. 1978.
5. Extension Agricultural Engineering: *Kansas Cattle Feeders Handbook* 1979.

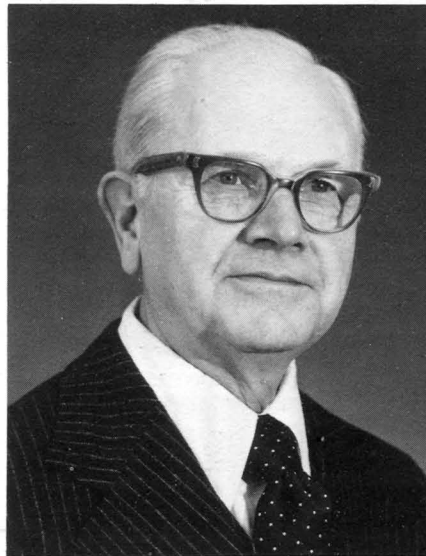
College to Provide Graduate Training for Mexican Veterinarians.

Agreement has been reached between the College and Mexican veterinary officials on a program to provide graduate level study for Mexican veterinarians at the University of Missouri-Columbia.

Dean Kenneth D. Weide announced that the Instituto Nacional de Investigaciones Pecuarías (INIP), a national Mexican animal research laboratory, will send one or more of its veterinarians to Columbia for advanced degree study in basic veterinary sciences, probably as early as this summer. The Mexican government will provide scholarships to support their veterinarians' studies here.

Dean Weide and Dr. C. Andrew Carson, Department of Veterinary Microbiology chairman, met last December with INIP director, Dr. Carlos Arellano, to establish the cooperative teaching program. Dr. Carson and Dean Weide

Dr. Ramsey To Be Academic Convocation Speaker



Dr. Frank K. Ramsey will be the 1980 Academic Convocation speaker for the College of Veterinary Medicine. Dr. Ramsey is a Distinguished Professor of Veterinary Pathology at Iowa State University in Ames.

Dr. Ramsey has been very active in veterinary medicine at the international level. In 1961, he served as a veterinary consultant for the U.S. Department of Agriculture to direct aid for developing a veterinary school in Kabete, Kenya, the only African veterinary school south of the Equator open to all races. He was a co-leader in 1965 of a 43-member veterinary delegation to Europe and the Soviet Union. In addition, he has been a consul-

tant in veterinary work in Chile, Colombia, Israel, and Nigeria.

Among his research interests, Dr. Ramsey has been working with neurological disorders, neoplasms, and systemic fungal diseases of domestic animals. In the early 60's, Dr. Ramsey conducted a three-year study on livestock losses caused by lightning and electricity.

Dr. Ramsey has been associated with Iowa State University since 1943 when he entered the professional program there. He received his DVM degree in 1946 and joined the faculty. In 1955, he received the PhD degree. Two years later, he was named Distinguished Professor and Head of the Department of Veterinary Pathology, the latter post he kept until 1975.

Before entering the professional curriculum in 1943, Dr. Ramsey had taught in a junior college in Glendive, Montana, been superintendent of schools in Bonilla, South Dakota, and had taught at various schools in North and South Dakotas.

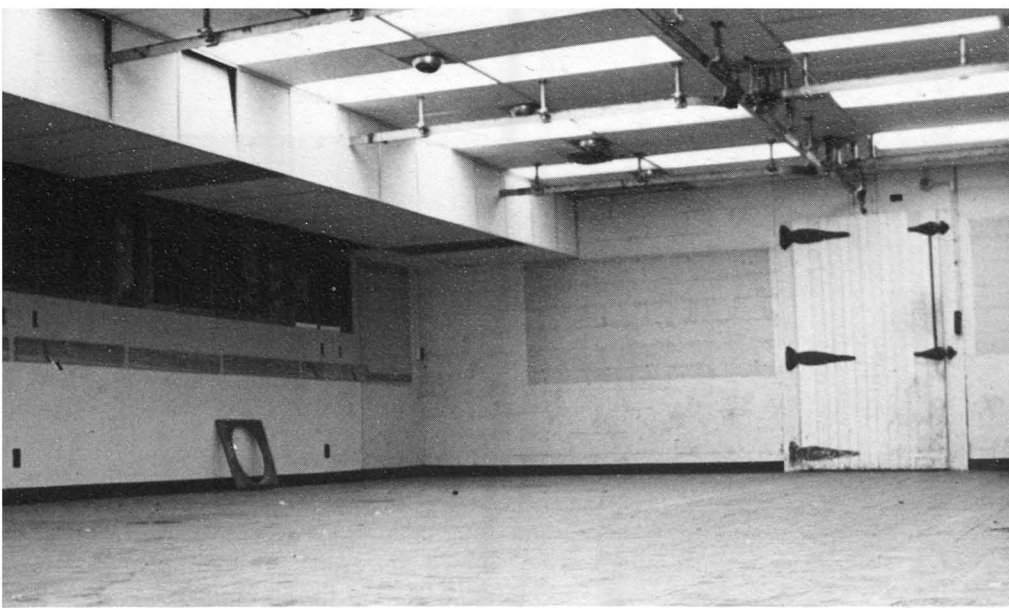
The College's Academic Convocation will be Saturday, May 10, 1980, in the main area of the Hearn's Multipurpose Building, starting at 1:00 p.m.



Dean of Indian Veterinary College Visits

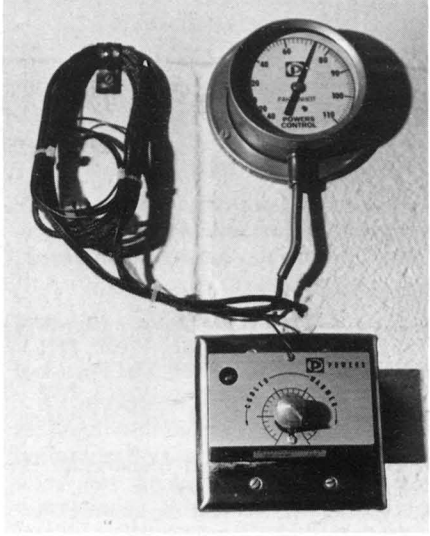
Dr. P. K. Sharma, Dean of the Faculty of Veterinary Sciences at Assam Agricultural University in India, visited the University of Missouri-Columbia for three days, beginning January 16.

Dr. Sharma singled out for his visit the Colleges of Veterinary Medicine and Agriculture. He spoke with faculty and administrators, among them the Veterinary College's Dean, Dr. Kenneth Weide, concerning this University's teaching, research and extension programs. Dr. Sharma toured the Veterinary College's four departments as well as the Agriculture College's Departments of Animal Husbandry, Poultry Husbandry, Food Sciences and Nutrition, and Extension.



Construction of the laboratory animal facilities marks the first major construction to take place on Connaway Hall since the third floor was completed on the west wing in 1969. The first major addition to Connaway Hall was underway in 1948, what was to become the first floor of the east wing. Construction on the original Connaway Hall — all of that building which faces Bouchelle Street — was completed in 1911. The cost for that three-story, natural stone structure came to only \$31,906.24.

Counterclockwise, from upper left: Before-January, 1979. After, January, 1980. Moving cages and animals to new facilities. Cage washer installed. Temperature control unit— one for each room.



New Laboratory Animal Quarters at the College

Old Gross Anatomy Laboratory 'Recycled'

Researchers at the University of Missouri-Columbia now have access to new, up-to-date facilities for housing their laboratory animals. The College has just opened its new laboratory animal quarters on the ground floor of Connaway Hall, one year from when the \$238,405 construction project began.

Dr. John Lenz, Laboratory Animal Veterinarian for the College, said that these new facilities meet current University and federal regulations for animal care. In a space formerly occupied by an anatomy teaching laboratory, the quarters meet high standards of cleanliness and animal comfort.

Researchers can control the animals' environment better in the Connaway area than they could in older laboratories. Each of the animal rooms has its own temperature control system which allows the temperature in each room to be adjusted independently from other rooms. Room temperature can be con-

trolled within a range of 1°C.

In addition, three are medium confinement rooms. From these rooms, said Dr. Lenz, the filtration system can remove almost 100% of all airborne particles — including particles as fine as some viruses. These medium confinement rooms also have negative air pressure relative to the outside so that when a door is opened, outside air will come in rather than vice versa. Researchers can utilize these three rooms for investigations into potentially hazardous airborne diseases.

Dr. Lenz added that whether a researcher uses a medium confinement room or one of the other rooms, that researcher can now have space devoted solely to his work, rather than sharing a common room with other experiments.

As an indication of the demand for such facilities, Dr. Lenz remarked that all rooms will probably be in use within a month.



Faculty Publish

Selby, L. A., Corwin, R. M., and Hayes, H. M., Jr.: "Risk Factors Associated with Canine Heartworm Infection", *JAVMA*, 176, 1:33-35.

Jensen, H. E.: "Canthus Closure", *Compend Contin Educ Pract Vet*, 1, 10:735-741.

Jensen, H. E.: "Keratite Sicca and Parotid Duct Transposition", *Compend Contin Educ Pract Vet*, 1 9:721-726.

Green, R. A., Roudebush, P., and Barton, C. L.: "Laboratory Evaluation of Coagulopathies Due to Vitamin K Antagonism in the Dog: Three Case Reports", *JAAHA*, 15, 6:691-698.

Roudebush, P. and Burns, J.: "Pleural Effusion as a Sequela to Traumatic Diaphragmatic Hernias: A Review of Four Cases", *JAAHA*, 15, 6:699-706.

Lentsch, R. H., Wagner, J. E., and Owens, D. R.: "Comparison of Techniques for Primary Isolation of Respiratory Mycoplasma pulmonis from Rats", *Infection and Immunity*, 2, 2:590-593.

Annual Conference Coming

October 11-12-13, 1980

The Annual Fall Conference will be held at the Ramada Inn, October 12-13. The Classes of 1955, 65, and 75 will have class reunions. The reunions will be held at the Ramada Inn during the evening of October 11, 1980.

Two New Additions to the College's Faculty



Dr. Collier



Dr. Basel

The College's Department of Veterinary Pathology has recently appointed two new faculty members.

Dr. Linda L. Collier had been a research associate with the Department of Veterinary Microbiology and Pathology at Washington State University. She received her PhD from that institution in 1979; her dissertation was entitled "Investigations of Chediak-Higashi Syndrome in Four Animal Species". Dr. Collier was awarded the DVM degree with Distinction from the New York State College of Veterinary Medicine at Cornell in 1975. Her academic honors include Phi Kappa Phi and Phi Zeta. In 1975, she worked in a private mixed practice in Oregon, and in 1976 became an NIH Post-Doctoral Fellow at Washington State University. Dr. Collier has been appointed Assistant Professor at UMC.

Before coming to the College as a Resident, Dr. Dean L. Basel had been

employed in a private mixed animal practice in Saginaw, Michigan. He was awarded his DVM degree with Honor from Michigan State University in 1978. Dr. Basel is a member of the Society of Phi Zeta and the American Association of Bovine Practitioners. His professional interests include toxicology and immunology.

Dr. Faulkner Appointed to Board

Dr. Lloyd Faulkner has been appointed to serve on the Board of Trustees of the American Association for Accreditation of Laboratory Animal Care (AAALAC) as the representative of the Federation of American Societies for Experimental Biology. Dr. Faulkner's three-year appointment began December, 1979.

Dr. Faulkner is currently Associate Dean for Research and Graduate Studies for the College.

The AAALAC provides a means of peer evaluation of research animal care programs by the scientific community to encourage optimal care of animals.



Incidence of Antibiotic Resistance*

Compared to Five Years Ago, the Incidence of Antibiotic Resistant *Pasteurella spp* Recovered in Missouri From Cattle With a Shipping Fever Complex Has Increased.

William H. Fales, PhD
Veterinary Medical Diagnostic Laboratory and
Dept. of Veterinary Microbiology

Pasteurella spp recovered from Missouri feedlot cattle with a clinical or necropsy diagnosis of a shipping fever complex frequently are resistant to ampicillin, penicillin, tetracycline, streptomycin, and triple sulfa when tested *in vitro* with the standard disk diffusion method described by Bauer, *et al.*¹

To determine if a trend of antibiotic resistance is evident, Veterinary Medical Diagnostic Laboratory Records were reviewed from 1975 through 1979.

Data show an increase in the number of cattle with a shipping fever complex referred to this laboratory and a definite trend in resistance to antibiotics which are commonly used to treat this problem. This is significant in that *Pasteurella* is the major target of antibiotic therapy even though a variety of microbial agents may initiate the bovine shipping fever complex.

With this high rate of resistance the question often comes up whether or not reported antibiotic resistance (by disk diffusion) can be overcome with a high

dose of a drug. The answer appears to be no because the corresponding MIC values *in vivo* would be impossible to achieve. The MIC (Minimum Infective Concentration) is defined as the least amount of antibiotic that will inhibit the growth of a given microorganism and as such serves as a quantitative guide in the level of antibiotic to be used.

High antibiotic dosages probably should be used when susceptibility reports are made to insure an adequate MIC level in the blood at 12 or 24 hours.

There is definite need for the development of new antibiotics for use in treating the bovine shipping fever complex. With present drugs, dose levels should be reconsidered before use. In addition, changes in management should be considered.

*Condensed version of report, "The Incidence of Antibiotic Resistant *Pasteurella spp* Recovered in Missouri from Cattle With a Shipping Fever Complex" presented by Dr. Fales to the 22nd North Central Conference of Veterinary Laboratory Diagnosticians, Madison, Wisconsin, to the 60th Annual Conference of Research Workers in Animal Diseases, Chicago, Illinois, and to the 55th Annual Conference for Missouri Veterinarians, Columbia.

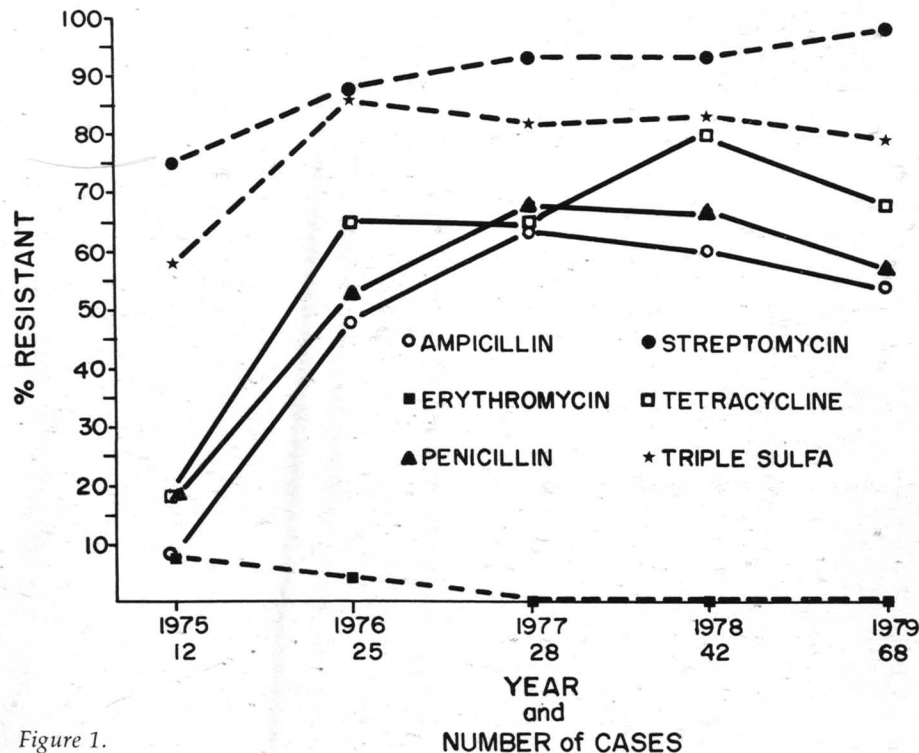


Figure 1.

Drug	Resistance/ Total	% Resistant
Ampicillin	93/175	53%
Erythromycin	2/175	1%
Penicillin	101/175	57%
Streptomycin	156/175	89%
Tetracycline	115/175	65%
Triple Sulfa	141/175	80%

Figure 2. Summary of approved and commonly used antibiotics from 1975 - 1979. With the exception of erythromycin, the drugs tested have a significant incidence of resistance.

Drug	Resistance/ Total	% Resistant
Cephaloridine	0/175	0%
Chloromycetin	1/175	0.5%
Clindamycin		
Lincomycin	139/139	100%
Cloxacillin	159/165	96%
Gentamycin	0/174	0%

Figure 3. Summary of nonapproved or infrequently used antibiotics. The resistance pattern could be a reflection of overall antibiotic use or the innate resistance of *Pasteurella* to these drugs.

References

- Bauer, A. W., W. M. M. Kirby, J. C. Sherris, and M. Turck. 1966. Antibiotic susceptibility testing by a standardized single disk method. *Amer. J. Clin. Pathol.* 45:493-496.
- Hjerpe, C. A., and T. A. Routen. 1976. Practical and theoretical considerations concerning treatment of bacterial pneumonia in feedlot cattle with special reference to anti-microbial therapy. *Proceedings, Annual Conference American Association of Bovine Practitioners.*

Faculty Publish

Vaillancourt, D., Bierschwal, C. J., Ogwu, D., Elmore, R. G., Martin, C. E., Sharp, A. J., and Youngquist, R. S.: "Correlation Between Pregnancy Diagnosis by Membrane Slip and Embryonic Mortality", *JAVMA*, 175, 2:466-468.

New Series

The sequential numbering system of the VETERINARY MEDICAL REVIEW has been dropped in favor of volume number and issue number to make this publication more compatible with library cataloging. Because of confusion concerning the name of this publication and its numbering during its early history, this editor chose to begin anew with this issue being volume 1, number 1.

Visiting Lecturers



Dr. Miller

Dr. Dodds

Dr. Janice Miller, veterinary pathologist, presented "Biology of Bovine Leukemia Virus Infection" on January 10 in the College's Teaching Hospital Auditorium. Dr. Miller is associated with the National Animal Disease Center in Ames, Iowa, and she has been active in research on bovine leukemia. In 1978, Dr. James Thorne of the College, tested an experimental inactivated virus vaccine for bovine leukemia which had been developed by Dr. Miller and a co-researcher, Dr. Van Der Maaten.

Dr. W. Jean Dodds presented "Bleeding Disorders in Animals" on February 14 at the College. Dr. Dodds is Research Director of the Laboratories for Veterinary Science for the New York State Department of Health. She has authored more than 100 research publications and is an associate editor, *Laboratory Animal Science*. In 1974, Dr. Dodds was selected as Outstanding Woman Veterinarian of the Year.

The two presentations were sponsored by both the Visiting Lecturers Series and the University Assembly Lecture Series. In addition, The Student Chapter, AVMA, and the Area of Micro-biology helped support Dr. Miller's lecture, and the Area of Pathology and the Department of Veterinary Pathology contributed to Dr. Dodds' presentation.



Dr. Simpson examines his patient three days after surgery.

Brain Surgery a Success

In the best interests of the patient, the veterinarian will use whatever means are available to correctly diagnose the malady and to treat the animal.

Early last December, a five-year-old Irish Setter was referred to the College from Oklahoma. The dog suffered from progressively severe and frequent seizures. Dr. Steve Simpson, neurologist and neurosurgeon for the College, made a routine seizure examination which showed a high probability of a cerebral neoplasia.

In order to verify what his tests had indicated and to locate the suspected lesion, Dr. Simpson recruited the assistance of the Veterans' Administration Hospital in Columbia and the UMC School of Medicine. He and several students took their patient over to the Medical School after hours for radioisotope scanning and computerized axial tomography scanning on the CAT scanner. These tests revealed a lesion within the left cerebral hemisphere of the dog.



Dr. Simpson carefully removes bone to reveal the dog's brain. (Photo taken from videotape).

Dr. Simpson next performed a left-lateral craniotomy. He found a lesion where the CAT scanner indicated it would be, and he removed it. Dr. Simpson later identified the lesion to be a hamartoma, a vascular anomaly.

Following recovery from anesthesia, the Irish Setter appeared for all practical purposes normal, and the dog was returned to its home. At last report, the dog was doing well except for an infection probably unrelated to the surgery.

Drug Resistance in Pathogenic Bacteria Under Investigation

Medical Investigators Need an Idea of the Scope and Magnitude of This Problem to Determine How Best to Deal with It.

A three-state epidemiologic survey underway at the College may quantify the extent of antibiotic resistance in select pathogenic bacterial agents in food-producing animals.

Dr. Lloyd Selby, Associate Professor, Veterinary Microbiology, was recently awarded a \$148,870 grant from the Food and Drug Administration, U.S. Public Health Service, to identify and evaluate patterns of antibiotic resistance in pathogenic bacteria of livestock. Dr.

Selby and his associates are utilizing records of veterinary diagnostic laboratories in Missouri, Iowa and Arkansas, as well as making their own field studies.

Through Dr. Selby's research, livestock and medical experts may have a better grasp of the overall situation. They can then weigh the benefits of increased food production against potential hazards to the health of humans and animals.

For more than twenty years, livestock

producers and feedlot operators have added to livestock feeds sub-therapeutic levels of antibiotics to increase the rate and efficiency of weight gains in their animals. However, evidence has indicated that use of antibiotics to ward off infectious agents is increasing the incidence of antibiotic-resistant bacteria. Some medical investigators believe that such increasing resistance may pose a threat to human health.

So far the evidence of increasing antibiotic resistance of some types of bacteria has been obtained through studies of small populations of animals and humans, and by *in vitro* experiments.

Donation Aids Anesthesia Work

Fund Named For Pet

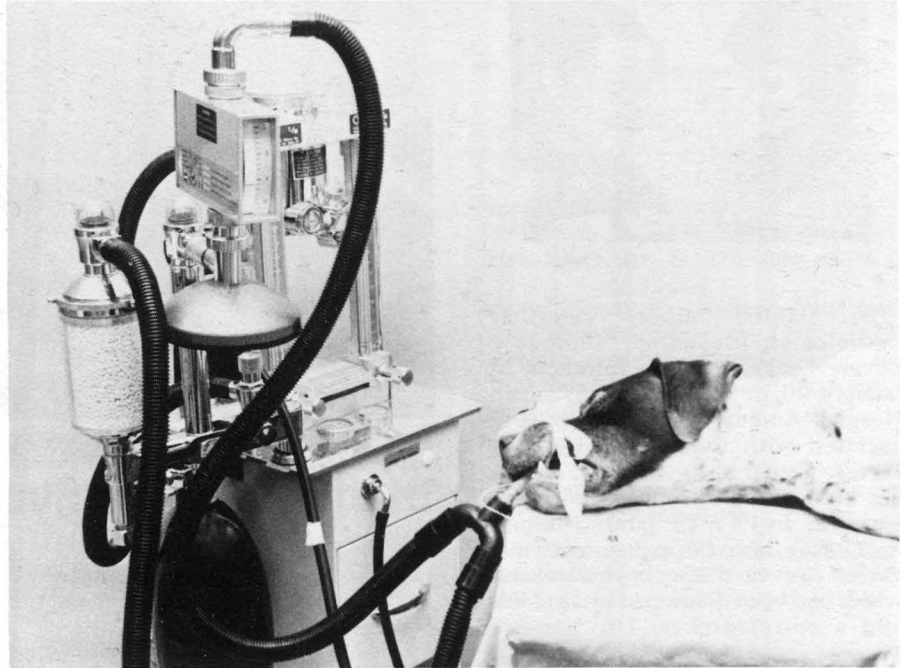
Mr. George Menos of Kirkwood, Missouri, would like to relieve pain and suffering in animals.

Toward that end, he has donated \$2900 over the past year to the College in the name of his dog, Oscar M. In turn, the College is utilizing the Oscar M. fund in research and clinic applications of anesthesia.

Dr. Cynthia Trim, veterinary anesthesiologist at the College, is directing the use of the fund. She reported that last December the College received a Narkotest-M unit which will allow her and veterinary students to precisely measure the concentration of anesthesia in both the anesthetic machine and in the patient's breath, thus enhancing the safety for the patient.

The Oscar M. fund will be used to purchase a Transcutaneous Electrical Nerve Stimulator if Dr. Trim's research should demonstrate that this device can control pain in animals during their immediate post-operative periods.

Dr. Trim said that she will use the remainder of the Oscar M. fund for research into the action of non-narcotic



The topmost hose of the anesthetic machine connects to the Narkotest-M unit.

analgesic drugs in dogs.

Private donations, such as the fund Mr. Menos established, help fulfill

funding needs to advance research, teaching, and service at Missouri's Veterinary College.

Recent Results on Marek's Disease Research

This Herpesvirus-Caused Disease Is a Good Model for Lymphoproliferative Disease Study

Dr. Hans K. Adldinger, Professor of Veterinary Microbiology at the College, attended the bi-annual symposium of the International Association for Comparative Research on Leukemia and Related Disease, held October, 1979, at Pisunda, USSR, on the east coast of the Black Sea. At that meeting Dr. Adldinger presented "Cell-Mediated Cytotoxicity of Blood Leukocytes from Marek's Disease Virus Infected Chickens Directed Against Viral and Tumor Associated Antigens."

Dr. Adldinger's research has been supported for more than three years by the National Cancer Institute, U.S. Public Health Service. The National Cancer Institute also co-sponsored this symposium at Pitsunda.

Although Marek's Disease is no longer an economic burden to the poultry industry, thanks to a vaccine developed in the late 1960's by the U.S. Department of Agriculture, Dr. Adldinger is very interested in this herpesvirus-caused disease because it is

a good model for the study of lymphoproliferative diseases in animals and humans.

Marek's Disease is a lymphomatous and neuropathic disease of chickens that often results in fatal malignant lymphomatosis.

This neoplasm is caused by a highly contagious avian herpes-virus. As a model in animals, Marek's Disease permits comparative studies of the many factors that influence the outcome of infections with oncogenic herpesvirus. One significant factor in the host organism is the ability of its immune system, in particular cell-mediated cytotoxic responses, to react quickly and effectively to infection caused by oncogenic herpesviruses.

Research done in Dr. Adldinger's and other laboratories has previously established that this cytotoxicity is mediated mainly by T-lymphocytes which attack tumor cells. However, the replicating herpesvirus may damage the thymus which produces these cytotoxic lymphocytes. In addition, the virus will trans-

form some lymphocytes into tumor cells (and it is these tumor cells that infiltrate peripheral nerves among other tissues to produce paralysis, a sign of Marek's Disease).

In short, whether or not a particular chicken survives Marek's Disease depends to a large extent on the outcome of a race between the chicken's immune response and the destruction wreaked by the replicating virus to lymphatic tissues combined with the progressive lymphoproliferation.

Dr. Adldinger's paper presented at the symposium dealt with an aspect of this 'race' which takes place during the initial phase of infection.

Within three days following infection cytotoxic lymphocytes appear and attack the virus-infected cells. Then, two days after these lymphocytes have appeared, other lymphocytes become present that are toxic to tumor cells. Thus, chickens can mount immune responses against both the virus and the tumor cells soon after infection, but apparently these responses are not always protective.

The answers to the question of what tips the balance in favor of the chicken or the tumor will require additional research.

Missouri Veterinarian

Note from the Editors

As you can see, this issue of the MISSOURI VETERINARIAN is included in the VETERINARY MEDICAL REVIEW, and each future issue of MISSOURI VETERINARIAN will be a part of every other issue of VETERINARY MEDICAL REVIEW.

So, MISSOURI VETERINARIAN will continue to be published three times a year, and from an editorial standpoint remain a student and alumni oriented publication with student editors and student assistants.

MISSOURI VETERINARIAN has joined VETERINARY MEDICAL REVIEW because of high production costs. Within a four-year span, production costs have more than doubled for MISSOURI VETERINARIAN, a publication almost entirely dependent on advertising revenues. Those revenues were simply not enough to permit MISSOURI VETERINARIAN to continue in its old format. Rates for advertisers could not be raised to compensate; rates were already high. Thus, the choice facing MISSOURI VETERINARIAN was either surgery or euthanasia.

Editors of both publications elected surgery. Such action will entail changes. Much of the content in past issue of MISSOURI VETERINARIAN was devoted to technical and scientific articles prepared by students and faculty. Material of this nature will in the future be integrated with the continuing education aspect of VETERINARY MEDICAL REVIEW. Furthermore, MISSOURI VETERINARIAN will carry no more advertising. For printing and distribution purposes, MISSOURI VETERINARIAN and VETERINARY MEDICAL REVIEW will be handled as one publication.

Nonetheless, we, the editors feel that this union will enhance the worth of VETERINARY MEDICAL REVIEW and MISSOURI VETERINARIAN for you, the reader.

Missouri Veterinarian
Vol. 30, No. 1 (1980)

Editors Sue Graves, Cathy Ruddy
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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.

Dean's Corner



We would like to remind you that this year the College of Veterinary Medicine Alumni Association is making a concerted effort to increase the number of life memberships.

At the present time we have a total of 468 dues paying members. Of this total 114 are life members.

Members of the Alumni Association receive the Missouri Alumnus magazine, special group rates on foreign and domestic tours, use of the library facilities on the campus, and special activities and group tours to Tiger sports events in football and basketball and much more.

The Alumni Association is active in the Merit Scholar Program on the campus. At the present time UMC has more Merit Scholars on campus than any other Big 8 college.

We are in the midst of our life membership drive right now. Those alumni who become life members between January 1, 1980 and the deadline date for

registration at the 1980 Annual Fall Veterinary Conference sponsored by the College will have the registration fee for that conference waived. Starting July, 1 1980 any of you who hold or become lifetime members of the alumni association will be able to take advantage of a 10% reduction in fees for any continuing education course sponsored by the College of Veterinary Medicine during 1980-81.

That should be quite an incentive for you to sign up!

Lifetime membership is \$200, or \$250 for a Dr. and spouse membership if your spouse is an alumnus of the University of Missouri.

If you don't have a pledge card and wish to join, send your check to me, payable to UMC Alumni Association. I will take care of the paper work. Do it now!

Outstanding Teacher: Dr. Homer Dale

Dr. Homer Dale has taught veterinary physiology to students of the College for 29 years. He remarked that the big difference in students now compared to when he started in 1951 is: "The sex difference — I don't feel that this has changed my style of teaching. I feel that the presence of women in the class results in a better class attitude."



Born in Minneapolis, Minnesota, in 1922, Homer Dale moved to Whiting, Iowa, when he was 14 years old, and through the influence of that small town's veterinarian, he decided to make a career of veterinary medicine. In 1944, he was awarded his DVM degree from Iowa State University and then went to work in a predominantly large animal practice in Guthrie Center, Iowa. During this time in private practice, Dr. Dale decided to teach because: "I didn't feel I was using all of the skills and information I had learned in veterinary school.

Furthermore, Guthrie Center had too many mud roads."

Following a stay in the army and in the post of Illinois Assistant State Veterinarian, Dr. Dale returned to Iowa State University to teach and to earn his MS degree in 1949. After teaching at Texas A&M and the University of Wisconsin, Dr. Dale came to the University of Missouri in 1951. He also began work for his PhD degree, which he received in 1953.

In 1956, Dr. Dale was promoted to Professor, and four years later he was made Chairman of the Department of Veterinary Physiology and Pharmacology, a post he retained for six years.

Dr. Dale has served two terms on the editorial board of the *American Journal of Veterinary Research* and also as an editor for the *Journal of Wildlife Management*. He has been Secretary and then President of the American Society of Veterinary Physiologists and Pharmacologists. Reflecting his interest in students, Dr. Dale has served several times as faculty advisor for the Student Chapter, AVMA. In 1965, he was selected as Outstanding Teacher of the College.

Alumni Notes

Dr. Warren Schilb (50) has a daughter, Carolyn, finishing a residency in pediatrics, a daughter, Deana, in the third year of Medical College, and a son who is a third year premedical student at Oklahoma State University.

Dr. Walter F. Ketchum (51) is in private practice in Glendale, Arizona.

Dr. Layton C. Jackson (51) has opened a practice in Ft. Smith, Arkansas, December 15, 1979.

Dr. Albert Elmer Blum (54) retired from practice, June, 1979.

Dr. Robert E. Pope (55) is the Regional Public Health Veterinarian for the Texas Department of Health, Region II which includes 13 counties of Southeast Texas.

Dr. Leon H. Russell (56) has received the Texas A&M Former Students Distinguished Achievement Award for individual student relations for 1979. Dr. Russell has also been elected 3rd Vice President of the Texas Medical Association.

Dr. Robert Paul Botts (57) is a research veterinarian for the Environmental Protection Agency and is stationed with the U.S. Public Health Service in Corvallis, Oregon.

Dr. George W. Jury (62) of Lubbock, Texas, was a panelist on a Dermatology Seminar at the Joint Annual Meeting of the Texas-Louisiana Veterinary Medical Associations, Houston, February 3-5, 1980. While at the meeting, Dr. Jury participated in the first annual TVMA-LVMA "Fun Run" of five miles to finish 3rd overall and 1st in his age group. Dr. Jury has served the 2,100 member Texas VMA as District Director for the past 12 years, and he is a member of the Texas Academy of Veterinary Practitioners.

Dr. Christopher H. Rolf (64) has opened the Maple Tree Veterinary Clinic in Ellisville, Missouri.

Dr. Russell Hackler (70) has opened his second veterinary hospital in Castro Valley, California. Dr. and Mrs. Hackler also added a new daughter, Tara, in 1979.

Dr. Gerald G. Long (72) received a Ph.D. from Washington State University in June 1979. He has accepted a position in Animal Disease Diagnostic Laboratory at Purdue University.

Dr. Michael Wempe (72) has moved into a new hospital facility in Odessa, Texas.

Dr. Clifford Van Kopp (74) has operated an emergency service in Bakersfield, California for the past three years.

Dr. Sherry Clark Van Kopp (74) is associated with a small animal practice in Bakersfield, California.

Dr. August Walstad (75) has opened a small animal medical and surgical service in Joplin, Missouri.

Dr. Rebecca R. Gibson (75) has been in Papua, New Guinea for two years doing research on pigs for the New Guinea government. She will return to the U.S.A. in 1980 when the project will be completed.

Dr. Lloyd R. Gloe (76) is now in a mixed practice with Dr. Don Mattesheard (52) in Marshfield, Missouri. Dr. and Mrs. Gloe have two children, Darwin Robert (77) and Leslie Renee (79).

Dr. Alan Burns (77) is the owner and director of the Queens Veterinary Emergency Clinic, Queens, New York; the Park Avenue Veterinary Clinic, Long Beach, New York, and is a partner of the Animal Clinic of Far Rockaway, New York.

Dr. Christopher Bratcher (77) is President of the Springfield Missouri Veterinary Medical Association for 1980. He is the Program Coordinator for the Springfield Veterinary Medical Continuing Education Academy. He is associated with a new veterinary hospital which has been approved by the American Animal Hospital Association. Dr. Bratcher is also a staff member for Springfield Emergency Clinic.

Dr. Wesley McVicker (77) is now in practice with Dr. W. Hope (75) in Booneville, Missouri. Dr. and Mrs. McVicker have a daughter, Laura, born June 27, 1979.

Dr. Douglas Baker (78) has joined Dr. David Hardin (77) in a private practice in Hartville, Missouri. He had previously been associated with a practice in Okaloosa, Iowa.

Dr. Peter Mann, (79) is participating in a Comparative Pathology Residency Program at the National Zoo in Washington, D. C.

Dr. Durant

Dr. Adrian J. Durant celebrated his 93rd birthday last December. He now lives in a nursing home in Columbia.

According to his daughter, Mrs. Robert Smith, he remains a cheerful and kind-hearted man, very mobile and without handicap. Mrs. Smith reports that a year ago, Dr. Durant broke his finger in a car door, and the cast restricted his physical activity for the first time in his life.



Many of this College's first alumni remember Dr. Durant; he was in charge in 1946 when the first students were admitted into the new professional curriculum. He held that post, Chairman of the then Department of Veterinary Science, until 1949 when the Department was reorganized to become the School of Veterinary Medicine with Dr. Aaron Groth as its first dean. Dr. Durant remained on the College's faculty until his retirement in 1957.

Dr. Durant was awarded his BS degree in 1913 and his AM degree in 1915 from the University of Missouri. In 1924, he received the DVM degree from Michigan State University. He was nationally known for his interest and expertise on goats and bobcats.

Dr. Durant was associated with veterinary medicine since 1912 when he began work with Dr. John Connaway. In 1931, he succeeded Dr. Connaway as Chairman of the Department of Veterinary Science, and he was the man who laid much of the groundwork to make the College what it is today.

Kennel Club Donates to College

The Southeast Missouri Kennel Club has donated \$3,500 to the University of Missouri-Columbia's College of Veterinary Medicine. In an announcement made February 20 by the club's treasurer, Mr. Gary Stephens, \$1,500 of that donation is to be used for equipment purchases by the Small Animal section of the College's Teaching Hospital and the remaining \$2,000 is to be earmarked for the proposed Canine Research Center.

Speaking for the club, Mr. Stephens stated: "Through our donation we feel we are doing our small part to improve the care that can be given to our dogs."

Missouri Students Attend 1980 SAVMA Symposium

The 1980 SAVMA Symposium was hosted by Louisiana State University's School of Veterinary Medicine, Baton Rouge, Louisiana. The Symposium was held the weekend of February 14 - 16 to coincide with the Mardi Gras celebration in New Orleans.

Beginning Thursday with registration and a "mixer" party, the program consisted of lectures and labs from Friday morning until Saturday afternoon. The banquet and party were held Friday night. This left Saturday night open for those who wished to attend Mardi Gras. A special bus was chartered to go to New Orleans, but some students chose to drive their own cars. The general consensus of students of New Orleans on Saturday night was one of "wall-to-wall crazy people".

Lectures in Baton Rouge covered a multitude of subjects with many emphasizing equine and small animal medicine, which had the largest attendance. However, the program had something to offer everyone whether

their interest was equine, small animal, food animal, or exotic animal medicine.

For the most part, the lectures were concise and well-structured. Even if a student were familiar with the subject matter of a lecture, that person could pick up one or two useful ideas. The only complaint that could be made about the lectures was that they were somewhat simplified — probably due to the time limit of 45 minutes per lecture and that some of the attending students had not yet been introduced to some of the subject matter.

Physical facilities at LSU's School of Veterinary Medicine were very impressive, especially the large animal area. Planners had used ideas from several other schools such as Texas A&M and Iowa State University when designing their facilities. For example, closed circuit television is used throughout the entire school at LSU. This allows all students to observe surgical procedures or laboratory work being performed by clinicians or instructors.

The small animal and large animal surgery areas are contained in a single surgery suite with recovery rooms. The large animal surgery unit has padded floors, and the recovery room is padded on the floor and walls to prevent injury during recovery should the animal thrash around.

The physiology laboratory consists of modules, each containing a television monitor. All machines in the laboratory are hooked into the monitor system in such a way that if one of the modules shows an interesting situation in progress, all of the modules can be switched over to allow everyone in the laboratory to view what was happening.

Although this is just a brief outline of a few of the outstanding features of the LSU facilities, it was easily understood why LSU students wanted to host the Symposium in order to "show-off" their school.

The 1981 SAVMA Symposium will be hosted by the New York State College of Veterinary Medicine at Cornell.

Important Dates to Remember

April 19-25, 1980

AAHA Convention, Los Angeles, California: Missouri will have an Alumni-Friends reception April 24. Check your AAHA program for time, hotel, and room.

July 21-22, 1980

American Veterinary Medical Association meeting, Washington, D. C.: Missouri will have a room reserved for an Alumni-Friends Reception. For time and place please check your AVMA program when it arrives.

October 4, 1980

We will have a Veterinary Alumni Day. One hundred tickets have been reserved for us to attend the Missouri-Penn State football game. There will be a short seminar the morning of the game, followed by a brunch and then on to the game that afternoon. Bring the entire family to see our Tigers defeat the Lions from Penn State. Details will follow later this summer from the Alumni Center. Don't throw any mail away, else you may miss a chance to attend our first Alumni Day. Remember we only have 100 tickets.



Class of 1979 Cited for Participation

During a recent meeting of the Student Chapter, AVMA, Dr. Robert Youngquist on behalf of the AVMA presented to the Student Chapter's immediate Past President, Ms. Ava Frick, a certificate in recognition of the 1979 graduating members of the University of Missouri Student Chapter of the AVMA, all of whom became Association Members upon graduation.

African Swine Fever Poses Threat

African swine fever (ASF) has yet to hit the United States. But American animal health experts are very concerned that this deadly virus disease of pigs could break out in this country.

If African swine fever were to become widespread, it could devastate Missouri's pork industry. "The loss could approach \$350 million — the value of the more than four million head of hogs in the state", said Dr. Hans Adldinger, veterinary microbiologist, "should the more virulent form of the disease spread." Dr. Adldinger is a professor at the College.

Dr. Adldinger first studied ASF in 1965 at Plum Island Animal Disease Laboratory and, together with U.S. Department of Agriculture (USDA) researchers, determined that the causative agent was a DNA virus. The Plum Island Laboratory, which is off the coast of New York, is the primary research and diagnostic center of USDA for animal diseases foreign to the U.S.

The acute form of ASF kills almost all hogs that become infected. It is very easily transmitted by contaminated feed or garbage, infected insects and ticks, contact between animals, and even contaminated clothing, tools, and vehicles. Although humans may spread the virus they do not become infected.

Since the late 1950's ASF has spread from its place of origin, east Africa, to other countries in the Old World such as Portugal, Spain, France, and Italy. In 1971, ASF struck Cuba, penetrating the Western Hemisphere for the first time. Since then, it has broken out in Brazil, the Dominican Republic and Haiti. Where it has hit, ASF has been countered with programs of quarantine and slaughter.

In light of the recent spread of the disease, American animal health officials have been preparing to deal with ASF.

The USDA prohibits importing live hogs or uncooked pork from any country known to have ASF. An Emergency Disease System, coordinated by USDA, is in operation.

The Veterinary Medical Diagnostic Laboratory of Missouri's Veterinary College has joined the Emergency Disease System, and that laboratory is prepared to cooperate to the fullest extent with USDA should the Secretary of Agriculture declare an emergency when foreign disease invades.

Vigilance is required if the Emergency Disease System is to work at all. Missouri's Veterinary Medical Diagnostic Laboratory is watching for the first signs of ASF. The Laboratory's Director, Dr. Larry Morehouse, and two of its diagnosticians, Drs. Robert Solorzano and Loren Kintner, received special training at Plum Island to enable them to test for and recognize ASF.

Dr. Solorzano stated he could run a test for ASF, a Fluorescent Antibody test, in about a day's time. This test would be followed by a tissue culture test. Should Dr. Solorzano have a positive test, he would send additional samples to Plum Island for further testing. At the same time those premises from which the samples were taken would come under quarantine. Should the Plum Island tests confirm Dr. Solorzano's test, then state and federal regulatory authorities would immediately launch a large-scale investigation and quarantine program.

These authorities would want to contain and then eradicate the disease. Eradication would be by slaughter of all suspect animals.

A number of animal health authorities now believe that ASF would probably not sweep through the nation because they and diagnostic microbiologists such as Dr. Solorzano are watching for it. Dr.

Solorzano mentioned that already he has run several tests for ASF, all of which were negative.

Furthermore, ASF may be easier to recognize in this country than in other countries because signs of ASF closely resemble those of another viral disease, hog cholera. Hog cholera, once a common disease in Missouri, was recently eradicated from the U.S. by concerted effort of state and federal governments. Should an animal appear as though it has hog cholera, a veterinarian or pork producer can suspect ASF.

However, the form of ASF that has appeared in the Western Hemisphere complicates the control picture because it is a much less deadly form than the Old World variety. Whereas the disease as it has appeared in Africa and Europe can kill as much as 95% of infected pigs, the New World form may kill as few as 10%. This does not make the disease any less serious. Those pigs that recover from ASF show poor weight gains, are generally unthrifty, and can spread the disease for months following recovery.

Whether or not ASF could be stopped in this country with minimal financial loss would depend on how promptly the disease is reported. If ASF were to appear anywhere in Missouri and then be allowed to persist for several weeks because of negligence or misdiagnosis, it would be extremely hard to eradicate. The virus would spread into local insect and tick populations, and into all buildings of any farm. Because of everyday, normal activity from one farm to another, ASF would spread through an entire farming community.

Should an outbreak of ASF be promptly reported, however, the chances of preventing an epidemic are very good.

Veterinary Medical Review

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