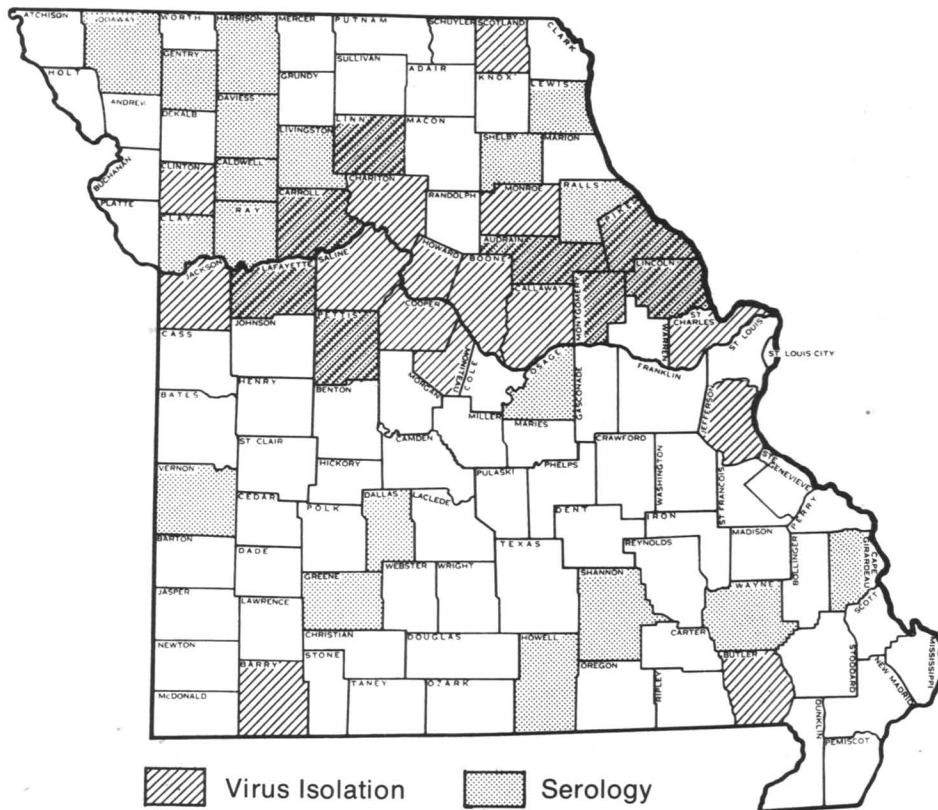


Veterinary Medical Review

College of Veterinary Medicine and Cooperative Extension Service

Pseudorabies in Missouri



Positive Counties by Serology and Virus Isolation (1970 - 1977)

University of Missouri-Columbia

Current Status

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A control program for pseudorabies was initiated in Missouri in 1977 with three objectives: (1) facilitate movement of swine from Missouri to other states, (2) prevent the spread of pseudorabies within the state, and (3) determine the incidence of the disease in the state. In cooperation with the Missouri Department of Agriculture and the Missouri Pork Producers Association, the College's Veterinary Medical Diagnostic Laboratory has been conducting the pseudorabies serum neutralization testing program.

The map (above) shows the widespread distribution of positive virologic and serologic tests which are evidence of this disease in Missouri. For more information, please turn to page 4.

In the future more research funds may be made available to the College. For that story, see page 8.

Highlights From the Accreditation Report

“...the College has made some significant improvements.”

As reported in the last issue of the *Veterinary Medical Review*, the College has been granted “Full Accreditation” by the Council on Education of the American Veterinary Medical Association. Dean Kenneth D. Weide received the final written report of the Council’s evaluation in January.

In the summary, the report stated: “The College is making a commendable effort to provide students with the broad background and the special skills needed as they approach their careers in veterinary medicine.”

However, the report said that a few specific problems remain to be corrected. While all of the recommendations made in the previous evaluation (two years ago) had been met, especially concerning newer and larger physical facilities, laboratory animal holding areas must be improved. The report did note that renovation is presently underway.

Concern was expressed in the report regarding radiology instrumentation in the Teaching Hospital: “. . . all of the equipment is in a state of obsolescence that requires frequent and expensive repairs . . . less equipment of modern design would provide more effective teaching time.”

Nevertheless, every person who was involved in preparing that report is aware of the fiscal constraints under which the College operates. Of the more than \$5 million total budget for fiscal year 1975-76, slightly less than \$3 million were provided by state appropriations. Approximately 81% of all funds went to salaries and wages. The report agreed with the College’s concern regarding lower than average salaries paid to many of the faculty and that funding does not permit recruitment of more faculty for back-up strength in some areas.

While mention of problem areas occasionally dotted the report, most of the College’s activities and responsibilities were praised throughout the evaluation. The College’s library was commended for its excellent space, selection of books, and outstanding staff. The Veterinary Medical Diagnostic Laboratory was recognized as an interdisciplinary service, teaching, and research unit within the College, “. . . staffed and organized to focus maximum effort on the diagnosis of disease conditions in a wide variety of species on a day-to-day basis.”

The Teaching Hospital, under the Department of Veterinary Medicine and Surgery, was singled out in the report as being: “. . . the laboratory portion of the professional curriculum.” The Teaching Hospital was found to be: “. . . adequate, maintained in sanitary condition, and in general well equipped . . . [and able to] generate patients (local and referred) which are sufficient in numbers to provide teaching materials.”

In general, the evaluation found that the other three departments within the College were surpassing minimal requirements concerning teaching, research and service.

The report pointed out that the faculty overall is: “. . . highly qualified . . . [and] averaging more than five years each of experience in private practice, regulatory work, or military veterinary medicine, and twelve years in teaching.”

The last page of the report stated: “The classification of accreditation of the College of Veterinary Medicine, University of Missouri, is *full accreditation*.”

The College is required to file annual progress reports with the Council of Education, especially related to alleviation of concerns and deficiencies. A full accreditation evaluation is required every five years.



Just before he returned from his teaching assignment in Brazil, Dr. C. J. Bierschwal was presented an engraved plaque as a token of appreciation from his students. Dr. Bierschwal (L) is proudly showing the plaque to Dean Kenneth D. Weide (R).

Dr. Bierschwal Returns From Overseas

Dr. C. J. Bierschwal returned December 7 from Porte Alegre, Brazil, where he had been working since August 4 as a consultant to the College of Veterinary Medicine, Brazil Universidade Federal Do Rio Grande Do Sul, as part of the Programa De Educacao Agricola Superior.

Dr. Bierschwal taught theriogenology to graduate students, worked in the research programs, and consulted with practitioners in the field.

In comparing the Brazil College to this College, Dr. Bierschwal praised the technical information made available to the students, but mentioned that some of the clinical equipment of the Brazil College

could be upgraded and that students there do not receive as much clinical experience as do students at this College. Like students here, Brazilian students must have had some pre-veterinary education before entering the four-year professional program.

Dr. Bierschwal said that livestock producers and practitioners in Brazil still have to contend with tuberculosis and brucellosis in addition to problems not found in the U.S. such as Foot and Mouth Disease and some diseases carried by ectoparasites.

The program in which Dr. Bierschwal participated is currently coordinated by the Latin American Studies Center of Michigan State University.

Dr. Poppensiek to Deliver Precommencement Address

Dr. George C. Poppensiek will be the 1978 Precommencement speaker for the College of Veterinary Medicine. Dr. Poppensiek is James Law Professor of Comparative Medicine of the New York State College of Veterinary Medicine and Professor of Comparative Pathology of the New York State College of Medicine. He is also Research Professor with the Department of Preventative Medicine, Upstate Medical Center, New York.



Since 1974, Dr. Poppensiek's work has been in that broad area of research that lies between Veterinary Medicine and Human Medicine. His is a unique position in that he can help bring these two diverse fields of medicine closer together.

Dr. Poppensiek had been Dean of New York State College of Veterinary Medicine for 15 years. In the last year of his administration, the eight story Research Tower was dedicated. The structure, with 80 laboratories, 4 electron microscopes, and 5 surgical areas, represents one of the world's most advanced veterinary research facilities.

The same year saw the formation of the Cornell Feline Research Laboratory. Work was also begun on expanding the Veterinary Medical Diagnostic Laboratory. During Dr. Poppensiek's administration, research was expanded on poultry disease and aquatic animal disease.

Before becoming Dean of New York State Veterinary College, Dr. Poppensiek had been associated with Plum Island Animal Disease Laboratory. His work was concentrated on Foot and Mouth Disease, especially with means of inactivating the virus of that disease.

Dr. Poppensiek was among the researchers who developed a leptospira antigen and vaccine, and a combined canine distemper-infectious hepatitis vaccine which employed live viruses.

Dr. Poppensiek was awarded his V.M.D. degree from the University of Pennsylvania in 1942 and an M.S. degree from Cornell University in 1951.

Precommencement exercises for the College of Veterinary Medicine will be Saturday, May 13, 1978, in the main area of Hearn's Multipurpose Building, beginning at 8:30 a.m.



Dr. Martin is MVMA President

Dr. Charles E. Martin was elected President of the Missouri Veterinary Medical Association during their 86th Annual Meeting held at Tan-Tar-A Resort, January 29-31. The gavel of office was handed to Dr. Martin (L) by Dr. Jack L. Bostwick (R), District 7 member of the AVMA Executive Board.

Dr. Martin received his D.V.M. and B.S. (Agriculture) degrees in 1958 from the University of Missouri, and M.S. degree from Purdue in 1967. From 1958 to 1965, he practiced in the Marceline, Missouri, area. In 1967, he joined the faculty at the College. Currently, Dr. Martin is Professor and Chairman of the Department of Veterinary Medicine and Surgery.

Dr. Martin is a Charter Diplomate of the American College of Theriogenologists and presently serves on the Executive Board.

Concerning his new office, Dr. Martin stated: "This year, 1978, is destined to be a

very busy year, and that actions taken by MVMA will hopefully be those which will foster the progress of Veterinary Medicine and assist the livestock industry and the animal-owning public."

Other officers elected at the MVMA Annual Meeting were: Dr. T. J. Vogelweid (MO '51), Moberly, President-Elect; Dr. G. T. Barrows (MO '57), Kansas City, Vice President; Dr. E. J. Powell (MO '64), Maryville, Secretary-Treasurer. Dr. W. F. Bryson (MO '53), Fredericktown, outgoing President, was presented the MVMA's "Veterinarian of the Year" award.

Jefferson Club's Veterinary Medicine Chapter Gains Another Member

Mrs. Bernice Colson of Riverside, California, has become the second member of this chapter as a Distinguished Fellow. The distinction of "Distinguished Fellow" designates those who have donated at least \$100,000 to the University in some form of bequest. Anyone wishing to become a Jefferson Club member may specify the College of Veterinary Medicine.

Mrs. Colson has had a life-long interest in animal welfare and is a former resident of St. Louis. Income from her donation will

be used to aid students needing financial assistance.

Dr. J. D. Rhoades was guest editor of *The Veterinary Clinics of North America*, Vol. 7, No. 4. Dr. Rhoades and Dr. C. W. Foley co-authored an article in this volume, "Cryptorchidism and Intersexuality". Dr. C. L. Barton contributed "Canine Brucellosis" and "Canine Vaginitis".

Pseudorabies in Missouri—

Continued Alertness to the Occurrence of

Due to severe outbreaks of pseudorabies in Iowa, Indiana and Illinois which began in 1974 and have increased in number until the present time, a control program for this important swine disease was started in Missouri in 1977. This program was instituted in order to facilitate the movement of swine from Missouri to other states, to prevent the spread of pseudorabies within the state, and to determine the incidence of the disease in the state. Pseudorabies was made a reportable disease and only animals with negative serum neutralization tests were permitted to move through collection

points and livestock shows. The certified pseudorabies free herd plan introduced for breeding stock in 1977 requires all the breeding stock in a herd to have negative serum neutralization tests for pseudorabies, but only a negative retest of 25% of the animals every three months, to allow unrestricted movement from the herd.

The two laboratory tests used at the Veterinary Medical Diagnostic Laboratory for pseudorabies are the Fluorescent Antibody Tissue Culture technique for the isolation and identification of the virus from sick or dead animals, and the serum neutralization test on healthy animals for antibodies to the virus to determine past exposure. The pseudorabies serum neutralization test for swine movement was started May 16, 1977 with support from the Missouri Pork Producers Association and the Missouri Department of Agriculture. The number of laboratory confirmed cases of pseudorabies in Missouri detected by the Fluorescent Antibody Tissue Culture test from 1970-1977 was 44 cases out of 1,648 cases tested (2.7%), Table 1.¹ The virus has been isolated in Missouri from dogs, cats, cattle, one rat and a large number of swine. All virus isolations made from other species were from animals associated with swine.

From May 16, 1977 to December 31, 1977 there were 19,874 swine sera from 1,506 submissions tested by the serum neutralization procedure for pseudorabies at the Veterinary Medical Diagnostic Laboratory. Due to retests for herd certification and some toxic samples, these sera were from 15,530 animals from 684 Missouri herds. Of these individual animals 332 of the 15,530 tested (2.14%) and 48 of the 684 herds (7.02%) had antibodies to

Table 1
Pseudorabies in Missouri 1970-1977

Year	No. Pos.	Total Cases	% Cases Pos.
1970	5	486+	1
1971	4	112	3.2
1972	* 5	129	3.9
1973	2	134	1.5
1974	4	107	3.7
1975	5	132	3.8
1976	*10	243	4
1977	* 9	305	3
TOTAL:	44	1648	2.7

+Includes field investigations for hog cholera

*4 cases in dogs, 1 in cattle, all others in swine



Technician is adding serum to wells for testing. The serum is taken from vials in the rack on the left.

Pseudorabies Testing Program Benefits Missouri

Because of efforts by the Veterinary Medical Diagnostic Laboratory, Missouri pork producers are now in a much better situation than producers in some neighboring states for interstate shipment of swine. "Missouri cannot afford to have its swine exports curtailed due to pseudorabies," said Dr. Robert Solorzano who is in charge of the Diagnostic Laboratory's pseudorabies serum neutralization testing program.

State regulations currently prohibit showing or marketing pigs in Missouri without a 'negative' serum test. On top of that, a number of states prohibit importation of swine unless the animals are proven

not to be pseudorabies carriers. Because Missouri is a major exporter of pigs in the U.S., especially breeding stock, a laboratory which can conduct serum neutralization tests is indispensable.

Since May 16, 1977, the College's Diagnostic Laboratory has been conducting these tests for practitioners and pork producers to identify those herds which have been exposed to pseudorabies. At the moment, this laboratory is the only facility in Missouri that has the capability for pseudorabies testing.

In the eight months of testing since the inception of the program, 48 herds out of 684 (7.02%) have been tested as 'positive' — that is, antibody titers were derived

from the samples. On the other hand, only 332 samples out of 15,530 animals (2.14%) have been found to be 'positive'. Dr. Solorzano attributes this difference in percentages to "only a few animals within some herds which were found to have been positive."

This testing program was started with a grant from the Missouri Pork Producers Association and has continued under a contract with the Missouri Department of Agriculture. These funds have defrayed two-thirds of the costs of the tests and have enabled the Diagnostic Laboratory to hold the charge to the individual producer or practitioner to \$1 per sample.

1977: A Progress Report

of This Disease Is Important For Its Control

pseudorabies, Table 2.² The number of counties from which sera were tested is 94 of 114 (82.46%) and the number of positive counties per number of counties tested was 27 of 94 (28.72%). When the results obtained by virus isolation from 1970 to 1977 and serology in 1977 are combined, 42 counties of 114 (36.8%) show evidence of the presence of pseudorabies virus during the past eight years and thirty of 114 (26%) give evidence of its presence this year. The map of Missouri (cover) has the location of farms with positive serology tests in 1977, positive virus isolations 1970-1977, and positives by serology and virus isolation. The wide-spread distribution of positive tests which are evidence of the occurrence of pseudorabies in Missouri and the low number of positives by virology and serology gives the picture of a disease endemic in the swine population. Outbreaks that have been followed in which quarantine and disinfection were the only control measures employed, appeared to subside without difficulty.

One of the problems associated with the serum neutralization test in the early stages of use in Missouri was a high per cent of toxic reactions in improperly submitted samples, 403 of 2,712 (15%) yielded a "no test" result. The problem has been largely resolved due to improved sampling procedures and only 755 animals of 16,285 tested (4.64%) had toxic sera. The number of toxic sera of the total number of sera submitted was 1,606 of 19,874 (8.08%). The number of herds which had one or more toxic sera was 59 of 707 (8.34%).

A new immunodiffusion test for pseudorabies which is not yet available for evaluation has been used experimentally at the National Animal Disease Center. Its advantages are a fast turnaround time of two days compared to four days for the serum neutralization test and the elimination of toxic reactions. The disadvantages of the test are less sensitivity than the serum neutralization test and the inability for quantitation. Sensitivity would appear not to be a problem for most of the titers in Missouri (93%) were high. Quantitation which is desirable to follow the progress of control measures by follow-up tests, would be achieved by using the serum neutraliza-

tion procedure as a backup with immunodiffusion used for screening and rapid turnaround times. Specificity has not yet been examined and other herpes viruses in swine, i.e. cytomegaloviruses, Infectious Bovine Rhinotracheitis, or strain variations of pseudorabies could create problems. The procedure for the preparation of the reagents is complex and time-consuming. A commercial firm is preparing these reagents with a projected summer completion time.

At present the three objectives of the pseudorabies program are being fulfilled with the techniques available, but continued alertness to the occurrence of this disease is important for its control.

Robert F. Solorzano, Ph.D.
Associate Professor, Veterinary Microbiology

David G. Thawley, B.V.Sc.
Assistant Professor, Veterinary Microbiology

¹The 23 counties which had laboratory confirmed cases of pseudorabies from 1970-1977 were: Chariton 1, Barry 1, Jackson 1, Lafayette 6, Saline 1, Cooper 1, Scotland 1, Linn 1, Boone 6, Callaway 2, Moniteau 1, St. Charles 1, Montgomery 4, Audrain 2, Jefferson 1, Howard 1, Pike 3, Pettis 1, Lincoln 2, Monroe 3, Butler 1, Carroll 2, and Clinton 1. In 1977 the eight counties with nine laboratory confirmed cases of pseudorabies were: Chariton 1, Barry 1, Jackson 1, Lafayette 2, Saline 1, Montgomery 1, Lincoln 1, and Carroll 1.

²Titer distribution of the positive sera was 26-1:2 (7.83%), 31-1:4 (9.34%), 27-1:8 (8.13%), 46-1:16 (13.86%), 57-1:32 (17.17%), 67-1:64 (20.18%), 63-1:128 (18.98%), 11-1:256 (3.31%), 4-1:512 (4%). The 27 counties positive by serology for pseudorabies and the number of positive animals per animals tested in the county were: Audrain 24/127 (18.9%), Caldwell 59/919 (6.42%), Cape Girardeau 1/225 (.44%), Carroll 52/459 (11.33%), Clay 29/121 (23.97%), Dallas 1/296 (.34%), Davies 13/254 (5.12%), Gentry 2/59 (3.39%), Greene 44/940 (4.68%), Harrison 2/245 (.82%), Howell 1/926 (.11%), Lafayette 4/335 (1.19%), Lewis 7/60 (11.67%), Lincoln 5/16 (31.25%), Linn 1/227 (.44%), Livingston 31/192 (16.15%), Montgomery 6/1532 (.39%), Nodaway 9/74 (12.16%), Osage 3/384 (.78%), Pettis 3/150 (2%), Pike 21/1464 (1.43%), Ralls 3/9 (33.33%), Ray 3/75 (4%), Shannon 1/94 (1.06%), Shelby 1/694 (.14%), Vernon 1/592 (.17%), and Wayne 5/45 (11.11%).

Drs. R. S. Youngquist, C. J. Bierschwal, R. G. Elmore (with A. L. Jenkins, R. H. Schultz, and J. H. Widmer) have had published, "Induction of Abortion in Feedlot Heifers with Cloprostenol", *Therio.*, 7, 5:305-312.

Table 2
Pseudorabies Serology in Missouri
May 16, 1977 - December 31, 1977

#SAMPLES TESTED	19,874
#SUBMISSIONS	1,506
#ANIMALS	15,530
#POSITIVE ANIMALS	332 (2.14%)
#HERDS	684
#POSITIVE HERDS	48 (7.02%)

Pseudorabies Vaccination in Relation to Testing

Several practitioners have been asked by clients about the effect on the serum neutralization test of vaccinating their animals to prevent pseudorabies. The problem, according to Dr. Solorzano, is that a vaccinated pig would give a 'positive' serum test result that would make the animal indistinguishable from a possible pseudorabies carrier.

The Orthopedic Foundation for Animals has awarded a grant-in-aid of \$5,000 for study of genetic aspects of canine hip dysplasia under the supervision of Dr. C. W. Foley.

Drs. L. D. Olson, D. E. Rodabaugh and L. G. Morehouse have had published "Comparison of Furazolidone and Carbadox in the Feed for Treatment of *Salmonella choleraesuis* in Swine", *Am. J. Vet. Res.*, 38, 10:1471-1477.

Dr. J. S. Larsen has had published "Lumbosacral Transitional Vertebrae in the Dog", *J. Am. Vet. Radiol. Soc.*, 18, 3:76-81.

Drs. G. M. Buening, L. Perryman and T. McGuire have had published "Practical Methods of Determining Serum Immunoglobulin M and Immunoglobulin G Concentrations in Foals", *JAVMA*, 171, 5:455-458.

Dr. L. A. Selby has contributed "Value and Methods of Animal Studies in Epidemiology" to the *Handbook of Teratology*, edited by F. Clarke Fraser, Plenum Press, 1977.

Diagnosis of Mycotoxicosis

Diagnosis of poisoning or impaired performance from moldy feeds is a challenge. Mycotoxins, known toxic metabolites of certain fungi, may be produced under certain environmental conditions but not under others. Presence of fungal contamination, even with a fungus capable of producing a mycotoxin, does not prove a diagnosis. Only when a mycotoxin is isolated which produces a disease syndrome compatible with that toxin can a diagnosis of mycotoxin poisoning be made. Thus "mold counts" or even specific mold cultures rarely are useful except to suggest a *potential* problem. On the other hand, absence of visible mold in a feed, especially milled feeds, does not assure absence of mycotoxins. Processes such as steaming, roasting or pelleting may kill contaminating fungi while the more stable mycotoxins remain.

Specific recognition of toxigenic fungi requires expertise in mycology as well as facilities and media for definitive identification. It is not recommended that such identification be attempted unless individuals are trained and experienced, since even experts may disagree on certain aspects of fungal classification.

Mycotoxin identification using chemical analysis is available in the Veterinary Medical Diagnostic Laboratory for several common mycotoxins. These include aflatoxin, zearalenone (F-2), T-2 Trichothecane toxin, diacetoxyscirpenol (DAS), ochratoxin, rubratoxin and sterigmatocystin. Representative samples of a suspected feed or grain are essential for a feed supply to be properly evaluated since mycotoxin concentration may vary widely within a storage facility.

In many cases, the only way to evaluate potential effects of mycotoxins is to feed a test group of animals with a suspect feed. The animals should be of the same kind to which feed will normally be given. Six to ten animals should be fed for a minimum of two weeks with close attention paid to amount of feed consumed and rate of gain.

Dealing with mycotoxins is a complex and difficult situation with many unanswered questions. Only by considering all factors available can a reasonable decision be made about utilization of moldy or damaged feeds.

Gary D. Osweiler, D.V.M.
Associate Professor,
Veterinary Anatomy-Physiology

Swine Reproduction Problems and the Mycotoxin, Zearalenone.

Corn stored under cold conditions in the Midwest is subject to contamination by the fungus, *Fusarium roseum*. Its toxin, zearalenone, is more of a problem in Missouri and those states north than is aflatoxin, which is the bane of corn growers in the South.

Sows which ingest zearalenone can show false signs of estrus. High levels of the toxin in sows can result in infertility.

The National Pork Producers Association considers reproductive failure one of the five major problems the swine industry now faces. The Association recently awarded a grant to the College for the study of the role of *Fusarium* toxins in infertility of swine. Dr. Gary D. Osweiler is in charge of the project and he is assisted by Dr. Charles W. Foley and Dr. Larry P. Ruhr (as reported in the September-October issue of *V.M.R.*).

The three researchers will first investigate what effect if any zearalenone has on the fertility of boars. Three groups of boars will be exposed over a seven-week period to different dose levels of the toxin. A fourth group of boars will be used as a control. During exposure and the seven-week ob-

servation period after the last of the toxin has been given, all boars will be given a standard fertility examination. After that, studies will be made to determine any effects on hormone levels in the blood.

In the future, Dr. Osweiler hopes to expand the project to include toxin effects in gilts given small doses. "Even if the level of toxin the gilt is exposed to is so low that she shows no symptoms of false estrus, there may be other, long-range effects," added Dr. Osweiler, "that no one is sure of right now."

In that work, evaluations will be made of the gilts' estrus cycles, the character of estrus, and comparisons of litter sizes. In addition, studies will be made of hormone levels in the blood similar to the studies with boars.

This research should give more definitive answers than before to two questions the pork producer faces when he discovers that his stored corn has become contaminated with the fungus, *Fusarium roseum*. How much of this fungus can the herd be exposed to with safety? Can the herd be exposed at all without harm?

Inter-Disciplinary Interest

The Immunology Journal Club provides an opportunity for members of this College's faculty to meet with clinicians and researchers from UMC's School of Medicine and the Ellis Fischel Cancer Research Center.

At each of the monthly meetings, a participant will discuss in depth a particular article which has appeared in a professional journal. A critique is made of the methods, experiments, ideas, etc. set forth in the article.

These meetings have been taking place for years and currently about ten people attend each meeting which is held in Connaway Hall.



Check Presented

The Upjohn Company donated \$500 to the College's Student Chapter of the AVMA. Mr. Rueben Meredith (R), Chapter President and fourth-year student, received the check on January 19 from Mr. Chuck Berrier (L), sales representative for the Upjohn Company.

Funds for Ophthalmology Training Program

The James H. Woods Foundation of St. Louis has provided a grant to the College to fund a residency program in veterinary ophthalmology, beginning in July, 1978.

Known as the James H. Woods Residency in Veterinary Ophthalmology, this program would train a veterinarian for two years under the guidance of the College's present ophthalmologist, Dr. Harlen Jensen.

Very few veterinarians have specialized in ophthalmology. Of the approximately 32,000 veterinarians in this country, only 38 are recognized in the discipline by the American College of Veterinary Ophthalmology.

The Woods Foundation has provided support to the College in a variety of areas, and maintains an active interest in animal and poultry health.

New Director for College's Animal Resource Program

In January, Dr. John Lenz assumed responsibilities for animal resources care and management of the College.

Before assuming his present duties, Dr. Lenz had been Director, Animal Research, Wayne County General Hospital in Eloise, Michigan.

Dr. Lenz is looking forward to teaching again. He will be teaching genetics of domestic animals in addition to laboratory animal medicine which he feels is a challenging field for veterinarians because of the vast numbers of small animals kept for research and because practitioners are treating increasing numbers of pet rodents.

One of Dr. Lenz's first efforts at the College will be to improve laboratory animal facilities.

Dr. Lenz received his D.V.M. degree in 1969 from Kansas State University and an M.A. degree from the University of Kansas in mammalian genetics. Among other organizations, he is an active member of the American Association for Laboratory Animal Science and the American Society of Laboratory Animal Practitioners.



Cardiologist Makes Presentation

Dr. Larry Tilly made a detailed presentation on "Canine and Feline Cardiac Arrhythmias" on January 19 to a full audience in the Teaching Hospital Auditorium. Dr. Tilly is staff cardiologist at the Animal Medical Center in New York City. His presentation was jointly sponsored by the College's Visiting Lecturer's Series and the Student Chapter of the AVMA.

Forages Kill Cattle

Grass Tetany

Several cases of grass tetany which have been reported this fall and winter are the first outstanding occurrences of this condition since the epizootic of March, 1973. The reappearance of this condition would be attributed to a good growing season for the grass coupled with cloudy, cool, windy weather. Most cases involve cows in peak milk production with nursing calves three to six weeks of age.

A confirmed diagnosis of grass tetany is difficult to make from a necropsy of the dead animal. Since this condition produces no pathognomonic lesions, a diagnosis of grass tetany is usually made from history (anamnesis) and an absence of any other cause of death.

Magnesium oxide is beneficial as part of the mineral supplement but is not completely effective in preventing all cases of grass tetany. The feeding of legume hay or grain is another useful preventive measure.

Nitrate Poisoning

The extension veterinarian has received an unusual number of reports of cattle losses presumably caused by nitrate poisoning. One example was twenty-seven head of cows which had been receiving sudan cross hay without any noticeable problem for several feedings. The hay crop had received 100 pounds of actual nitrogen per acre. But after one feeding the owner found 21 of the 27 cows dead. Four days later, three of the six survivors aborted.

Another case was caused by oat hay which had been grown on land used the two previous seasons for feeding turkeys. The oats lodged and were cut in the milk stage for hay. A large bale was fed to 21

cows during the evening. The owner found 13 dead cows the following morning.

Nitrate tests were positive on the oat hay. Tests on the hybrid sudan indicated some bales were safe for feeding while others appeared to be too dangerous to use. Tests on hay bales from other cases have usually shown that results are highly variable within the same field. Some bales appear to be safe for feeding while others are nitrate positive.

Fast growing forages cut green before becoming too coarse make hay of high nutritive value and, if cured properly, make very palatable feed for cattle. However, these rapid growing forages have taken rather large amounts of nitrogen from the soil and nitrate may be trapped in the plant before it is converted to plant protein.

M Principle of Aflatoxin

Occasionally, young nursing calves have been reported to have lost feet or, rarely, ear tips or ends of tails. Upon examination, the parts are lost due to necrosis following thrombosis of blood vessels. These lesions are identical to those produced by fescue or ergot in older animals. This condition in young calves is assumed to be caused by the M principle of aflatoxin. This toxin is secreted through the milk and is toxic to the nursing calf rather than the cow.

A black angus cow in O'Fallon, Missouri, recently gave birth to quadruplets — two females and two males, weighing an average of 25 pounds apiece. All calves died shortly after birth. What that cow had been eating nine months before has yet to be determined.

Bonnard L. Moseley, D.V.M.
Extension Veterinarian

New Brucellosis Vaccine Being Sought

Gerald Buening, Associate Professor of Veterinary Microbiology.

For his research toward such a vaccine, Dr. Buening was awarded a one-year, \$25,000 grant from the Agricultural Research Service of USDA. The research would involve trying to chemically modify the *Brucella abortus* organism or protein fractions of this bacteria. Dr. William Fales, Assistant Professor of Veterinary Microbiology, is co-investigator.

More Research Funds Possible

New Congressional Act May Mean Long-Term Benefits for the College

The passage by Congress of the Food and Agricultural Act of 1977 could mean significant progress for the College's research program. Nevertheless, several issues must be resolved or defined in the Act before the College receives funding.

Dr. L. C. Murphy, Associate Dean for Research and Graduate Studies for the College, is responsible for initiating and coordinating efforts for receiving maximum possible funds from the Act.

Subtitle E of the Act is of particular interest. This provision was included to promote improved health and productivity of income-producing animals. This means more dollars may be available from the federal government for research into animal diseases. The Act authorizes Congress to appropriate as much as \$25 million annually to serve the purposes of Subtitle E. However, at this time no appropriations have been made.

Almost half (48%) of any funds appropriated will be awarded to research institutions in each state in relation to the value of the income of domestic livestock (including horses) and poultry in that state, and the inventory of those animals in each state. Because Missouri ranks very high in this regard compared to the other 49 states, Missouri should be receiving a very significant portion of those dollars.

The other 48% of any appropriated funds will be divided among those states in proportion to their animal health research capacity. One issue that must be resolved in Subtitle E is what is meant by "research capacity."

"Research capacity" may soon be specifically defined. The Secretary of USDA is

currently organizing an Animal Health Science Research Advisory Board. That Board, along with the USDA Science and Education Administration, will be working out the details of the definition of "research capacity."

The Science and Education Administration is a Washington, D.C., based arm of State Agricultural Experiment Stations and will be administering Subtitle E. That office will be receiving information concerning on-going research at most institutions from the Current Research Information System (CRIS), a computerized information retrieval system operated by the USDA and designed to give any institution up-to-date information on any agricultural research activity.

All research projects at the College will be listed with CRIS. At this time, those projects that are funded by USDA are already in CRIS. The College will be able to more fully relate its capacities to whatever definition is given to "research capacity" by listing its research with CRIS.

In addition to CRIS listing, the faculty and administration of the College will have to assess current research capabilities. Concerning this, Dr. Murphy commented: "We feel that an integral part of the College's mission is research. We have a number of highly capable research scientists presently involved in research on animal diseases and we can be eligible for funds."

A committee was formed in January consisting of faculty from this College and the College of Agriculture to develop a comprehensive animal health and disease research program for Missouri.

The earliest date that funds may be received by the College depends on the time required for the Secretary of USDA to establish his advisory board, and then for various provisions of the Act to be more clearly defined. After that, appropriation bills must be passed by Congress.

Dr. Murphy remarked funds may not be available until October, 1979. However, once funding has begun, it will probably be continual.

One of the final provisions made in Subtitle E is that money received for any project over \$100,000 must be matched by other dollars. Efforts are underway by College administrators to obtain sufficient matching funds from non-federal sources to be in a position to quickly qualify for Subtitle E's funding formula.

Additional Duties for Administrator

Dr. L. C. Murphy has been recently appointed Assistant Director for Veterinary Medicine of the Missouri Agricultural Experiment Station. He is taking this position in addition to his current duties as Associate Dean for Research and Graduate Studies of the College. Dr. Murphy will be participating in various committee activities with the College of Agriculture and will function as a liaison between that College and the College of Veterinary Medicine.



Veterinary Medical Review

College of Veterinary Medicine
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Barry L. Siler

Editor: Barry L. Siler
W-205 Veterinary Medicine Bldg.
College of Veterinary Medicine,
University of Missouri, Columbia, MO 65201

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UNIVERSITY OF MISSOURI

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on committee?*

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