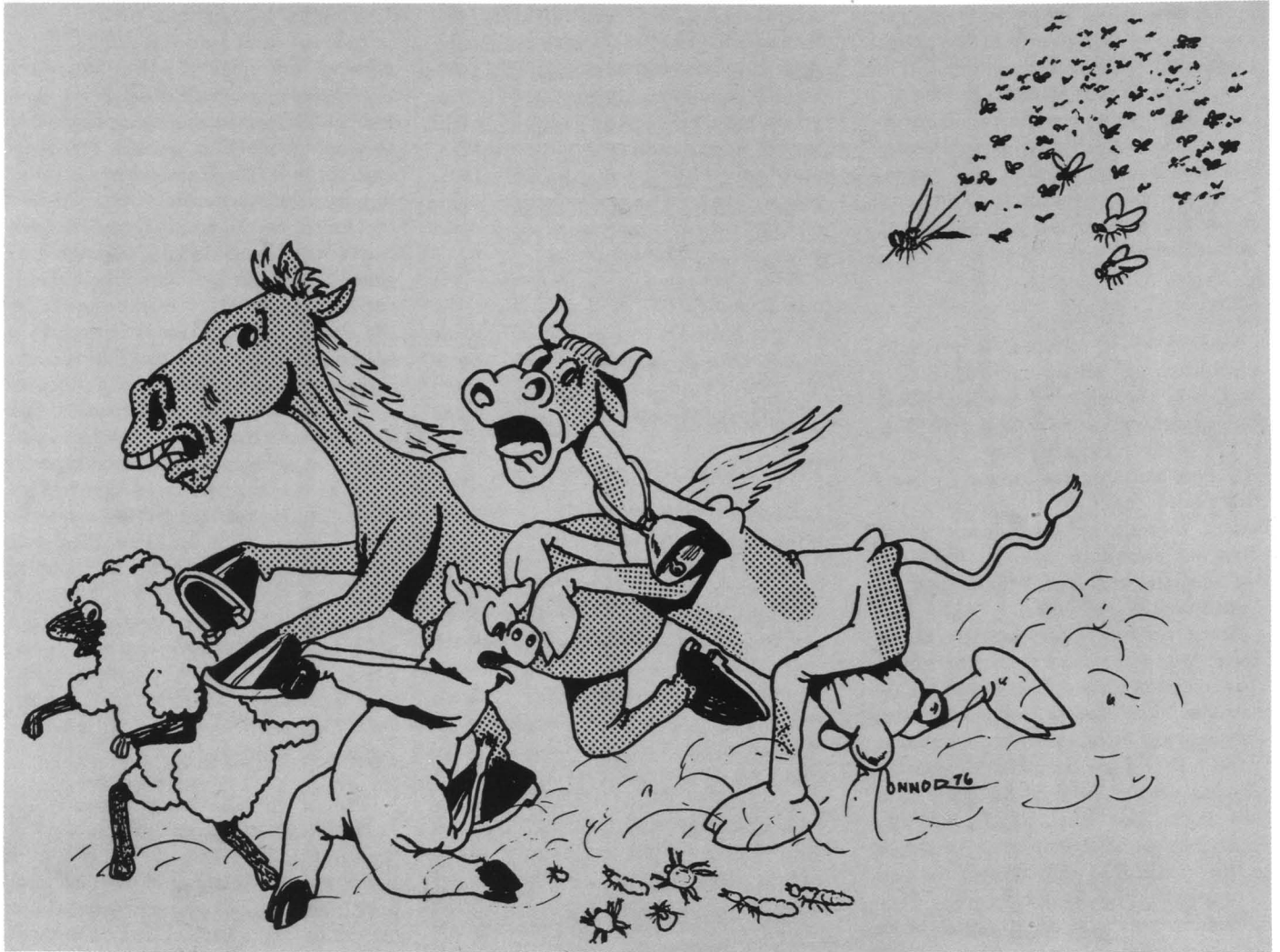


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Ectoparasites bug livestock. See inside for scoop. Also see update on swine influenza.

Ectoparasitism of livestock

Ectoparasites of the pig, cow, sheep and horse include lice, flies, ticks, mites and some filarid nematodes (note absence of fleas). Some of these pests are rather permanent residents and are transmitted by contact, while others are temporary guests and usually pass from one animal to another without the requirement of direct body contact. Some are chewers and cause hair loss and scaliness; others are bloodsuckers and may cause anemia. All are capable, though, of causing "worry" with consequent loss of interest in feeding, poor weight gain and general unthriftiness.

Lice

Pediculosis or lousiness is primarily a problem in colder months and is frequently the cause of much rubbing and scratching. Lice are photophobic, so the darker, gloomier days of winter are more suitable for them. Animals also crowd together more during the winter, thus allowing easier transmission from one animal to another. Some lice are bloodsuckers and others feed on epidermal scale and hair.

Swine commonly play host to *Haematopinus suis*, a bloodsucker and the largest louse on domestic animals, measuring up to 6 mm. These black lice stand out noticeably on white or pale skinned pigs such as Yorks. They may be found in greatest numbers around the skinfolds of the neck and axilla; but when populations are high, they spread over much of the surface of the trunk. The thin skin of the ears is especially popular for feeding. They cement to hairs eggs or nits which hatch rather quickly. All stages feed on the pig and the life span is about one month.

Lice are rather host-specific and cannot live off pigs for very long. Occasionally one will be seen attempting to feed on man but it does not do well on hosts other than the pig. Malathion, ronnel and cioldrin in dust or spray forms are generally quite effective. Application is best done in mid-autumn when the weather is not too cold for sprays. Be sure to cover the whole body including inside the ears. Repeat in 14-21 days in order to kill lice that have hatched since the first treatment. If pigs show lousiness during the winter and can be kept inside for a short time, a spray may be used. Labels of the compound must be read carefully in order to be aware of restrictions prior to slaughter.

Lice of cattle and sheep also prefer wintertime. Chewing and bloodsucking lice are important pests. Chewing may cause scaliness, hair loss and breaking of wool. Bloodsucking lice can cause severe anemia, especially of calves and lambs, with death as a real possibility. A striking feature of lousiness is that some animals seem much more susceptible than others and these beasts may be recognized as ones which stand apart from the herd, often appearing rather depressed. Dips, pour-ons and spot-ons give a high degree of louse reduction and are often done in conjunction with grub control.

The chewing louse, *Damalinia*, is more common on the horse than is the sucking louse. It too appears during the winter causing a patchy alopecia. Since horses become hard to handle when spray is applied, insecticidal dusts might be best.

Two-winged-fly types

Dipteran pests are great in numbers and varieties. They include horse and deer flies, gnats, mosquitoes, stable and face flies, bottle flies, maggots and grubs, and keds. Horse and deer flies attack any warm-blooded animal and are especially troublesome during the hot summer months. Horseflies are considered the primary vector of *Anaplasma* in Missouri cattle. Since they have cutting-sponging mouthparts and secrete an anticoagulant, blood often flows freely from the wounds. This blood induces other flies to alight and eggs of some, such as bottle flies, are deposited around the wound with emerging maggots then feeding on necrotic tissue.

Wounds caused by other ectoparasites or by physical trauma also attract flies. Blackflies and other gnats (*Simulium*, *Culicoides*) are bloodsucking too and may cause large welts. Blackflies seem to bother horses a great deal, especially inside the ear, forming large whitish plaques or ear cankers.

Mosquitoes are bloodsuckers and vectors of viruses which cause encephalitides, which chiefly affect the horse. The ked, *Melophagus ovinus*, is a bloodsucker on sheep. It actually is a wingless fly and spends its whole cycle on the sheep.

Face flies are pests of cattle. They feed on nasal and ocular discharge and are potential vectors of *Moraxella*, the etiologic agent of pinkeye. Eggs are deposited in fresh cow dung. Hornflies, *Haematobia (Siphona)*, cover the backs of

cattle and also lay eggs when cows defecate. Stable flies, *Stomoxys*, prefer damp straw for egg laying. They inflict painful wounds, feed on blood and cause much irritation. Fly "strike" or deposit of eggs with subsequent appearance of maggots is common, especially involving bottle flies. Damp, soiled wool or hair or oozing wounds attract these flies and provide an ideal substrate for secondary bacterial infections. Cattle grubs, such as *Hypoderma*, migrate through the body and are evident in the late spring when they cause nodules or "warbles" to appear under the hide. Care must be taken in applying a systemic insecticide after September in Missouri since this may cause the breakdown of migrating grubs and a consequent anaphylactic response.

Control of dipterans is directed at several strategic points: eradication of the adult, removal of sites of egg deposit and larval support, eradication of the maggot and proper care of the host. Dips and sprays may provide temporary relief from attack by certain types of flies. Dust bags located under trees or over doorways are helpful. Horn flies seem quite susceptible, whereas horse-, black- and face flies are little affected. Insecticidal smears and sprays over wounds will help protect against maggots. Systemic grubicides are effective and safe late in the summer against cattle grub migration but there is no good control for sheep keds.

Ticks

Hard ticks are a perennial summertime problem in Missouri. Cattle and to a lesser extent horses and swine suffer greatly from the irritation and blood loss caused by all stages of ticks. Wounds attract flies and allow secondary bacterial infection. *Anaplasma* may be transmitted by ticks. High pressure sprays and dipping vats are most effective.

Mites

Mites cause mange and those important to livestock are quite similar. *Sarcoptes*, the only mite really a problem on swine, is very common. It causes hyperkeratinization around the ears and head of pigs and there is much rubbing because of the irritation. These mites burrow and feed on layers of the epidermis. They are rather host specific but man can be affected by them for a short period. Malathion sprays or dusts are currently recommended with application made prior to farrowing, at weaning and prior to breeding.

Sarcoptes of different varieties are also found on sheep, cattle and horses. *Psoroptes* and *Chorioptes* are important scab mites which do not burrow and which cause much damage to wool and hair and excoriation of skin. These mites are highly transmissible and are cause for quarantine. Organophosphate high pressure sprays or dips are recommended for control.

Pest control

A list of some of the insecticides available for ectoparasite control is included with this article. It is not all-inclusive but should be representative of those available. It is important to note that most are organophosphates which are cholinesterase inhibitors and should not be applied concurrently with other organophosphates. The manufacturer's recommendations for use, dose level, method of application, suggested time to apply, restrictions related to slaughter and contraindications or possible toxic effects must be clearly understood. Sprays, dusts and dips depend upon the geographic area, type of livestock operations and type of ectoparasite being dealt with. -- Dr. Robert M. Corwin

INSECTICIDES AND ACARINICIDES*

- A. Organophosphates (cholinesterase inhibitor)
 1. crotoxyphos - Ciodrin[®], Ciovap[®]
 2. coumaphos - Co-Ral[®]
 3. crufomate - Ruelene[®]
 4. dichlorvos (DVP) - Vapona[®]
 5. famphur - Warbex[®]
 6. fenthion - Tiguvon[®]
 7. malathion - Cythion[®]
 8. ronnel - Korlan[®], Trolene[®]
- B. Cyclodiene (neurotoxicant)
 1. lindane - Myzin[®], Smear

*This list is not meant to be all-inclusive or an endorsement of the mentioned brandnames.

Grants received

Dr. Joseph E. Wagner, professor of veterinary pathology (Vet. Med. Diag. Lab.), has received a \$17,460 grant from Agricultural Research Center-West. Dr. Wagner's grant is for study of heretofore unreported Theileridae isolated from domestic cats in southwestern Missouri.

Dr. D. C. Blenden, professor of veterinary microbiology (Cont. Ed.), has received two grants for continuation of this rabies work. The World Health Organization contributed \$1,000 and Pan American Health Organization \$8,000 for further study on early biopsy diagnosis of rabies.

ECTOPARASITES OF LIVESTOCK IN MISSOURI*

Horse

Haematopinus asini (bloodsucking louse)
Damalinia equi (chewing, most common louse)
Tabanus (horsefly)
Simulium (blackfly)
Stomoxys (stable fly)
Gastrophilus eggs (bot)
Calliphoridae maggots (bottle fly)
Habronema grubs (cattle grubs reported out of state)
Dermacentor albipictus (winter tick)
Amblyomma americanum (Lone Star tick) } Southern Missouri
Amblyomma maculatum (Gulf Coast tick) }
Rhipicephalus sanguineus (brown dog tick)
Sarcoptes scabiei
Psoroptes } (mites)
Chorioptes
Parafilaria (filarid nematode) "summer bleeding"
Onchocerca (filarid nematode) nodules in subcutis
Habronema (spirurid nematode) "summer sore"

Pig

Haematopinus suis (bloodsucking, hog louse)
Tabanus (horseflies)
Calliphoridae maggots (bottle fly)
Sarcoptes scabiei (mites)

Cattle and Sheep

Haematopinus eurysternus } (bloodsucking lice)
Linognathus vituli }
Damalinia bovis } (chewing lice)
Damalinia ovis }
Tabanus (horsefly)
Chrysops (deerfly)
Simulium (blackfly)
Culicoides (bloodsucking gnats)
Stomoxys (stable fly)
Musca autumnalis (face fly)
Haematobia irritans (horn fly)
Calliphoridae maggots (bottle fly)
Hypoderma lineata } (cattle grubs)
Hypoderma bovis }
Amblyomma americanum (Lone Star tick)
Amblyomma maculatum (Gulf Coast tick)
Rhipicephalus } (ticks)
Dermacentor }
Sarcoptes scabiei } (mites)
Demodex bovis }
Chorioptes }
Psoroptes }
Stephanofilaria stilesi (filarid nematode)

*Imported stock import ectoparasites.

Community health aspects of swine influenza

On March 24, 1976, President Ford announced that the United States would provide influenza vaccine for the entire population in the fall of 1976. This announcement came six weeks after the report of an influenza outbreak due to a new influenza virus at Ft. Dix, New Jersey. The virus, which is antigenically identical to the influenza virus of swine, has been designated A/New Jersey/8-76 [Hsw1N1].

The reporting of this swine-type influenza in man and the initiation of the National Influenza Immunization Program have raised many questions as to the public health significance of the disease, the veterinary significance and the importance of swine and swine products as potential sources of human infection. The following review has been compiled to answer many of these questions and to correct any misconceptions which may exist about the epidemiology of the disease as we currently know it.

Influenza, or influenza-like disease, has been recognized in man for many years. Widespread epidemics and pandemics occurred in 1847-1848, 1889-1891, 1918-1919, 1957-1958 and again in 1968. These pandemics resulted in large numbers of deaths, with approximately 20 million individuals succumbing to the 1918-1919 pandemic alone. It was not, however, until 1933 that the viral etiology of influenza was first firmly established. In domestic mammals, swine influenza has been known since 1918 and equine influenza was first described in 1963. Until recently it has been generally agreed that such animal infections are not a reservoir of human infection, but that the influenza of domestic animals is of human origin with adaption and associated modification to the new host species.

Until 1918, when influenza in swine was first clinically recognized, this disease had never been reported and there was general agreement that it was a completely new disease. This occurrence coincided with the greatest worldwide human influenza pandemic of modern times. With the finding that the human and swine influenza viruses of that time were antigenically related, it is now postulated that the swine infection resulted from adaption to swine of the virus which caused the human pandemic of 1918.

In order to place in perspective the current finding of human patients infected with a swine-type influenza virus [A/New Jersey/8/76 (Hsw1N1)], it is necessary to review some of the major antigenic types of influenza virus that have circulated in the human and swine populations since the beginning of the century.

The major human influenza pandemics of this century have been due to Type A influenza virus. The first strains isolated in the 1930's and which were prevalent until 1943 are known as Type A [classic] strains. A major shift in antigenicity in the mid-1940's resulted in the appearance of the Type A-1 strains, which were the principal epidemic strains from 1947-1957. In 1957 another major antigenic shift led to the appearance of the Asian strain [Type A-2] and again in 1968 another shift resulted in the Hong Kong influenza strain. Minor antigenic drift in the Type A-2 strain has resulted in most of the influenza virus variants which have been circulating in the human population in recent years. Indirect evidence from immunological studies have classified the virus which caused the 1918-1919 pandemic as 'swine-like', as it appears it was closely related immunologically to the prototype swine influenza virus, which adapted to swine during the 1918 pandemic and continues to circulate in the swine population as it has for decades with only minor antigenic drift. These swine viruses are officially classified as Type A (swine) influenza viruses.

The isolation of the swine influenza virus [A/New Jersey/8/76 (Hsw1N1)] in young army recruits at Ft. Dix does not represent another major antigenic shift from the Type A-2 human strain of influenza viruses, but it is generally agreed the New Jersey virus represents an adaption of a Type-A (swine) virus back to man. It has been confirmed recently that the A/New Jersey/8/76 (Hsw1N1) influenza virus is identical antigenically with the influenza viruses that have been isolated and identified from outbreaks of influenza in swine herds during the past two years. The New Jersey isolate was initially labeled 'swine-like' because of a close antigenic relationship with the swine influenza viruses. However, with the finding from recent immunological studies that it is identical antigenically with the present day swine influenza viruses, this virus

should now be classified as a true swine influenza virus.

With the isolation of this virus in humans and the indication that human-to-human spread has occurred with the virus, there exists the possibility of another pandemic such as occurred with the Asian and Hong Kong influenza strains. Immunological studies on the present-day human population indicate that the majority of the population possess no immunity to this strain of influenza virus. Only the older sector of the population possess any significant degree of immunity and this immunity could well represent previous exposure to Type A(swine) influenza virus prior to the 1920s. Epidemiological studies over many years have shown that persons with frequent exposure to swine, such as veterinary practitioners, swine producers and abattoir workers, have a higher antibody titer to the swine influenza viruses than persons not in contact with swine.

However, most infections are considered to be asymptomatic, as the swine adapted virus appears to have low pathogenicity for man. No human-to-human spread with these viruses has been indicated until the recent infections at Ft. Dix. Therefore, if we assume that the present-day viruses in swine herds originated from the 1918-1919 human pandemic, adaption to swine and antigenic drift away from the original 1918 virus has been responsible for a lessening of its pathogenicity for man. At this point in time we do not know whether the new A/New Jersey(8/76 (Hsw1N1) strain has increased pathogenicity for man or not. However, with the indication that human-to-human spread is possible with this virus, it is assumed that minor changes within the swine virus have taken place and accompanying changes in pathogenicity for man are possible.

To further clarify the present situation concerning the recently isolated swine type virus and the National Immunization Program, common questions that have recently been raised concerning this subject are listed below with their appropriate replies:

Q. What are the chances of persons contracting the Type A/New Jersey/8/76 (Hsw1N1) influenza from contact with swine?

A. General influenza surveillance in past years has established that persons in contact with swine, such as veteri-

narians, farmers, and slaughterhouse workers, do have higher antibody titers to swine influenza than those persons not in contact with swine; however, in these cases no human-to-human spread has been indicated by accompanying antibody titer rises in the family members or close contacts of these individuals. Present information has also shown an association between persons with immunity to the A/New Jersey virus and the degree of contact with swine. All confirmed cases of human antibody titer rise to Type A/New Jersey/8/76 virus which have occurred outside Ft. Dix have been associated with possible swine contact and once again no intrafamily spread has been indicated. There is absolutely no reason for alarm among swine producers concerning increased risk to themselves or their families, as at the present time there is no indication to suspect that persons in contact with swine are any more at risk to swine influenza virus than they have been for the past few decades.

Q. How widespread is the New Jersey influenza virus in the nation's swine population today?

A. Surveillance studies have indicated that approximately 50% of the swine herds within the United States are infected with swine influenza virus which is antigenically identical to the A/New Jersey strain. Recent investigations have shown serological positive rates of 20-100% in older pigs in swine herds across the country. In younger pigs, less than 9 months of age, sero-positive rates of 0-20% have been observed. These rates have been recorded nationwide, indicating the virus has been circulating for a considerable period of time and is now widespread in the nation's swine herds.

Q. Is there any risk of human infection of swine influenza occurring through the consumption of swine products?

A. Influenza is a respiratory disease with infection occurring via the respiratory route from virus excreted from the respiratory tract of infected animals. Pork products intended for human consumption do not contain the virus. Infection cannot occur orally and therefore it cannot be stressed firmly enough that pork products do not present a potential danger to consumer infection.

Q. Is it possible we could be headed toward an epidemic similar to that which occurred in 1918-1919?

A. Evidence from the outbreak at Ft. Dix has indicated human-to-human transfer of this virus does occur. This

has not been shown outside this military establishment and at present the degree of ability of the virus to spread among humans is unknown. However, the A/New Jersey/8/76 strain represents the appearance of a strain of influenza virus for which the majority of the human population does not have an immunity. A similar situation has existed in the past when a new antigenic strain of influenza virus appeared and worldwide epidemics occurred. Therefore, the appearance of the New Jersey strain provides the potential for a new worldwide pandemic of influenza with its associated increased morbidity, mortality and economic losses.

Q. If there is an influenza pandemic due to the New Jersey strain, would this be more serious than previous pandemics?

A. The answer to this question is not known. However, since the virus is more closely related to that which caused the 1918-1919 pandemic than to those strains causing the influenza epidemics of the last two decades, we must be prepared to make an analogy with the type of influenza caused by the 1918-1919 strain. During the 1918 pandemic in Missouri the fatality rate of 284/100,000 as compared to 6/100,000 in 1921 was due to influenza alone. Also, 48.9% of deaths attributed to influenza in 1918-1919 were in the 20-39 year age group. This indicates that during this extensive epidemic the sector of the population at greatest risk was the young, mature, healthy adult. This is in contrast to recent influenza virus strains which have caused highest mortality in the aged and debilitated. Therefore, although it is not known, it is possible that the A/New Jersey/8/76 strain could be highly pathogenic, not only to the old, the ill and debilitated, but also to a much younger age group. This type of pandemic could have a devastating effect on both the health and the economic productivity of the nation. It has been estimated that the 1918-1919 pandemic might have had losses of \$117 billion in today's terms. With this in mind, the \$14 billion spent on the National Immunization Program could represent insurance against these losses.

Acknowledgments

I would like to acknowledge the assistance given by Dr. G. R. Noble, Virology Division, Center for Disease Control, Atlanta, Georgia, and Dr. R. Webster, St. Jude's Hospital, Memphis, Tennessee, in providing information included in this manuscript. -- Dr. David G. Thawley

Skunks make dangerous pets

The dangers of acquiring pet skunks have been extolled for years; numerous writings and editorials have appeared in professional journals and programs to discourage the veterinarian from descenting or immunizing the skunk. There is really no defense for the veterinarian who becomes involved in such a situation when a problem develops.

Recently a Missouri practitioner was confronted by a farmer with a litter of "orphaned" skunk kittens. The practitioner strongly advised against the skunk as a pet and the descenting and immunization involved but the farmer persisted and the veterinarian proceeded.

The kittens were descented and injected with rabies vaccine. The farmer distributed the kittens to neighbors but kept one for his own which bit him and several days later became ill with rabies. The farmer immediately began the post-exposure immunization program and although there was a possibility for many exposures involving several families, no other incidents occurred even though most of the remaining kittens soon developed rabies.

There are many risks involved in such a story, the least of which is that a person holding a wild animal as a pet is required by law to have a permit to do so. The veterinarian who descents a skunk becomes an accomplice. -- Dr. D. C. Blenden

Zoo vets to meet

The American Association of Zoo Veterinarians will hold its annual meeting in St. Louis on Oct. 24-28 at Stouffer's Riverfront Towers, 200 South Fourth St.

Special sessions will be presented dealing with reptiles, cage birds, marine mammals and nursery care. Nutrition, restraint, reproduction and behavior of zoological animals will be discussed. Anyone interested in the medical problems of captive wild birds, mammals and reptiles is invited to attend.

For more information contact Dr. William J. Boever, St. Louis Zoological Park, St. Louis, MO 63110.

Around the College . . .

Continuing Education programs announced

The College of Veterinary Medicine and the UMC Extension Division have announced the following continuing education programs in veterinary medicine for 1976-77:

- Swine Animal Health Day*, Oct. 21
- Ophthalmic Surgery Workshop*, Oct. 23-24
- Physical Examination and Auscultation of the Heart*, Nov. 5
- Clinical Neurology Workshop*, Nov. 9-10
- Soft Tissue Surgery Workshop*, Nov. 12-13
- Clinical Gastroenterology Workshop*, Jan. 6-8
- Applied Renal Medicine Seminar*, Jan. 11-12.
- Workshop for Small Animal Surgical Technicians*, Jan. 14-15.
- Symposium on Health Care in the Dog*, Jan. 22
- Clinical Parasitology Workshop*, Feb. 4-5
- Electrocardiography for Veterinary Technicians*, Feb. 15
- Animal Control Officers Training Program*, Feb. 22
- Orthopedic Surgery Workshop*, Feb. 25-26
- Workshop on Breeding Soundness Examination and Infertility of the Bull*, March 5-6
- Electrocardiography Short Course*, March 11-12
- Thoracic Disease Seminar*, March 23-24
- Disc Surgery Workshop*, March 25-26

Chairman honored

Dr. Willard H. Eyestone, chairman of Veterinary Pathology, was selected as an honorary member of the American College of Laboratory Animal Medicine (ACLAM).

Dr. Eyestone was selected for this honor in recognition of his outstanding leadership and extraordinary contributions to laboratory medicine. He is only the fourth individual nominated for honorary membership to the College.

Dr. Eyestone received the award at the annual ACLAM banquet, July 19, in Cincinnati during the American Veterinary Medical Association convention.

Advanced Dermatology Workshop, Apr. 5-6

Rabbits, Rodents and Reptiles, Apr. 14

Equine Animal Health Day, Apr. 15-16

Community Health Aspects of Veterinary Medicine, Apr. 21

General Surgical Procedures Seminar, Apr. 29-30

Persons interested in more detailed information on these programs should contact the Continuing Education and Extension Office, 23 Veterinary Sciences Building, College of Veterinary Medicine, Columbia, MO 65201.

Board certification open to practitioners

The diplomates of the American College of Theriogenologists recently finalized a provision for board certification of qualified practitioners of theriogenology who have not undergone formal post-doctoral specialty training.

Practitioners who pass the qualifying examination will now gain admission to the traditional diplomates examination. Dr. C. J. Bierschwal, secretary of the American College of Theriogenologists, stated that a formal announcement will be made soon to define prerequisites necessary for making application to the college.

Dr. Meyer elected by anatomists

Dr. Hermann Meyer, professor of veterinary anatomy-physiology, was elected secretary-treasurer by the American Association of Veterinary Anatomists at their annual meeting held recently in Cincinnati.

The Association is a 250-member organization.



Dean K. D. Weide discusses the Equine Center with recent visiting lecturer, Dr. Gordon J. Baker (left).

Dr. Baker discusses equine problems

Dr. Gordon J. Baker, noted equine clinician from the University of Glasgow, spoke at the College on July 30 as part of the Visiting Lecturer series.

Dr. Baker's presentation, which was rescheduled from July 28 because of his illness, was on "Pathologic Conditions of the Mouth and Nasal Pharynx of the Equine." The College regrets any inconvenience the unavoidable change in date caused and a tape was made of Dr. Baker's lecture for loan to interested practitioners who may have missed it.

For information on borrowing the tape, contact the Office of Continuing Education, 23 Veterinary Sciences Bldg., College of Veterinary Medicine, Columbia, MO 65201.

Tapes available from intermountain meeting

The audio cassette tapes listed below are available for short term loan from the Office of Continuing Education, 23 Veterinary Sciences Bldg., College of Veterinary Medicine, Columbia, MO 65201. They were all made at the 47th (1975) Intermountain Veterinary Medical Association Meeting.

"Hydration of Calves" by M. Brown, D. V. M.; "Parasite Control" by R. Shock, D. V. M.; "Examine Equine for Insurance or Sale" by J. Herrick, D. V. M.

If you wish to borrow these tapes, let the Continuing Education Office know.

Annual Conference to focus on gastrointestinal system

The 52nd Annual Conference for Veterinarians, scheduled Oct. 10-11 at the Ramada Inn in Columbia, will focus on the gastrointestinal system.

Highlighting this year's program will be Dr. Neil Anderson from Kansas State University who is a leader in the field of gastroenterology of small animals. Dr. Anderson's presentation on the pathophysiology of diarrhea will relate to various species.

Also featured will be Dr. Irwin Kohler, Ohio Diagnostic Laboratory in Wooster, on enteric diseases of swine; Dr. O. M. Radostits, Western College of Veterinary Medicine in Saskatchewan, on general enteric problems in the bovine; and Dr. A. V. Larson, National Animal Disease Center in Ames, IA, on a chronic tuberculosis-like intestinal infection called Johne's disease.

The remainder of the program will be provided by UMC faculty. Dr. Brent Jones, assistant professor of veterinary medicine and surgery, will discuss hepatic disease of the canine; Dr. Douglas Traver, resident in equine medicine and surgery, will talk about enteric problems in the equine.

A panel moderated by Dr. J. N. Berg, assistant professor of veterinary microbiology, will discuss salmonellosis in man and animals. Members of the panel will be Dr. Keith Van Steenbergh, Missouri State Veterinary Diagnostic Laboratory in Springfield; Dr. Arvey Sanders, Chief of Food Microbiology at the Food and Drug Administration in Beltsville, MD; and Dr. D. C. Blenden, professor of veterinary microbiology and Director of Continuing Education in Veterinary Medicine at the College.

The following minitopics will be offered: Large animal -- "The brucellosis problem" by Dr. Taylor Wood, state veterinarian; "Rabies immunization for humans," Dr. D. C. Blenden; "Lymphosarcoma," Dr. James Thorne, associate professor of veterinary medicine and surgery; "Footrot," Dr. J. N. Berg.

Small animal topics will be "Epilepsy," Dr. J. E. Breazile, professor of veterinary anatomy-physiology; "Canine brucellosis," Dr. J. D. Rhoades, associate professor of veterinary medicine and surgery; "Injectable anesthetics," Dr. C. E. Short, professor of veterinary

medicine and surgery; "Rabies immunization for humans," Dr. D. C. Blenden.

The Missouri Veterinary Medical Association and the Academy of Veterinary Practitioners will meet Sunday before the conference begins. The Missouri Veterinary Medical Alumni Association will present its annual Alumni Award of Merit at a luncheon Sunday.

The Annual Conference banquet Sunday evening will feature Dr. James Olson, Interim University President, and presentation of the second annual Distinguished Service Award by the College of Veterinary Medicine.

Also held in conjunction with the Annual Conference will be a dinner sponsored by the College of Veterinary Medicine Development Committee on Saturday, Oct. 9. Dr. Mel Sheehan, director of intercollegiate athletics, will be the featured speaker of the housewarming dinner for raising funds to furnish and equip the student lounge and Alumni-Friends Conference Room in the new building. For more information, contact: Dean K. D. Weide, College of Veterinary Medicine, Columbia, MO 65201.

For further information on the 52nd Annual Conference for Veterinarians contact Dr. John Rhoades, College of Veterinary Medicine, Columbia, MO 65201.

Results obtained in heartworm study

Early this year 820 Missouri practitioners were sent a heartworm prevalence survey to which 87 responded.

Missouri was arbitrarily divided into eight regions for the study: St. Louis, northeast, southeast, north central, south central, northwest, southwest and Kansas City.

In the St. Louis area, including St. Louis and St. Charles counties, 19,095 dogs were examined and 639 were found positive for *Dirofilaria* with many of the confirmations made by a combination of direct and Knott's tests. The spectrum of occurrence ranged from 2-20%. Three cats were reported to be positive from postmortem findings; these cats had pulmonary signs and were radiographically positive but had no microfilariae.

The Kansas City area reported 84 positive samples in 875 examined.

Southeast Missouri reported 1816 cases positive for *Dirofilaria* out of 2071 examined.

The south central area, which included the Ozarks, reported 69 positive of 1998 samples examined and 21 of 284 were reported from the north central area.

Dr. John Rhoades and Dr. Bob Corwin, professors from the College who conducted the survey, wish to thank those veterinarians who gave detailed data and their names and addresses.

Animal behavioralist to highlight Midwest Interprofessional Seminar

Dr. Michael W. Fox, noted authority on animal behavior, will be the keynote speaker at the 18th Annual Midwest Interprofessional Seminar on Diseases Common to Animals and Man, Sept. 21-22. He will be addressing the seminar participants on "Applied Ethology and Comparative Psychopathology."

Dr. Fox has authored several books on animal behavior and has appeared on the *Tonight* and other TV shows. He is Director of the Institute for the Study of Animal Problems, Humane Society of the U.S., Washington, D. C.

The Interprofessional Seminar offers zoonotic and comparative medicine presentations by various experts in the field and is held annually at different schools across the Midwest. It is being hosted this year at the Campus Inn in Columbia by the University of Missouri College of Veterinary Medicine and School of Medicine and the Missouri Division of Health.

For further information on the seminar or copies of the program contact Dr. D. C. Blenden, Office of Continuing Education, College of Veterinary Medicine, 23 Veterinary Sciences Bldg., Columbia, MO 65201.

Faculty attend AVMA

Faculty attendance at the AVMA Convention July 19-22 was high this year. In fact the Connaway Hall and Clinic parking lots were nearly empty the week of the meeting.

The following presentations were given:

Dr. J. E. Breazile, professor of veterinary anatomy-physiology, "Progress in veterinary anatomical nomenclature during the year 1975-76;"

Dr. J. R. Coffman, professor of veterinary medicine and surgery, "Steroids in septic shock;"

Dr. R. M. Corwin, associate professor of veterinary microbiology, "Prevalence of heartworm infections in Missouri;"

Dr. G. G. Doering, associate professor of veterinary medicine and surgery, "Data base for pruritus and demodicidosis as an immune deficiency;"

Dr. C. S. Frisk, acting director of Research Animal Diagnostic and Investigative Laboratory, "Sequential ultrastructural studies of hamster enteritis;"

Dr. H. E. Garner, professor of veterinary medicine and surgery, "Post-operative care of the equine abdominal surgery patient;"

Dr. H. E. Harkness, assistant professor of veterinary medicine and surgery, "Laboratory animals and the practitioner;"

Dr. B. D. Jones, assistant professor of veterinary medicine and surgery, "Esophago-gastric endoscopy in small animal medicine;"

Dr. S. Odend'hal, research associate in veterinary anatomy-physiology, "Postcapillary venules in bursa cloacalis (bursa of Fabricius);"

Dr. G. D. Osweiler, associate professor of veterinary anatomy-physiology, "Report on Third Toxicology Symposium to the American Board of Veterinary Toxicology;"

Dr. L. A. Selby, associate professor of veterinary microbiology, "Observational studies -- environmental factors associated with disease patterns in domestic animals: Swine birth defects;"

Dr. J. E. Wagner, professor of veterinary pathology (Vet. Med. Diag. Lab.), "Animal susceptibility studies with a cytauxzoon agent of feline origin."

Dr. L. G. Morehouse, professor of veterinary pathology (Vet. Med. Diag. Lab.), served as chairman of the Laboratory Accreditation Board of American Assoc. of Veterinary Laboratory Diagnosticians.

Dr. G. A. Van Gelder, professor of veterinary anatomy-physiology, served as chairman of the Examining Committee for the American Board of Veterinary Toxicology, as vice-president of American College of Veterinary Toxicologists, as presiding officer for the scientific session and as co-presiding officer for the toxicology section on public health.

The American College of Veterinary Microbiologists elected *Dr. R. W. Loan*, professor of veterinary microbiology, to represent them on the Advisory Board on Veterinary Specialties for the 1976-80 term.

Dr. H. E. Jensen, associate professor of veterinary medicine and surgery, presented a scientific exhibit on pathology of the eye.

Dr. C. E. Short, professor of veterinary medicine and surgery, made a presentation for the American Society of Veterinary Anesthesiology during the convention.

Also attending the AVMA convention were: From the Dept. of Veterinary Anatomy-physiology -- *Drs. R. C. McClure*, professor; *H. E. Meyer*, professor; and *M. E. Tumbleson*, associate professor; from Veterinary Microbiology -- *Dr. H. K. Adldinger*, associate professor; from Veterinary Pathology -- *Drs. H. H. Berrier*, associate professor; *W. L. Eyestone*, professor; *L. D. Olson*, professor; *R. J. Kinkler*, research associate; *S. L. Nelson*, associate professor; and *D. A. Schmidt*, professor; from Veterinary Medicine and Surgery -- *Drs. A. A. Case*, professor; *C. J. Bierschwal*, professor; *J. M. Carrillo*, assistant professor; *K. H. Niemeyer*, professor; *J. D. Rhoades*, associate professor; and *Dean K. D. Weide*.

Faculty Notes

Dr. H.E. Jensen, associate professor of veterinary medicine and surgery, presented "Ophthalmic pathology in stereoscopic slides" at the American Animal Hospital Assoc. meeting in Anaheim, CA May 14-25.

Dr. L.G. Morehouse, professor of veterinary pathology (Vet. Med. Diag. Lab.), served as a member of a site visitation committee for the Laboratory Accreditation Board of the American Assoc. of Veterinary Laboratory Diagnosticians May 17-21.

Dr. L.D. Olson, professor of veterinary pathology, attended the annual meeting of Livestock Conservation Inc. at St. Paul May 19-20 and presented a report on Research on Swine Abscesses and Swine Dysentery at the University of Missouri.

Veterinary Medical Review

College of Veterinary Medicine and UMC Extension Division

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