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EATON LABORATORIES, Division of The Norwich Pharmacal Company, NORWICH, N. Y.
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Cover photo: Nature's Miracle—Birth.
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Across the
DEAN’S DESK . . .

Each winter quarter brings with it the arduous task of interviewing all applicants and the selection of students who will comprise the freshman class who will begin their professional embryonic development with the opening of the fall quarter. This is a difficult and time-consuming task, and yet in our opinion one of the most important challenges as well as opportunity for shaping the future of our profession. An easy approach would be to arrange all applicants on the basis of their academic performance and select the top 75 or 80, and save a lot of time by eliminating the personal interviews. In our opinion this would deny some of our most worthy applicants an opportunity to become members of the veterinary profession. We should never become so mechanical in our procedures as to forget that we are dealing with human beings possessed of all the virtues and frailties of the human race, and we should endeavor to admit those showing greatest promise of fulfilling the ideals expected of a professional man. Such things as motivation, understanding, integrity and dedication to a lifetime of service do not necessarily reveal themselves on a transcript of academic credits. These are the things with which we concern ourselves in the personal interviews we have with the applicants, and for this reason we do not review the student’s transcript and thus be tempted to pre-judge the individual prior to our interview. Rest assured the student’s academic performance comes in for careful scrutiny later to determine the consistency of performance especially in the more difficult science courses, which we have found is a good indication of the student’s most likely performance in veterinary medicine. Perhaps the one most important factor in determining a student’s success, once he has been admitted to veterinary medicine, is his motivation. I often explain to students that motivation is the difference between wanting something and being willing to put forth the effort to get it; it represents the difference between digging in when the going gets tough, rather than giving up and deciding there are easier ways of making a living. This same motivation is equally important in later professional life where all of you will agree that one’s metal is tested on occasion.

Thus far, during the month of January, we have interviewed about 100 applicants. What the total number will be is impossible to accurately determine. My prediction is that we will have in the neighborhood of 200. You might be interested to know that thus far the academic record of the applicants is the best that I have encountered in the 16 years I have participated in the selections. This is no doubt a reflection of the greater emphasis placed on academic performance in high school. I also believe the organization of a preveterinary club on our campus last year by the Junior American Veterinary Medical Association has had a most stimulating effect on the students preparing for veterinary medicine. The leadership which the Junior AVMA has given to this organization

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has been most commendable, and has stimulated a greater desire and an awareness of the extra effort required by those who are really wanting to be admitted to veterinary medicine. We are all most proud of this fine effort on the part of our student body. It is this type of unselfish leadership which will prepare them for future leadership in the profession. In addition, we should give due credit to the members of the profession who have been more active than usual in recent years, through Career Day programs, civic organizations and in their daily contacts in interesting good young people in veterinary medicine as a career. If you could only sit in on some of the interviews and hear the fine things related by many of the applicants about their home town veterinarian, I am sure all of you would be more appreciative of the important role you are playing in shaping the future of the profession. It would also bring home to each of us that the best and most lasting public relations result from our daily contacts.

This is only one of the many activities going on in our college. Research grants are steadily increasing as staff and facilities become available; training grants for specialized graduate study are available in many departments. The Continuing Education short courses are being well received and although they require a real effort on the individuals and departments offering them, we all feel it to be our best and effective means of fulfilling our obligation to the profession.

In closing, I would like to announce that the dedication of Goss Laboratories will take place in June as a part of the annual conference. The dates of which have not been set but will definitely be during the week of June 9.

I hope all of you will begin making plans to attend so as to make it the largest and best ever. I am sure all of you former students will want to be present to honor Dr. Goss who contributed so much to the profession and has had a lasting influence on all who were privileged to have him as a professor.

All of you will receive official programs and announcements later. We will be looking forward to seeing you.

Sincerely,

Walter R. Krill

Editorial Viewpoints

This year the American Veterinary Medical Association, professional organization of veterinarians, will celebrate the one-hundredth anniversary of its founding.

Established on June 9, 1863, at the Astor House in New York City by a small, mostly foreign-educated group of veterinary surgeons who had met to discuss the advancement of veterinary science, the association grew quickly until today it has more than 17,000 members representing three-fourths of all veterinarians in North America.

When the AVMA was organized in 1863, the U.S. had one, now extinct, private veterinary college in Philadelphia. Today there are 18 veterinary colleges in the United States, and two in Canada. The oldest veterinary college in the United States is the College of Veterinary Medicine at Iowa State University, Ames, Iowa. It was founded in 1879 and still exists.

Today, veterinary schools in the United States and Canada together graduate more than 1,000 students annually. This year 1,149 students, selected from 2,648 admission applications, entered veterinary colleges, and 191 women are attending veterinary schools this year, a new high for women enrollment.

Today's veterinarian may be a practitioner, research worker, teacher, military man, government service employee, or belong to any one of 31 different categories of veterinary medical work listed in the AVMA's 1962 Directory. In general practice there are 9,211 veterinarians caring for both livestock and pets of all
kinds. Veterinarians limiting their practices to the care of pets, including birds, number 3,963. Others teach or do research in fields such as anatomy, biochemistry, pathology, radiology, parasitology, and microbiology. The prevention of diseases transmissible from animals to man, the inspection of meat and milk, and inspection of animals entering the United States from foreign countries are included among the activities of veterinarians employed by the federal government. Food hygiene for troops stationed abroad, space research projects, and the development of food supply and animal industries in foreign countries are some of the responsibilities of the Army and Air Force Veterinary Corps.

The modern veterinarian has had a minimum of two years of pre-veterinary college training and four years of intensive study in a veterinary school accredited by AVMA before he receives his D.V.M. (doctor of veterinary medicine) degree. The basic veterinary medical training is virtually identical with the training received by medical students; both groups frequently share the same classrooms. Only in the advanced courses do veterinary medical concepts begin to be more specifically confined to the various species of animals. After graduation, veterinarians and physicians often work side by side seeking solutions to medical problems concerning both humans and animals. Veterinary medical facilities today are as modern as those you will find elsewhere in the medical field.

But it wasn’t always this way. At the turn of the century most schools of veterinary medicine in America were privately operated for the sole purpose of quickly turning out practitioners. Cures recommended to the students were supposed to take care of almost any ills afflicting beast and man. Every practitioner jealously guarded his favorite remedies.

Most veterinarians at that time were primarily interested in horses. They would attempt to care for other animals, but this work was incidental.

It was the invention of the automobile that put veterinary medicine on the path toward becoming the scientific profession it is today. As automobiles became more numerous on the streets of the United States, horses became less plentiful. Veterinarians were forced into other fields, and so the vehicle that created the traffic jam also produced the scientific veterinarian.

Any list of the accomplishments of the veterinary profession highlights the two aims of the profession—to advance animal health, and to advance human health.

In the United States, serious livestock diseases eradicated or drastically reduced by the profession include pleuro-pneumonia, cattle tick fever, foot-and-mouth disease, screwworm infection, vesicular exanthema, tuberculosis, and brucellosis.

The beneficial results of the profession’s success in drastically reducing tuberculosis in U. S. cattle were two-fold. As tuberculosis in cattle declined, bone and glandular tuberculosis became rare in man.

Efforts of veterinary medicine reduced losses due to brucellosis from $90 million in 1947 to $27 million in 1957. Every livestock disease controlled or eliminated by the profession saves millions of dollars that would otherwise have been lost along with the disease-stricken animals. These savings reach the general public in the form of quality food products at lower cost.

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Veterinary accomplishments benefiting human health are manifold. In 1941 Dr. Otto Stader developed a fracture immobilizing device now widely used by bone specialists.

Dr. Frank Schofield, a Canadian veterinarian, discovered dicumarol, the anticoagulant substance now being used in treating heart disease in humans.

In 1954, Dr. Alfred E. Earl, a New Jersey veterinarian caring for laboratory animals in a drug research firm, discovered the tranquilizing effects of reserpine and established a research project which uncovered, and is still uncovering, new tranquilizers for application in veterinary medical and human medical fields.

Dr. Karl Meyer, a veterinarian working with the Hooper Foundation research laboratories, solved the mystery of botulism—food poisoning—thus paving the way for the canned food industry.

As recently as 1956, Col. Harry A. Gorman, U.S. Air Force Veterinary Corps, developed an artificial hip joint for dogs and, working with medical orthopedists, successfully adapted the prosthesis to man.

Cereal grains are among the plants that can best survive atomic fallout. Pine trees rank with people in the amount of radiation they can stand, but wheat, barley, and corn can withstand more. Other highly tolerant plants include cabbages, rutabagas, cauliflowers, and turnips.

Feeding magnesium supplements to beef cows during the winter feeding period may help to prevent grass tetany.
The Role of the Practicing Veterinarian In Public Health Education In His Community

BY MARCIA C. BROWN, Vet. Med. IV

The Veterinarian in his Community:

The community has been called a group of people living in physical proximity who have certain basic things in common. As practicing veterinarians, we are all members of a community, be it urban, suburban, or rural. Everyone in our community is interested in health, health for themselves, their families, and their animals, but only the medically trained persons in the community have the knowledge and ability to help the community and its individual members protect and improve their health status.

Too often, we as veterinarians tend to consider the diagnosis and treatment of animal illnesses to be our only responsibility to our communities, while, in reality, our responsibilities are much greater in the area of prevention of disease or health promotion. This article is an attempt to explain how we, as veterinarians, can help promote health in our communities.

Public Health Education:

The World Health Organization has defined health as “a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity,” and Veterinary Public Health as that “field of activity which protects and advances human well-being by utilizing the combined knowledge and resources of all those concerned with human and animal health and their interrelationships.” As can be seen from the preceding definitions, public health is a broad field involving mental, economic, and social well-being as well as prevention of specific physical illnesses caused by micro-organisms and their toxins. So while the veterinarian is concerned with zoonosis and their control, he also should be concerned with the broader areas of public health. In order to communicate this extensive concern, the veterinarian must become an educator of his community in the various aspects of public health.

Education comes from the Latin “educere”, meaning “to lead forth” or “out”. Consequently, the educator, in this case, the veterinarian, becomes a leader in his community in all areas concerning public health. Whether or not the veterinarian leads his community toward better health standards or allows them to stagnate or to be led astray by misinformation depends on his ability and willingness to act in his role as a public health educator.

Public Health Education of Clientele:

The veterinarian has ample opportunity every day to educate his clients; over the phone, in person, and by example.

The small animal practitioner begins his role as educator the moment a client steps into his hospital. His waiting room should be supplied with magazines and booklets dealing with public health. He should definitely supply his clients with literature concerning pet care, nutrition, parasite control, and immunization. He may have pamphlets dealing with rodent control, food sanitation, and environmental sanitation. Such materials are readily available through state and federal health organizations, the American Veterinary Medical Association, and the American Animal Hospital Association.

The entire veterinary hospital should be an example of good environmental sanitation; clean and odorless. The hospital construction should comply with all community health ordinances. It should be built of, and equipped with, materials that are easily kept clean. The veterinarian in an urban or suburban area should be especially careful to control odors and noises that may become a nuisance in his community.

Of course, the veterinarian himself is the most important agent in the health education of his clients. Every service
that the veterinarian performs should be accompanied by an explanation of its public health implications. For example, the dog owner should be given an explanation of the purpose of rabies immunization. The veterinarian should explain that rabies is a viral disease of all warm-blooded animals, and it is most often present in the wild animal population. Rabies is ordinarily contracted by a bite from an infected animal that carries the virus in its saliva. The disease is always fatal to man and domesticated animals. Several reliable products are available to help prevent the disease and control its spread. Immunization is not permanent and must be boosted every one to three years depending on the product used. The veterinarian should recommend the type of vaccine to be used in each case. Following such a simple explanation, the practitioner should be prepared to adequately answer any further questions that the client may ask. Similar explanations should be given concerning distemper, hepatitis, and leptospirosis immunization, pet nutrition, parasite control, pet housing and sanitation, and surgical procedures. Obviously, all of these services do not involve zoonosis control directly, but they are aspects of public health because they involve the mental and economic well-being of the client and the physical health of the pet.

The large animal practitioner has an even more important role to play in public health education. His responsibilities involve not only the health of the animals on the farm, but also the health of the farm family and employees, the surrounding community, and the health of all persons handling or consuming animal products from the farm. His role as a public health educator may be more easily understood if he considers himself to be a practitioner of preventive medicine as well as a practitioner of therapeutic medicine. He must consider the entire farm as a health unit, rather than be concerned primarily with the individual sick animal.

Needless to say, such a concept is difficult to communicate to a farmer who is concerned about his prize dairy cow's cut teat. However, it is the veterinarian's responsibility to discuss with the farmer the environmental circumstances that led to the accident and suggest ways that the environment should be improved to avoid such accidents in the future. Conversations such as these may lead to concern about farm sanitation and environment: about herd health control programs for brucellosis, tuberculosis, leptospirosis, and mastitis; or about insect or rodent control. Opportunities to discuss preventive medicine or health promotion are always present if the veterinarian will take the time and trouble to discuss them, and by so doing, he is fulfilling his role as a public health educator.

The large animal practitioner's role in providing wholesome food products for his community is quite apparent. The veterinarian must constantly be aware of this responsibility when he advises his clients concerning shipment or slaughtering of sick animals. Some veterinarians may be even more directly concerned with food products through part-time work as an inspector or advisor in the local slaughtering establishment. Such a job involves not only the condemnation of diseased carcasses and the passing of healthy carcasses, but also the health of the employees, the sanitation of the establishment, and the disposal of waste products; the wholesomeness of the finished food product.

Organizational Public Health Education:
The various medical and health organizations to which the veterinarian may belong can be quite useful in disseminating public health information. The local Veterinary Association is an excellent example of such an organization. This group should make it known to their various communities that their members are available to speak to the Grange, the Farm Bureau, 4-H Clubs, school and church groups, Kiwanis, and similar organizations. A letter suggesting possible topics, such as rabies control, rodent control, restaurant sanitation, food processing sanitation, mastitis control, etc., might be sent by the local association to all...
groups in the area which have speaker meetings. Films, tapes, pamphlets, etc., are available to augment these discussions.

Many veterinarians are members of their local or county health boards. This situation provides an excellent opportunity for the veterinarian to use his training in environmental sanitation to the benefit of his community. He is able to work closely with members of the other health sciences in preparing and distributing public health information to his community.

The veterinary practitioner may serve as a part-time health deputy for the local Board of Health. As such, he will be responsible not only for the inspection of food processing establishment, dairy plants and farms, slaughtering houses, sewage and rubbish disposal establishments, etc., but also for the education of managers and employees of such establishments.

Extracurricular Public Health Education:

The veterinarian who is a responsible community citizen will volunteer his time and knowledge to many other organizations and individuals in his community. He may take a special interest in the community school system. He will encourage instructors to teach environmental sanitation by lending his microscope to a class to study polluted water or food decay. He may offer to supply petri dishes and agar for a class experiment about environmental microorganisms. He may help children understand the necessity of good diet by aiding them in a rat nutrition experiment. He may assist the hygiene teacher by loaning her a pair of rats or guinea pigs to be used in sex education classes. He may offer to show movies and discuss rodent and insect control. He may be especially helpful to individual high school students who are planning Science Fair projects in the field of Biology by making his equipment and reference books available to them and serving as their advisor.

The veterinarian can encourage the community library to purchase books about health, environmental sanitation, and pet care. In urban areas, the veterinarian may help establish and maintain a pet lending library by supplying animals and instructions about their care.

The interested veterinarian can be a good advisor to the local 4-H Club or Future Farmers of America group. By training youngsters in good environmental sanitation practices and improved animal health programs, he is helping to produce better future agriculturists.

The veterinarian may contribute his time and finances to groups like the Red Cross, the Community Chest, the March of Dimes, or the Tuberculosis Society. Each community has its own special health needs that the trained veterinarian and responsible citizen can help fulfill.

CONCLUSION:

The veterinarian can be a powerful, favorable influence for improved health in his community. Some of his time spent in public health education will be financially rewarding, some will not, but all will be rewarding in the sense of satisfaction that comes from a job well done and a responsibility fulfilled.

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WINTER, 1963
Principles of Veterinary Medical Ethics

PREAMBLE: The honor and dignity of our profession lies in our obedience to a just and reasonable code of ethics set forth as a guide to the members. The purpose of this code is far-reaching because exemplary professional conduct not only upholds honor and dignity, but also enlarges our sphere of usefulness, exalts our social standards, and promotes the science we cultivate.

Briefly stated, our code of ethics is the foundation of our individual and collective efforts. It is based on the Golden Rule.

Section I

The principal objectives of the veterinary profession are to render service to society, to conserve our livestock resources, and to relieve suffering of animals. A veterinarian should conduct himself in relation to the public, his colleagues and their patients, and the allied professions, so as to merit their full confidence and respect.

Section II

A veterinarian may choose whom he will serve. Once he has undertaken care of a patient he must not neglect him. In an emergency, however, he should render service to the best of his ability. He should not solicit clients.

Section III

A veterinarian should not employ his professional knowledge and attainments nor dispose of his services under terms and conditions which tend to interfere with the free exercise of his judgment and skill or tend to cause a deterioration of the quality of veterinary service.

Section IV

A veterinarian should strive continually to improve veterinary knowledge and skill, making available to his colleagues the benefit of his professional attainments, and seeking, through consultation, assistance of others when it appears that the quality of veterinary service may be enhanced thereby.

Section V

The veterinary profession should safeguard the public and itself against veterinarians deficient in moral character or professional competence. Veterinarians should observe all laws, uphold the honor and dignity of the profession, and accept its self-imposed discipline.

Section VI

The responsibilities of the veterinary profession extend not only to the patient but also to society. The health of the community as well as the patient deserves his interest and participation in nonprofessional activities and organizations.
Why Don't Veterinarians Write Prescriptions?

By R. Barry Prynn, Vet. Med. II

One of the least used rights of the Veterinarian is that of writing a prescription. As a medical graduate, this privilege is possessed, but seldom used.

The reasons commonly given for not writing prescriptions are many, such as; “I don't know Latin;” “I don't remember how;” “They don't have what I want the patient to use at the drugstore;” and “I make money on the medicine I dispense; why should I let the pharmacist get my extra profits?”.

While each of these is a good excuse they are exactly that—excuses! First, few prescriptions are written in Latin today. For example, the directions ter in die or t.i.d. can easily be written as three times a day—good old English. The pharmacist can read it, you can read it and so can the client—he's the one buying the medicine and he will administer it, so he should know the directions.

“They don't have what I want at the drugstore.” Don't they? Do you know what you want? By the use of generic names, prescriptions can easily be filled even though the human medication may have a different trade name. Perhaps for some special things, especially in large animal medicine, they won't have the necessary medication and in these cases there is just cause for dispensing. The pharmacist stands ready to aid you if you need help.

“I make money on the medicine I dispense! I don't want the pharmacist to get my extra profits.” This is the day of specialization and Veterinary Medicine is becoming more highly specialized. Make money the way you were taught—by good Veterinary Medicine—not Pharmacy.

As a detail man for eight years, I sold and saw many of the “profitable items” veterinarians had bought and stocked—setting right on the shelf where they had been for years, except for being moved to dust them (and in some cases not even that). This is dead money, lying there not doing anything. Put it into new and better equipment, paint the office, buy stocks, but let it do something besides collect dust.

Pick up some prescription blanks. Have them in every room. When you give a client directions for complicated care for his animal, don't trust his layman's memory. Write directions on a prescription blank—it's professional, it's good business, and it's good medical practice.

People expect prescriptions. There are 35,000 drugstores filling prescriptions in the United States today.

Simply write the client's name and address, species of the patient, name the
drug and the amount to be dispensed by the pharmacist (ounces, number of tablets, etc.), the directions as to how to administer the drug (i.e. three times a day, by months, etc.), and sign your name. It's that easy.

(Editor's Note: This article follows along the lines of Mr. Prynn's experience with veterinary practitioners as a pharmaceutical salesman.)

YOU'RE THE DOCTOR

BY BOB RAINIER, Vet. Med. IV

1. It was a beautiful day early in March when Dr. Solvall was called to Quiet Glenn Farm. The farm had been in the family many years and had raised some real fine Shorthorn cattle.

"Doc, you're the third vet I've called to look at this cow, I sure hope you can do me some good. You would never know it now, but she had the makings of a real winner three months ago. Remember, this is the daughter of my cow that was grand champion at the state fair two years ago— the same cow I imported from Scotland the previous year. Like I was saying, she was doing fine until about three months ago when for some reason or another she started with this diarrhea and she's gone downhill continually since then, although she eats fairly well."

The cow was a three-year old Shorthorn which now weighed about 700 pounds and showed considerable dehydration and weight loss. She had calved about four months ago and hadn't been seen in heat since.

A rectal palpation was performed and the uterus was quite small and both ovaries atretic and apparently inactive. A very pronounced diarrhea of a yellow-brown color was present. A first calf heifer which had also developed a diarrhea about a week ago so far had gone unchecked.

"I'm going to consult with the other veterinarians who saw this cow and find out their impressions and what treatment was given" the veterinarian told Mr. Glenn, the owner, "so I know just where we stand and I won't have to duplicate what they have already done, so I'll be back tomorrow morning."

Upon conferring with the other veterinarians who had previously seen the cow Dr. Solvall found out that she had been treated with astringents, antispasmodics, and antibiotics with no apparent success. One had cultured the feces and had isolated various coliform organisms which were sensitive to Neomycin but therapeutic use of this drug brought no results.

By the next morning, when Dr. Solvall returned to the farm he felt quite certain about his diagnosis. A rectal temperature was taken and was 101.4°F, just about what it had been upon previous visits by the other veterinarians. "Mr. Glenn, I have a good idea what is wrong with this cow, but there is one thing I must do to confirm my diagnosis." What is your diagnosis? How could it be confirmed?

2. This was the fourth time in the past six months that Mrs. Andrews had brought her five-year old male Boston Terrier to the hospital. The owner complained in the beginning that the dog just seemed to be unthrifty. Dr. Curum had examined a fecal sample at that time and found some hookworm ova and treated the condition appropriately. This did not, however, markedly improve the rough haircoat and the somewhat potbellied condition. On the next visit, vitamins and a good diet were prescribed, but this also was of minimal value. The skin condition became progressively worse and showed scaliness with some pustulation and the irritated areas were even becoming occasionally pigmented. A skin scraping for mites revealed none present. Bacteriological cultures of the pustular areas enabled isolation of some alpha-hemolytic staphylococci which were coagulase negative.

The dog was bathed in the hospital in an antibacterial shampoo, but this turned out to be only symptomatic treatment and any improvement was only of short duration.

"Mrs. Andrews, I'm going to hospitalize your dog for a few days for observation and laboratory testing to see if I can find out his basic problem," Dr. Curum told the uneasy owner. "By the way, how much has he been eating?" "Oh, he per-
haps doesn't eat quite as much as he did before he had this problem," the owner noted, "but he hasn't yet refused anything to eat and he sure gets his share at the water pan," Mrs. Andrews quickly added. "He's such a mess getting hair all over my new mohair carpet, but in spite of that, I couldn't be without his companionship," Mrs. Andrews told the doctor.

Laboratory studies conducted by Dr. Curum revealed the following:

What is your diagnosis?

Hematology: Urinalysis
Hb—12.5 gms (Voided Specimen)
Hct—39% Color—Straw
WBC—21,500/mm³ Sugar—Negative
18 Segs Albumin—Negative
2 Nov-segs Sp. Gr.—1.004
8 Lymphocytes Bile—Faintly Positive
1 Monocyte WBC—Occ./HPF
Marked eosinopenia Epithel. Cells—1 to 3 /HPF

See Page 23—For Diagnosis

Tropical Fish

A Hobby — A Patient

BY ARTHUR SANDLER, Vet. Med. IV

(Editor's Note: This article was included with the hope of presenting our friend in this issue's cartoon a more feasible solution to his problem.)

It has been estimated that there are more than ten million people in the United States who have an active participation in aquarium fishes. These fishes are fascinating creatures to watch and are kept by some people for purely decorative reasons. Most, however, find out before long that the beauty of tropical fishes is only a part of their attraction. They discover that, given proper conditions, some of these fishes will give birth to living young, and that some of the egg-laying species have extremely interesting breeding habits, lavishing a parental care upon their young that is a fascinating thing to watch. We also find that young fishes are usually not very difficult to raise, and that raising them to maturity can be a source of enjoyment, and is not entirely unprofitable.

The purpose of this article is neither to add new members to the ever-increasing number of aquarists, nor to offer instruction in the various aspects of breeding and raising the numerous varieties of tropical fish; but rather to acquaint the practitioner with the most basic knowledge in tropical fish, so that, should he be confronted with questions by his clients, he will be able to answer these questions or, at least, be somewhat familiar with the subject so that he will be able to suggest a possible source to locate the answer. I, myself, having been an aquarist and a breeder of Tropical Fish for fifteen years, enjoy discussing the various aspects of this hobby with neighbors, friends and other interested individuals. Tropical fish clubs are present in almost every major city, and their members include individuals from all the professions as well as non-
professional individuals. I engage in telephone conversations at least twice a week with local breeders of tropical fish and pet shop owners, who are seeking advice for a particular problem, which, if not solved immediately, could result in the loss of hundreds of fish. I am not suggesting that a practitioner should specialize in this one aspect of animal care; but generally, clients with dogs, cats, and birds usually maintain an aquarium as a showpiece in their living room, or as an educational “toy” in their children’s room. Most of the questions that a practitioner will be confronted with concerning tropical fish will be asked while he is examining an animal, such as a dog or cat, as an incidental—“Oh yes doctor, we have an aquarium and one fish seems to be sick.” This should become an additional friendly service or good will to his client.

Veterinarians were recently urged to take a more active interest in the health and sickness of fish both for scientific and practical reasons. On the basis of comparative pathology alone, it is well worth a veterinarian’s time to study and know about the diseases that plague fish. Virtually every disease entity found in the animal kingdom is also seen in fish. After all, fish have the same organ and tissue systems as all other vertebrates and respond similarly to physiological influences and impacts. Fish suffer from viral and bacterial diseases, including tuberculosis. They fall prey to various types of protozoan, mycotic and parasitic diseases, as well as many metabolic disturbances. Fish suffer from every form of cancer except leukemia.

Tropical fish are those vertebrates adapted for an aquatic life, found in those warmer zones near the equator respiring by means of internal gills throughout adult life and propelling and balancing themselves by means of fins. The various varieties of these tropical fish were originally found in different areas of the world; but have been imported and domesticated so that they are able to live and breed in areas which they were not found originally, such as in an aquarium.

All living beings can, in certain circumstances, become subject to disease and fishes are no exception. Generally, fishes have a great resistance against disease so long as they are not weakened by bad treatment, such as unsuitable food, lack of oxygen, too high or too low a temperature, or other weakening influences. Thus, to avoid diseases, the first essential is to keep your fishes under optimal conditions so that they may have good resistance if any infection should occur.

Most infections, however, can be avoided. If a new tank has been supplied with plants that have grown in the absence of fish, and completely healthy fishes are put in this tank, any parasite which causes a disease later on must have been introduced from the outside, either with new plants or living food or a new fish.

DISEASES OF THE SKIN
The skin of a fish consists of two layers, namely, the epidermis (upper part) and the cutis (the underlayer). The epidermis consists of epithelial cells with slime cells in between. The slime cells secrete a slimy substance covering the whole surface of the skin with a thin protective film. Some fishes are more “slimy” than others; for example, the tench and eels excrete much slime, while this is considerably less in the dace. It seems likely that the slime on the skin protects the fish more or less against bacterial infections; consequently, fishes with a very slimy skin are apt to be more resistant to infection than others. The excretion of the slime cells becomes greater when they are irritated, for example, by certain parasites. Abnormal slime excretion is an important symptom to be considered in diagnosis.

The cutis consists of fibers of binding tissue and is rich in blood vessels. The upper part of the cutis contains the scales, which are mounted in small pockets. Both sides of this part of a scale are covered with binding tissue and the whole is covered once more by epithelial cells. If pathogenic bacteria penetrate into the scale pockets, an inflammation
is caused and the scale pockets are filled with an exudate. Pressure of this exudate against the scales causes protrusion.

Beneath the cutis fat cells are situated, while between the cutis and the epidermis chromatophora (color cells) are present. The black ones, melanophora, are generally called pigment cells. The colors of a fish may vary between some limits; a completely healthy fish will be normally colored. Fading of colors is often a sign of disease, but it may sometimes be due to shock; if fishes are frightened, they often grow pale. The same phenomenon will occur when tropicales are kept at too low temperatures.

**Fish Louse**

The fish louse is about as large as a water flea and it belongs also to the Crustacea. The fish louse has two large suckers for attaching on the skin of its host. Above these, two facet eyes are present. A hollow sting is inserted under a scale of the fish into the cutis, and by means of this, the parasite feeds on the blood of the host.

Since the fish louse is a rather large creature, the parasites may be removed by a pair of forceps, while holding the fish in your opposite hand. If there are many of them, they can be removed by gently rubbing over the skin of the fish, always going from the head to the tail. In ponds it is impossible to remove all fish lice by individual treatment of the fishes. In such cases, treatment with potassium permanganate may be tried (0.2 to 2.25 grains per gallon). Never, on any account, add crystals of permanganate directly to the water; the chemical must be dissolved first in a small amount of water and then the solution added to the pond or tank. Dosage of the chemical must be as accurate as possible, since overly strong solutions may cause casualties among the fishes.

**Leeches**

Fishes that are attacked by leeches swim restlessly and try by all means to get rid of the parasites feeding on their blood. Usually they try in vain. Leeches are also dangerous as bearers of blood parasites (Trypanosoma species) that cause a sleeping sickness in fish.

Since the leeches are sucking very fast, they cannot be removed directly by forceps without causing serious damage to the fish. The best treatment is to place the fish in a 2.5 per cent salt solution for 15 minutes. In this solution, the fish will at first become restless, but this will do no harm. The parasites are paralyzed and most of them will fall off.

**Flukes (Gyrodactylus and Dactylogyrus)**

At first the colors fade and the fish grows very pale; then the fins are folded and gradually become torn while the skin becomes more slimy than normal and shows some small blood spots. Small blood spots may also show at the base of the fins. Generally, breathing frequency is increased, even in cases where the gills are not affected.

Treatment must be started as soon as possible. If the fishes have already been weakened too much they cannot be saved.

**Methylene Blue (Medical Quality).**

Stock solution: 1 gram in 100 ml of water. For use: 0.8 to 1.6 ml per gallon. This may be increased to 3.25 ml per gallon if necessary. The higher concentrations will affect the plants.

**Formalin.**

Stock solution: 10 ml formalin B.P., 990 ml water. For use: 6 to 7 ml per liter, 22 to 26 ml per gallon. Use only fresh formalin, not showing any white precipitate of paraformaldehyde, which is harmful to fishes. After 3 days a partial change of water is made and then a second addition equal to the first is made. Use artificial aeration during treatment.

**White Spot (ICH)**

The parasite penetrates the mucous coat and the upper layer of the epidermis. By its movements the epidermis is irritated and reacts by augmentation of the epithelial cells, resulting in a covering of the parasite by a layer of the skin of the fish. Thus, the swelling is a pathological production of the fish skin as a reaction to the activity of the parasite and not the parasite itself. The ich is always situated between the epidermis and the cutis, where it feeds on red blood...
corpuscles and distinegrated epithelial cells, When after some days in the fish skin the parasites have matured, they bore through the epidermic “bladder” and leave the fish for reproduction.

The mature parasite, having left its host, sinks to the bottom of the water, where it secretes a soft, jellylike cyst. Here a series of rapid divisions takes place. The speed of this process depends on the temperature of the water; it increases with higher temperatures. At 64 to 68°F, the division process takes about 12 to 18 hours. Approximately 36 hours after the mature parasite has left the fish, the youngsters will be swimming in a lively manner through the water in search of a host. Thus, in an aquarium, the parasites leave the fishes periodically, but fishes are infected again and again by ever-increasing numbers of parasites.

Development of ich in the skin of the fish takes different times, depending on the temperature of the water. From 70 to 80°F, the parasite will leave the fish 3 to 4 days after the white spot has become visible to naked eyes. At 50°F, this period will be 4 weeks or more. Thus, raising the temperature will decrease the time that the parasites remain in the fish skin, but it also shortens the time before reinfection occurs. Raising the temperature should therefore always be combined with some suitable treatment for killing the parasites. Heat alone will not kill them.

No chemical available will kill the ich in the skin of the fish, without killing the fish too, because the parasite is protected by the layer of epidermis growing over it. Consequently, one must wait for the moment when the ich leaves the fish for reproduction. The unprotected parasite, the cysts, and the youngsters in search of a host can be attacked successfully. Treatment must always be extended over a period sufficiently long to make sure that all parasites have left the fish.

Quinine Hydrochloride. Stock solution: 3 grams in 300 ml. The total amount is sufficient for treatment of 25 gallons of water. For smaller tanks use 12.5 ml per gallon. This amount is not added all at once but in three equal parts with an interval of about ½ day. The fishes must remain in this bath until every white spot has disappeared. Recommended temperature is 70 to 80°F for tropicaIs, 60 to 68°F for cold-water fish.

Methylene Blue (Medical Quality) For use add 0.8 to 1.0 ml of 1 per cent stock solution per gallon, repeat after 1 or 2 days. No coal filter is allowed since it would remove the dye from the water. Use artificial aeration only with coarse bubbles near the surface. Since a dirty bottom would inactivate the medication by absorption, remove all dirt from the bottom before treatment.

Methylene Blue hinders reproduction of the parasite, forcing it to simple division; after a short period the ich dies. Methylene Blue is completely harmless even to young fishes. In the weaker concentrations, it does not affect the plants.

Velvet or Rust Disease The disease is also sometimes called “gold dust” disease. Symptoms may resemble white spot. Infected fish show a “dusty” appearance of the skin. The skin looks like a surface which has been dusted with powdered sulfur or with talcum powder of a dark shade. The dust is of a pale yellowish color and may move over the skin surface.

The infection is most dangerous for young fishes; adult specimens, having a higher resistance, may carry the parasites for long periods. Therefore, most casualties will occur in batches of young fish, unless the victims are treated as soon as signs of disease have become apparent.

Methylene Blue (Medical Quality) Use in the same way as for white spot. It may be necessary to raise the concentration to 3.5 ml of 1 per cent stock solution per gallon. Treatment has to be prolonged for 2 or 3 days more than is required for cleaning the skin of fishes from the yellowish dust. Generally 6 to 10 days will be sufficient. The temperature should be kept between 75 and 80°F.

The SPECULUM
Only one equine anthelmintic is effective against 4 parasites.

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Acriflavine Neutral (Trypaflavine)

Stock solution: 1 tablet in 330 ml of hot water. For use: 8 ml of this stock solution per gallon is added to the water. For very obstinate cases the strength may be doubled. Temperature should be raised to 80°F and use of artificial aeration is strongly recommended.

Neon Tetra Disease. In neon tetras, a disease sometimes occurs in which some blemish or spot is formed in the blue-green line, which will gradually extend over a larger area and grow into a light-colored band which shows generally perpendicular to the longitudinal axis of the body. The initial spot may appear anywhere in the course of the line.

Treatment: Methods for prevention and cure are still unknown. It has been claimed that a cure could be effected with a rather strong dosage of Methylene Blue (medical quality), namely, 1 gram in 100 liters or 5.7 grains per gallon. This is about five times the amount used for treatment of white spot, and the plants will not stand it. In experiments by other investigators Methylene Blue failed to cure the disease.

Sliminess of the Skin

Sometimes a disease occurs characterized by the formation of a slimy secretion on the skin of the fishes. The colors of the infected fish are pale, while the slime covers the whole skin surface like a thin gray fog. The fins are usually folded up. The symptoms may be observed most easily in dark-colored fishes; in others it does not show so clearly, since there is less contrast between the gray fog of slime and the parts of the body that have not yet been affected.

Treatment: Salt. The affected fishes are bathed in a 1.5 to 2.5 per cent solution of salt for $\frac{1}{4}$ to $\frac{1}{2}$ hour. Since it is possible that the parasite produces cysts with a higher resistance, treatment must be repeated after 2 days.

Fungus Diseases

Fungus is characterized by the growth of thin threads on the skin or the fins of the fish. If fungus growth is very abundant, it may resemble tufts of cotton. Since fungus is not infectious to healthy and undamaged fish, it is not necessary to remove an infected fish from the community tank, although this might be advisable to give it a suitable treatment.

Treatment: If only a small part of the skin is covered by fungus, take the fish in the hand and touch the moldy places with a solution of a good disinfectant, such as commercial iodine solution, diluted 1:10; commercial mercurichrome solution diluted 1:10, or potassium dichromate, 1 per cent.

Eye Fungus: Eye fungus is a true fungus disease and a very dangerous one, since the fungus may easily penetrate the brain. It requires treatment different from other fungus diseases.

Treatment: The best method is to touch the infected eye with a pencil or brush dipped into a 1 per cent solution of nitrous argentum (silver nitrate) in distilled water. After this touch the eye with a tuft of cotton dipped into a 1 per cent solution of potassium dichromate.

BACTERIAL INFECTIONS

Tail Rot and Fin Rot

These are not true fungus diseases but are due to bacterial infections. Symptoms are putrefaction of the tail or other fins, or both. In most cases, small red spots are showing as well. The tail becomes torn and is gradually eaten away by the activity of the bacteria. Tail rot is a very serious complaint. If the infection penetrates into the body of the fish, it will be too late to rescue it from death.

Treatment: In early stages, the victims may be treated by touching the sore spots with an acriflavine solution (1 tablet in 330 ml of water) and then placing the fish for three days in a container with 8 ml of this acriflavine stock solution per gallon. By far the safest and surest treatment of tail rot is with the new wonder drugs, aureomycin, terramycin, and chloromycetin. These antibiotics are practically specific for the bacterial infections causing tail and fin rot. A minimal treatment with 250 mg of aureomycin per 5 gallons of water will
effectively remove the symptoms of the bacterial infections.

**Dropsy**
The Polish form is characterized by the occurrence of ulcers and lesions in the skin with slight production of exudate or even without exudate formation. Fish that have recovered may show deformities of the skeleton and the fins. If ulcers in the skin were present, they will leave scars.

**Treatment:** Chloromycetin, in a dosage of 50 mg per gallon of water, may cure the infection in a period of 3 to 7 days. Chloromycetin is known to be effective against some virus infections as well as against bacteria.

**Scale Protruding**
In many cases all the scales of the body stick out, while in others only some of the scales are in this condition. Besides the protrusion of the scales, there are generally some red spots (ecchymoses) on different parts of the body or fins. In some cases the fins are torn as well. The scales may be so loose that they fall off if the body of the diseased fish is rubbed.

**Treatment:** If the scales are pressed a little a watery exudate appears, which has been formed in the pockets of the scales. The pressure of this liquid causes the scales to rise. Experimenting with chloromycetin (250 mg per gallon of water) or with sulfanilamide (250 mg per quart) might be worthwhile.

**Tuberculosis**
It is possible that a number of instances of disease in fishes in which the symptoms are lack of appetite, progressive thinness, and sluggish movements may be caused by fish tuberculosis. Growing thin may be due to internal parasites such as worms, of course, but in many cases no internal parasite can be found. A certain diagnosis would only be possible after a specialized bacteriological investigation.

**Treatment:** As in human tuberculosis, streptomycin and PAS (para-aminosalicylic acid) could be expected to be effective, but these drugs are of prohibitive cost and further, they are not available for unqualified persons; cooperation of a physician or a veterinarian would be required. Dosage should probably be 1 to 2 grams of streptomycin or 2 grams of PAS per 100 liters of water (5.7 to 11.4 grains per gallon).

**DISEASES OF THE EYES**

**Exophthalmus or Protruding Eye**
Sometimes a disease occurs in fish in which the eye swells and, becoming too large for the orbit, protrudes.

**Treatment:** Cures are not known.

**DISEASES OF THE INTERNAL ORGANS**

**Worms:** Several species of tapeworms may be found in the belly of fishes, but they occur very seldom, if at all, in aquarium fish.

**NONPARASITIC AFFLICTIONS OF THE INTERNAL ORGANS**

**Inflammation of the Stomach and Intestines**
This is in most cases due to incorrect feeding. No fish can live on dried foods alone for a long period, and continuous feeding of only one kind of live food may also have bad results. Such diseases can consequently be completely avoided by giving fishes a suitable mixed diet.

**Inflammation of the Intestines**
Signs of an intestinal inflammation cannot be seen externally, although general symptoms such as lack of appetite, darkening of colors, etc., may give a warning that fishes are not healthy. From a section of a fish that has died from the disease, the condition may be easily recognized. Healthy intestines of most fishes have a whitish or pink color, whereas an inflamed intestine is red, due to a widening of the blood vessels.

**Treatment:** The remedy is simple. If bloody excrements have been found in a tank, feeding must cease immediately and the fishes be subjected to a 4 to 5 day fasting period. After that, they must be fed with gradually increasing quantities of another kind of food than was given before the disease occurred.

**Inflammation of the Stomach**
This is generally due to excessive amounts of salt contained in the food; therefore, when live food is given, this disease will not often occur. All salted artificial foods should be soaked in water...
to remove the salt. The chief symptom of inflammation of the stomach is a reddening of the mucous coat of this organ. Treatment is the same as that recommended for inflammation of the intestines.

**Constipation**

This is another complaint that may result from incorrect feeding. Some fishes are more susceptible to constipation than others; in aquaria it will be met mostly in angelfish and other varieties that possess a compressed body. Symptoms are lack of appetite and some swelling of the body.

Treatment: Constipation may be cured by giving the fish some dried food which has been soaked in medicinal paraffin oil. If it will not take this, some drops of paraffin oil may be applied directly into the mouth by means of a small syringe.

**Swim-bladder Disease**

Tropical fishes are often kept at low temperatures in transit, and afterwards swim-bladder complaints sometimes occur. These are recognizable by the behavior of the fishes. Specimens thus affected have difficulty in maintaining their equilibrium and sometimes fall "head over heels," making tumbling movements. Finally they rest at the bottom or, in other cases, they float at the surface. In such cases the disease is obviously due to chilling, which may cause inflammation of the bladder wall.

Swim-bladder troubles are best prevented by giving fishes a varied diet with sufficient supplies of fresh foods. Sudden changes of temperature must be avoided, as should subjecting the fishes to too low temperatures for long periods.

If you are confronted with any questions regarding breeding problems, here are ten commandments with which you may solve the problem. These methods are also applicable to a community aquarium tank.

1. Make sure they are both healthy. A healthy fish is usually active and has no body blemishes.
2. Make sure they are a pair (one male and one female)
3. Make sure they are properly conditioned. This means feeding generously with proper foods to induce ripeness in the female as well as the male, but do not overfeed. Overfeeding pollutes the water.
4. Make sure they have enough room. Allow one inch of body measurement of fish per gallon of water or two inches of body with artificial aeration.
5. Make sure they have the right temperature. The suitable temperature of most tropical fishes is between 74-78°F; but an increase of 2-3°F will stimulate spawning activities.
6. Make sure they have the proper water conditions. Attempt to retain the same pH, hardness and mineral content as is present in their natural habitat.
7. Make sure they have proper lighting. Darkest corners are a stimulus for spawning although an allowance of 2½ watts per gallon of water is necessary for the successfully maintenance of tropical fishes and tropical plants.
8. Make certain the aquarium is kept clean. "A clean aquarium is a healthy aquarium." Cleanliness prevents fungus and bacterial contamination which can kill the fish as well as the spawn.
9. Make sure there is an adequate amount of plants. This makes an excellent, eye-pleasing decoration, as well as a shelter for smaller fish and an attachment for newly laid eggs.
10. Make sure there is a proper amount of shelter. Some varieties are more pugnacious than others. This shelter affords the timid fish a place of safety.

Veterinary medical techniques are called upon when members of the fish family are stricken by diseases with which every veterinarian is familiar via his training and experience. They have much to offer and much to gain. An example was an outbreak of liver disease among fish last year. Fish are especially susceptible to liver disturbances because of the crowded conditions under which they are raised. Veterinarians found the diagnosis eluding others—but only because they were aware of the architec-
tural difference between the liver of fish and that of higher animals.

In conclusion—we, as members of the veterinary profession, are dedicated to the preservation of animal life, be they aquatic or land animals. We are able to offer the public the opportunity to partake of our knowledge and experience, provided the public is aware of its presence. Tropical fish play only a minor part in our vast field of endeavor. Yet, knowledge in this hobby is able to promote an unlimited amount of good will, and it is the most successful practitioner who possesses that good will and is able to give that "additional friendly advice" to his clients.

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Rabies Immunization

By CHARLES WALLACE, Vet. Med. I

Rabies is a uniformly fatal virus disease of significance to the public and of special concern to the veterinarian. The disease usually may be considered to be contracted by direct contact, such as a bite of an infected animal, and is carried most often by dogs, cats, skunks, and bats. Since the veterinarian frequently has occasion to be in contact with susceptible animals, and since the symptoms of the disease may often be obscured, protection against the disease in the form of immunization may be beneficial.

Prophylaxis after exposure to rabies consists of a series of fourteen shots given once daily for a two-week period immediately following exposure. Often, however, one does not realize that he has been exposed, and thus a delay in administration of the shots may prove fatal. Last year three deaths resulted from rabies in this country, largely because of this delay.

Since 1957, the Veterinary Unit of the Division of Communicable Diseases of the Ohio Department of Health has been involved with several projects to determine an economical and effective method of immunizing man against rabies. The first experiment involved the use of a duck-embryo vaccine administered intradermally to students of the College of Veterinary Medicine at the Ohio State University. Three primary injections and a fourth inoculation six months later resulted in 95% response. As a result, this experiment has shown that an individual can go for five or six years and yet respond to a booster.

A second project was designed to compare the antigenicity of high-egg-passage chick-embryo vaccine and duck-embryo vaccine. Both vaccines elicited a response in a satisfactory percentage of the individuals inoculated. Recently, an experiment was performed to determine the best time for the fourth inoculation. Currently, the freshman class of the College is involved in an experiment utilizing a tissue-culture vaccine administered intramuscularly in which diluents are being compared.

The reported incidence of rabies has been decreasing since 1949. However, the 395 cases reported last year showed a five-fold increase over 1961 and a major reversal of this trend. Of special interest is the fact that March is usually the month of highest incidence.

Veterinarians, who may wish to obtain protection against rabies, may obtain the duck-embryo vaccine commercially. Three injections (.2ml each) administered intradermally at five to seven day intervals with a fourth shot given six months later may prove effective. However, after the series has been completed a serum sample should be sent to the Ohio Department of Health for evaluation of antibody content.

* * *

Aside from protein and energy, the nutrients most apt to be lacking in dairy cattle rations are the mineral elements salt, phosphorous, magnesium, and cobalt.
A Personal Account of Accidental Exposure to Rabies in Two Feeder Steers

By David H. Berliner, Vet. Med. IV

Accidental exposure to rabies occurred on January 16, 1963 to Dr. Harrison Gardner of the ambulatory clinic and senior students Charles Short and myself. The incident resulted in all three of us taking a series of fourteen injections each as a precaution against contracting the fatal disease.

On Wednesday, January 16th, the ambulatory clinic was requested to worm and dehorn 69 Hereford steers for the Darby Dan Farm just west of Columbus, owned by millionaire sportsman John Galbraith. The steers were run through the "Ranger" chute and dosed orally using a dose syringe. The animals possessing horns were dehorned at the same time. The three of us took turns alternating between dehorning, worming, and working the chute. We were not wearing gloves when using the dose syringe. At this time no animals were showing any signs indicative of rabies. I did happen to make a remark in passing that one steer was bawling loudly for its mother, but no particular significance was attached to it. We felt that he was probably just scared.

Two days later, Friday, January 18th, the farm manager at Darby Dan Farm requested that the ambulatory clinic investigate two steers that were salivating profusely, showing signs of ataxia, anorexia, and bawling. The physical examination confirmed the afore-mentioned symptoms plus an elevated temperature of 104°F. A tentative diagnosis of rabies was made at the time of examination, and 20 cc. of Combiotic was administered to the calves just in case rabies was not the cause of the symptoms. The possibility of poisoning or moldy silage was not eliminated at this time, but rabies was our first choice.

The following day, Saturday, January 19th, the two steers continued to show signs of personality change, salivation, periodic stumbling and falling, tetanic tremors, and distressed bawling. Signs of sexual excitement were also observed. After consultation with Dr. Paul Schnurrenberger of the Ohio Health Department, it was decided to take rabies booster injections as a precaution, until the final diagnosis could be made. Sunday morning, the steers were again examined, and movies and slides made of their movements and appearance. Dr. Schnurrenberger was quite sure that rabies was present at this time. That night one steer died; Dr. Gardner removed the brain and delivered it personally to the Ohio Health Department Laboratories for diagnosis.

Meanwhile, Sunday afternoon, duck-embryo rabies vaccine in the amount of one cubic centimeter was administered to the three of us subcutaneously in the abdominal area. Monday, following the report that the brain from the steer was negative for NEGRi BODIES, no injections were administered. Tuesday, January 22nd, the health lab reported the brain to be positive for rabies by FLUORESCENT ANTIBODY identification.

It was then decided that the rabies injections, having been suspended, should now be resumed and administered for the entire 14-injection treatment. These were resumed on January 22nd and terminated on Sunday, February 3rd. Personnel at Eli Lilly, contacted by telephone at Indianapolis, reported that the fluorescent antibody test is nearly flawless as a diagnostic tool in detecting rabies. They also recommended that the treatment series be taken under the supervision of a physician.

An interesting but rather shocking sidelight to the injection program was the total lack of knowledge shown by the physicians and nurses of the University Health Service of how and where to
administer rabies vaccine. Chuck Short and I found ourselves knowing much more about rabies and its treatment and prevention than the persons treating us! We actually had to instruct the nurses on how to perform the abdominal subcutaneous injections.

As a result of this incident, it is felt that all practitioners should be reminded to be forever on the alert for cases of rabies, especially in areas that have been devoid of rabid animals for long periods of time. It is conceivable that accidental exposure could occur very easily just as in our case, and end fatally for the unfortunate person.

Also, we would like to point out that many physicians are unfamiliar with the duck-embryo vaccine which is used almost exclusively today for the treatment of persons exposed to rabies. You, as a veterinarian, should attempt to familiarize yourself with the procedure, in the event that your advice is requested by a physician or for your own benefit and protection.

On Friday, January 25th, the second steer was comatose and near death. Darby Dan Farm workers decided to destroy him and then disposed of his carcass. On the basis of the physical signs the steer exhibited it is felt that it too, would have been positive for rabies had its brain been subjected to examination.

Outline for Rabies Vaccinations in Humans
1. Number of injections required: 14.
2. Site of injections: Subcutaneously, in abdomen.
3. Type Vaccine used: Killed Virus, Duck Embryo Origin.
4. Reactions, if any: Mild lymph node enlargement around third or fourth injections, and again around the thirteenth.
5. Should be under direct supervision of a physician.
6. Allergic reactions to Duck Embryo may occur.

ANSWERS: (You’re the doctor)
1. Johnes’ Disease
   It may be confirmed by injecting .2 cc of Johnin intradermally in the mid-cervical region close to jugular groove. An enlargement greater than 2 times the normal skin thickness is very suggestive of the disease. However if the ID test is negative, the cow is not necessarily negative. In this case, 5-10 cc of avian tuberculin is injected I.V. after three hourly pre-injection temperatures have been taken to establish a base-line. Temperatures are recorded hourly thereafter and a rise of 1.8°F. is very suggestive and 2.0°F in a period of 8-10 hours is considered positive. Often times deep scrapings of the rectal mucosa will reveal the presence of numerous acid fast organisms. It should also be kept in mind that in very chronic cases or prolonged stages of the disease an excessive amount of antigen will already be present within the animal and thus the animal will not be sensitized by either the I.D. or the I.V. tests.

2. Cushing’s Disease
   This condition in dogs is usually manifested as a secondary hyperactivity of the adrenal cortex resulting from a basophilic adenoma of the anterior pituitary. The high corticosteroid levels are believed to result in a breakdown of body proteins and loss of subcutaneous fat accounting for the “potbellied” appearance. There is also atrophy of the epidermis, hair follicles, and sebaceous glands. The depressant action of the steroid upon the RE system as well as the presence of infected vesicles in the skin account for the relative lymphopenia along with a leukocytosis and a neutrophilia. The low specific gravity noted in the urine is the result of the pituitary tumor impinging upon the posterior portion of the gland and interfering with production of antidiuretic hormone.

Federal meat inspectors in 1962 examined over 107 million animals before slaughter, and performed necropsies on each one. They found that over 8.5% had a disease or other condition requiring at least partial condemnation. All condemned products were made unfit for human food.

Disturbance of the relationship between mother and young in the first hours after birth has profound and long-lived effects upon the young animals’ later emotional and social behavior.
The feature class for this issue of The Speculum is the class of 1953. We decided to feature this class because they are planning to have a class reunion in conjunction with the National AVMA Convention to be held this summer in New York City.

A questionnaire was sent out in an attempt to gather information. Questions concerning the following were asked: type of practice, hobby or leisure time activities, number of children, the greatest change in your practice since graduation, and the most valuable course of study in the College of Veterinary Medicine.

The Speculum staff sincerely hopes that this class has more success with the participation in their reunion than we had with the response to our sixty-three questionnaires from which only twenty-six were returned answered. To those who were able to take time to respond, we thank you very much. The following responded with this personal data:

Dr. Harold V. Appleman, Wooster, Ohio; large animal 95%, small animal 5%; Children: 3 boys; Leisure time: rose growing and stamp collecting.

The small dairyman has been replaced by fewer and larger operations with more efficient management in most cases.

Dr. Robert F. Behlow, Lexington, Kentucky; Professor of Animal Pathology, University of Kentucky; Children: 2 girls and 1 boy; Leisure time: training thoroughbred horses.

The fact that the teaching profession is generally looked up to rather
than down on or degraded is the greatest change in the profession.

Dr. Jack H. Bennett, Findlay, Ohio; large animal 25%, small animal 75%; Children: 3; Leisure time: hunting, fishing, bowling, and baseball.

Decrease in farms with livestock and increased size of herds on one farm is the greatest change I've seen since graduation. Practice has just reversed its percentages in small and large animal practices.

Dr. John D. Coltrain, Thorntown, Indiana; mixed practice; Children: 3; Leisure time: fishing.

There is a need for more specific or qualified diagnosis.

Dr. Robert W. Copelan, Lexington, Kentucky, Equine practice; Children: 1; Leisure time: polo.

Dr. Robert L. Craig, Edgerton, Ohio; general practice; Children: 3; Leisure time: golf, hunting, fishing, and bridge.

More and more veterinary products are available through feedstores than ever before.

Dr. Jerome M. Gigliotti, Amherst, Ohio; small animal practice; Children: 5; Leisure time: golf, family.

Public relations have improved tremendously in our area. The public is more aware of veterinary services and is willing to pay, in some areas of service, a comparable fee to our related professions.

Dr. Richard A. Griesemer, Columbus, Ohio; teaching and research in the Pathology Department, College of Veterinary Medicine, Ohio State University; Children: 3; Leisure time: bowling and bridge.

The greatest change since graduation is the fact that students are getting younger.

Dr. Walter Hendricks, Gurnee, Illinois; small animal practice; Children: 4; Leisure time: hunting and fishing.

Dr. J. A. Hines, Oxford, Wisconsin; general practice; Children: 4; Leisure time: breeding registered Hereford cattle, and big game hunting. He completed a very successful hunting trip to British Columbia in 1961.

Increased herd size, better working conditions, and more intelligent clients are the most marked changes I've seen in the last ten years.

Dr. M. C. Jackson, Montpelier, Indiana; dairy 40%, swine 40%, small animal 10%; miscellaneous 10%; Children: 3 boys, 1 girl; Leisure time: sports and travel.

Bigger dairy and swine operators and more clients who are part time farmers who request veterinary service in the evening and on Saturdays is the greatest difference I have seen.

Dr. Waldo F. Keller, Lansing, Michigan; small animal clinician associated with Michigan State University; Children: 2; Leisure time: water sports and wood working.

A steady increase in case load with client demand for more and better veterinary services has been a great change.

Dr. M. E. Maxson, New Castle, Indiana; mixed practice; Children: 2 boys and 1 girl; Leisure time: golf.

The trend is toward larger farming operations and the farmer diagnosis and farmer treatment is very prevalent.

Dr. Samuel Miller, Cincinnati, Ohio; Regulatory—Animal Disease Eradication Division, Agriculture Research Service; Children: one boy and one girl; Leisure time: all sports and television.

The greatest change that I have noticed in my practice since graduation is the improvement of the state and federal regulations governing interstate and intrastate movement of cattle. This has become necessary with our rapid transport systems of today and the continuous movement of livestock.

Dr. J. Richard Mitchell, Ann Arbor, Michigan; Public Health; Children: 3; Leisure time: hunting and fishing.

Increasing interest in public health among veterinarians and a more ready acceptance of the veterinarian by members of the allied professions has been a major change.
Dr. Frank Mueller, Jr., Hialeah, Florida; small animal hospital; Children: 4 sons; Leisure time: flying, hunting, and fishing.

Dr. E. G. Ongert, Oklahoma City, Oklahoma; Assistant Veterinarian-in-Charge of Animal Disease Eradication Division, U.S.D.A.; Children: 2 sons and a daughter; Leisure time: golf and bowling.

Over the past ten years there has been a much greater participation in regulatory disease programs.

Dr. Paul R. Schnurrenberger, Worthington, Ohio; Public Health; Leisure time: hunting, breeding and showing German Shorthaired Pointers.

The greatest change since graduation has been the increasing recognition by other professions of the value of veterinarians in public health.

Dr. Dale Smith, Caribou, Maine; dairy and small animal practice; Children: 5; Leisure time: lawns, trees, shrubbery, and church work.

A shift to small animal practice has been the greatest change.

Dr. James J. Spurgeon, Bradley, Illinois; 85% small animals, 15% large animals; Children: 2; Leisure time: teaching and preaching in Church of Christ.

My practice has not changed since graduation.

Dr. Russell F. Stryffeler, Columbiana, Ohio; mixed practice; Children: 3; Leisure time: family and church activities.

The most outstanding difference in my practice over the past ten years is the development and use of new antibiotics and steroids.

Dr. Elmer R. Taylor, Lancaster, Ohio; Public Health and small animal practice; Children: 4; Leisure time: home movies and tapes.

I feel the greatest change in my practice since graduation is the improvement in types and administration of medication.

Dr. John R. Toth, Wadsworth, Ohio; small animal practice; Children: 4; Leisure time: hunting and gardening.

The greatest change in my practice is the average pet owner is purchasing animals at a higher price and is more willing to use veterinary services to protect his investment in the pet.

Dr. William J. Weber, Leesburg, Florida; small animal practice; Children: 2 boys; Leisure time: hunting, photography, flying, and just plain loafing.

The greatest change in my practice since graduation has been the increased use of clinical pathology and lab work to arrive at the correct diagnosis.

Dr. Harold E. Wilkin, Van Wert, Ohio; general practice; Children: 2; Leisure time: hunting, skiing, golf.

A gradual change of more and more farmers relying on the feed companies to supply them the necessary drugs in prevention of disease, as well as the do-it-yourself attitude are the biggest changes in my practice.

Dr. Jack R. Wine, Zanesville, Ohio; 70% small animal and 30% large animal; Leisure time: boating and water skiing.

The greatest change in my practice is the fact that the veterinarian is forced more and more with each passing year to sell himself and his services, in competition with various lay competitors in the drug dispensing fields.

When asked, in your opinion, what was the most valuable course of study here in the College of Veterinary Medicine, 10 out of the 24 that answered the question replied that all the courses combined were needed to form a good background for diagnosing and treating diseases. Those that answered the question in this manner felt that all courses were vitally linked together and that the curriculum was balanced so that no one course was outstanding.

Three answered that outclinics and large animal ambulatory courses were the most valuable to them. Three men also answered that veterinary surgery (either large or small animal surgery) was the most valuable. Two listed pharmacology
and infectious diseases as the most important courses and two more felt that physiology was the most valuable. Pathology was believed to be the most valuable by two veterinarians and preventive medicine was listed once.

It is interesting to note that in every case, the course which the veterinarian chose as most valuable was directly related to the type of practice in which each has endeavored. It seems one would have to agree that all courses are essential for the diversified background needed by the veterinarian to perform successfully in the profession of Veterinary Medicine.

**ALPHA PSI NEWS**

**BY ASA MAYS, JR., Vet. Med. II**

Since the last issue of *The Speculum* the active membership of Alpha Psi has been increased by thirty-four members. Of these new members, initiated January 6, at our 56th annual initiation banquet, twenty-seven are freshmen and six are upperclassmen. At the same time an honorary membership was extended to Dr. Dale Henthorne (O.S.U. '43), Director of the University's Laboratory Animal Facilities.

The after dinner speaker at our initiation banquet was Dr. Donald Mossbarger of Bloomingville, Ohio. Dr. Mossbarger presented to us his personal glimpses of Europe and Russia which he visited last summer as one of a group of agriculturists and members of associated professions. In addition to showing and discussing with us many points of interest in Europe, such as the Follies in Paris and the Berlin Wall, several interesting slides of the collective farms and their "advanced" machinery in the farming district of Russia were shown.

Our monthly speaker meetings have been quite popular lately. The speakers have been of high quality and representative of various fields. Recently, Dr. Goodman of the German Department presented a talk on "The Philosophy of Religion" which proved to be informative and somewhat controversial. At an earlier date, Dr. Scothorn of the Parasitology Department, shared with us some of his experiences while serving with the U.S. Army in various parts of the world.

Several of our members attended the Alpha Psi National Convention held at Auburn, Alabama, November 16-18. They toured the veterinary school at Auburn and exchanged ideas with representatives of other chapters.

Athletically speaking, the fraternity has done quite well this year. Last quarter the active football team won the professional fraternity championship and the bowling team finished in third place. Presently, the basketball team has won its league championship and is awaiting tournament action. The bowling team is currently tied for first place in their league and is expected to advance to the play-offs.

We would like to remind each of our alumni of our standing invitation to visit the house at 237 E. 17th Ave. whenever in Columbus.

The annual Senior Send-off will be held April 25 and all are cordially invited to attend.

* * *

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• Parasitology

Dr. F. R. Koutz was appointed, January, 1963, to a five year term on the City of Grandview Heights Board of Health.

Dr. F. R. Koutz was re-elected Secretary of the City of Grandview Heights' Board of Health.

• Pathology

The Department of Human Pathology in the College of Medicine and the Department of Veterinary Pathology held a special program on February 6, 1963, commemorating the beginning of the eighteenth year of uninterrupted weekly seminars which have been conducted jointly by the two departments. The human and veterinary pathology seminar is an 800 level advanced course in the Graduate School which is taught each quarter of the year. The graduate students registered in the course each quarter are physicians, veterinarians, and dentists who have had previous advanced training in pathology. The program was held in the Veterinary Pathology Building on February 6, and consisted of the following presentations:

3:00 p.m.—Dr. Clarence R. Cole—Introduction—Commemorating the Cooperation of the Two Departments in Teaching, Research, and Service
3:20 p.m.—Dr. Ralph W. Storts—Osteoporosis in Swine
4:00 p.m.—Dr. Edward H. Fowler—Bovine Leukemia, Porcine Streptococccic Endocarditis
4:15 p.m.—Dr. Charles C. Capen—Renal Ricketts
4:30 p.m.—Refreshments and Tour of the Veterinary Pathology Building.

Recently the cooperative research in virology conducted by Dr. Louis Kasza and his collaborators in chemistry (Dr. Graf) and engineering (Mr. Kovach) was published in the American Journal of Veterinary Research, 23:1150-1156, November 1962. The title of their publication is, “Purification Experiments of Swine Enteroviruses and Swinepox Viruses on Ion-Exchange Cellulose Column.” There were no significant changes in the viruses during the purification processes.

* * *

Dr. Robert L. Farrell has been serving as Chairman of the College Committee to explore the feasibility of establishing a curriculum in veterinary medical technology. The final report of the Committee was presented by Dr. Farrell in Cleveland at the convention of the Ohio Veterinary Medical Association. The Committee concluded that it is not advisable to inaugurate a curriculum in veterinary medical technology at this time.

* * *

Dr. Clarence R. Cole addressed the Columbus Rose Club following its regular winter dinner meeting. The club’s membership, consisting of business and professional men, met in the Veterinary Pathology Building where Dr. Cole spoke on the subject, “Viruses Proven to be Causes of Cancer in Mammals, Chickens, and Fish.” Dr. Fowler described the teaching in applied pathology, and Dr. Gibson described his work with germ-free animals as the men visited the respective laboratories. The group was surprised to learn that most of the chicken tumors and the majority of mouse tumors are caused by viruses.

• Physiology and Pharmacology

Dr. Hamlin received his Ph.D degree in December 1962.
The Department was represented at the Equine Practitioners Association meeting on Dec. 3-5, 1962 by Dr. Hamlin and Dr. Smith. Dr. Hamlin talked on "Correlative Cardiology in the Horse." Dr. Smith talked on "Normal Heart Murmers in the Horse."

The Department received a NIH grant — "Ventricular Depolarization In Heart Malformations," will be conducted from December 1962 to December 1963 by Drs. Smith and Redding.

Dr. Herman Rahn, President-elect of the American Physiological Society and Dr. J. R. Pappenheimer, Council Member, American Physiological Society, visited the Department on February 8, 1962. Dr. Rahn lectured to the staff and students on "The Physiology of the Diving Women of Korea". Dr. Pappenheimer presented a talk entitled "Perfusion of the Cerebral Ventricles of the Unanesthetized Goat."

Dr. Hamlin received an NIH Career Development Award. This is for one year but future support is to be continued for an additional award. The award permits the recipient to devote his entire time to research and study. Dr. Hamlin is the first veterinarian to receive such an award at The Ohio State University.

Dr. H. H. Dukes visited the department on January 7, 1963.

Dr. Smith attended the American Association for Advancement of Science meeting, December 25th to December 30, 1962, in Philadelphia, Pa.

Dr. Redding with Dr. Koeptner of the Department of Pathology gave a post graduate course, "The Neurologic Examination of the Dog with Physiological and Pathological Interpretation".

**Surgery**

Dr. Ralph Slusher (OSU '54) is doing graduate study in the Department. His activity is primarily therapeutic diagnostic radiology.

Dr. William J. Roenigk, Dr. Slusher and Dr. George P. Wilson, with some assistance from other members of the staff have been making outstanding progress in a study of the treatment of malignant neoplasms in domestic animals. The study is being supported by a grant from the N.I.H.

Recent additions to the Department include:

- Baby girl—Dr. A. A. Gabel, Assistant Professor (Ruth Ellen, October 19)
- Baby girl—Dr. George P. Wilson, Assistant Professor (Amy Patricia, October 29)
- Baby girl—George Disterdick, X-ray Technician (Kimberly Sue, October 25)

Members of the Department have been contributing to numerous local, regional and national meetings with some of the most recent participating as follows:

- Dr. Gabel demonstrated enucleation of a cow's eye, exploratory laparatomy and rumenotomy of a cow, and cryptorchid, castration of two horses at the South-eastern Ohio Veterinary Association Clinic Day at McConnelsville in September.
- On October 4, Dr. Gabel discussed and demonstrated "Promazine, Chloral Hydrate and Ultra-short-acting Barbiturate Anesthesia of Horses" at the Mid-Atlantic States Veterinary Clinic at York, Pennsylvania.
- On December 5, Dr. Gabel presented an illustrated talk, "Accidental Intracardiac Injection—A Cause of Some Immediate Reactions to Drugs" at the Convention of the American Association of Equine Practitioners in Chicago.
- Dr. Gable attended the West Virginia Veterinary Meeting at White Sulphur Springs, February 17 and 18. He gave presentations on "Sedation and Tranquilization of Cattle and Horses" and "General Anesthesia of Farm Animals."
- Dr. Johnson spoke at the regional meeting of the Quarter Horse Association on "Unsoundnesses in the Horse" during the summer. During November at the meeting of the Standardbred Breeders Association held in Delaware, Ohio a similar paper was given on "Lamenesses in the Standardbred".
- At Purdue University in October at
the meeting of the Indiana State Medical Association a paper was given on “Unsoundnesses of all Breeds of Horses”. On closed circuit television a demonstration was given on the “Application of a Walking Cast”.

At the present time, investigation is being made of the various surgical procedures which may allow the successful removal of cataracts in the horse. Therefore, the Clinic is soliciting such cases to supplement this investigation.

STUDENT A. V. M. A. AUXILIARY

BY CAROL HATHAWAY

With the appearance of “Old Man Winter” the Student Auxiliary has been very busy.

Our Christmas program consisted of a Christmas Party and White Elephant Gift Exchange. This program afforded the girls an opportunity to become better acquainted in the many exciting and fun-filled games that were played. Prizes were awarded to the lucky winners.

The January meeting was enjoyed by all as Dr. James Savoy, the Veterinarian of the Columbus Zoo, showed slides and discussed his unique experiences in treating zoo animals. Many of us never realized the large amount of work which this position encompasses. Sanitation, diet preparation, and both therapeutic and preventive medicine are included in the daily routine.

Mrs. Ben Henson, President of the Ohio Veterinary Medical Association Auxiliary, and Mrs. W. Keith Wearly, a member of both the State and National Public Relations Committees, discussed the importance of the Auxiliary at our February meeting. It is believed that the girls now have a better understanding of the Auxiliary and its functions. During our business meeting, the officers for the 1963-64 term were elected. They are as follows: President, Judy Scott; Vice-President, Karen Mays; Secretary, Millie Hague; Treasurer, Barbara Sugaski.

The sale of Christmas candles and candy was a tremendous success. Due to its success, this will be our only money-making project this year.

WINTER, 1963

OMEGA TAU SIGMA NEWS

BY DARRYL BIERY, Vet. Med. III

Winter Quarter activities got under way on January 3rd with the traditional “Help Week”. The actives and neophytes really worked on improving the houses by cleaning, scrubbing, and painting. The chapter is especially proud of the newly decorated basement based on German murals.

To climax these efforts and toil, on Sunday the men went through formal initiation followed by a banquet in their honor at the Ohio Union. Dr. Walter Venzke presided as toastmaster and presented many very interesting after-dinner remarks. John T. Mount, Vice-President and Secretary of The Ohio State University, was the banquet speaker on the topic “Professionalism”. The much sought after Gamma awards were presented as follows: The National Gamma Award, Dr. H. H. Dukes, author of Duke’s Physiology of Domestic Animals; the Alumni Gamma Award, Dr. Ray Smiley, formerly in charge of Tuberculosis eradication in Ohio, the Associate Member, Dr. E. Akins who is an ambulatory clinician; the Honorary Member, Oliver Schaffer who is the Clinic Pharmacy Technician; and the Senior Gamma Awards to Pat Breen, Jack Hathaway and Lauren Wolfe. The new initiates were John Bensenhaver, Charles Beutel, Richard Bing, George Bishop, Gerald Briggs, Thomas Buckley, Richard Cardy, Gary Davis, James Edwards, Thomas Fox, Thomas Haverfield, Dale Hague, John Kantzer, Jack Knoll, Fred Labavitch, Edward Leeds, Gerald Mast, Ed-

The men of Omega Tau Sigma took an active part in intramural sports during Winter Quarter. Four basketball teams and one bowling team were entered in competition, and two of these are in the semi-final playoff. Our dinner speaker meetings continued to be interesting and informative due largely to the efforts of Jack Hathaway and Ray Krajewski. Mr. Richard Anderson, Assistant to the Vice-President of Battelle Memorial Institute, spoke on “Life on the Moon”, Mr. Eugene Knoder of the Ohio Division of Wildlife spoke on “Research and Development of Wildlife in Ohio”, and Dr. Harry Goldstein, Director of the State Diagnostic Lab., discussed “Professionalism.”

Socially, Gamma Chapter cannot be outdone. House parties predominated the early portion of Winter Quarter with the themes “Roaring 20’s” and “Sour Dough Casino Party”. Everyone enjoyed trying to do the Charleston or winning a fortune in play money. The weekend of February 15-17th was the high light of the quarter when forty brothers from Theta Chapter of Illinois and Delta Chapter of Canada were our guests. Friday night’s stag party (Canadian to Ohio to Illinois’s stories and songs) was followed Saturday by a tour through our clinic and basic science buildings, and a good once over look at the whole university. A buffet dinner was held Saturday evening followed by a dance at Cubbage Corners. Gamma Chapter certainly enjoyed having our brothers of Theta and Delta Chapters as our guests.

As always, the brothers of Omega Tau Sigma look forward to seeing friends and alums, and we invite you to stop in at the Chapter house.

A Case Report of Bilateral Retinal Detachment

BY MILTON WYMAN, Vet. Med. IV

During the first week of September, an eight-month old male miniature poodle was presented to a local practitioner for a slight CNS disturbance and a change in temperament. Although distemper and hepatitis vaccination was complete, a diagnosis of post-distemper encephalitis was indicated and made. Antibiotic and symptomatic therapy was instigated and a guarded prognosis was given at this time.

One month later the dog was returned showing more severe CNS disturbances involving ataxia, anterior hypermetria, intermittent opisthotonus and defective hearing. The hemogram was within normal limits. The animal appeared emaciated and manifested a slight fever and the treatment was continued. Vision still appeared normal and no ophthalmoscopic examination was made.

On December 23, the owners reported that the animal was apparently blind and deaf. Upon physical examination it did not respond to sounds, regardless of intensity, and pupillary response, both consensual and individual, was completely absent. When food was placed in the cage with the dog, he located it by smell. The previously mentioned CNS disturbances were accentuated. By projecting a light into the eye, the retina could be seen “floating” in the vitreous and funduscopic examination confirmed the bilateral retinal detachment. The owners agreed to refer the dog to the O.S.U. Veterinary Clinic for funduscopic photography and euthanasia.

Ocular examination at the clinic revealed complete bilateral pupillary dilatation and total absence of response to light. Due to this phenomenon, produc-
tion of mydriasis was unnecessary prior to ophthalmoscopic examination. In the "normal" eye the retina can be seen at +2 to −2 diopters (D). Funduscopic findings of the left eye of this dog revealed total retinal detachment. The retina was visible at +20 D indicating an anterior displacement due to the posterior retinal edema. The tapetum and disc were visible but not clearly in focus at 0 to −2 D. The degree of vascularity was severely attenuated when visible and these were primarily seen on the ventral aspect of the fundus. The dorsal aspect revealed no retinal vessels. The optic papilla was devoid of any vessels and appeared gray-black in color. Although focusing was extremely difficult due to the retinopathy, evidence of papilledema and lack of tapetal beadiness was present.

In general, the right eye resembled the left eye; however, there was some retina still in place along the nasal and temporal aspect in a ribbon-like fashion measuring approximately 2 mm wide and extending the entire width of the fundus. The edema and avascularity seen in the left eye was also manifested in the right eye.

## Treatment of Convulsive States

**By R. Barry Prynn, Vet. Med. II**

The most important factors in the treatment of convulsive states are dosage and duration of treatment. Just as in the treatment of cardiac disease and diabetes mellitus the chosen medication must be given for the lifetime of the animal.

Anticonvulsants, like digitoxin, require a certain period of time before the optimal therapeutic effect can be evaluated. In many cases it will be necessary to treat the patient for a minimum of four to six weeks before an evaluation of the effectiveness of therapy can be made. During this period the animal may continue to have attacks, but if the medication is effective there should be a reduction in the severity and frequency of attacks with an eventual cessation. If it becomes apparent after the "waiting period" that the drug being used is not effective, discontinue using it and institute therapy with another agent. If failure continues it is time to re-evaluate your diagnosis.

One must remember that disorders such as parasitism, purging diarrhea, eclampsia, fever, uremia, hypoglycemia and hypoxia from any cause, e.g., carbon monoxide poisoning and cardiac disease, may result in convulsions. Other common causes of convulsions are space occupying tumors and old scars. These require an entirely different therapeutic approach.

The following are some of the more effective chemotherapeutic agents currently being used and some of the newer ones currently under investigation.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phenobarbital</td>
<td>16-60 mg. t.i.d.</td>
</tr>
<tr>
<td>2. Primidone (Mylepsin, Mypoline)</td>
<td>100-300 mg. t.i.d.</td>
</tr>
<tr>
<td>3. Acetazolamide (Diamox)</td>
<td>100-250 mg. t.i.d.</td>
</tr>
<tr>
<td>4. Diphenylhydantoin (Dilantin in Sodium)</td>
<td>100-200 mg. t.i.d. (or more)</td>
</tr>
<tr>
<td>5. Mephobarbital (Mebarol)</td>
<td>200-800 mg. per day</td>
</tr>
<tr>
<td>6. Methobarbital (Gemonil)</td>
<td>200-800 mg. per day</td>
</tr>
<tr>
<td>7. Mesantoin</td>
<td>200-600 mg. per day</td>
</tr>
<tr>
<td>8. Ethotox (Peganone)</td>
<td>500-1000 mg. per day</td>
</tr>
<tr>
<td>9. Phenacemide (Phenurone)</td>
<td>500-3000 mg. per day</td>
</tr>
<tr>
<td>10. Trimethadione (Tridione)</td>
<td>500-2000 mg. per day</td>
</tr>
<tr>
<td>11. Phensuximide Milontin</td>
<td>500-3000 mg. per day</td>
</tr>
<tr>
<td>12. Methsuximide (Celotin)</td>
<td>500-1500 mg. per day</td>
</tr>
<tr>
<td>13. Benzchlorpropamide (Hibicon)</td>
<td>4-8 Grams per day</td>
</tr>
<tr>
<td>14. Altrolactamide (Thamisone)</td>
<td>2-4 Grams per day</td>
</tr>
<tr>
<td>15. Toin Unicelles</td>
<td>Under investigation</td>
</tr>
<tr>
<td>16. Ethosuximide (Zarontin)</td>
<td>Under investigation</td>
</tr>
<tr>
<td>17. NH₂-Glutethimide</td>
<td>Under investigation</td>
</tr>
</tbody>
</table>

Winter, 1963
Aiming for a Perfect Score

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Scientific Demonstrations As A Stimulus for Careers in the Health Sciences

By Gene Snyder, Vet. Med. III

On Monday, January 7, Dr. H. H. Dukes presented a program entitled "Veterinary Medicine Provides an Educational Service to Secondary Schools" to the College's student body. Dr. Dukes, who we know as the author of The Physiology of Domestic Animals, was Chairman of the Department of Veterinary Physiology at Cornell University from 1932-1960 and is now Professor Emeritus of that institution and also Professor of Physiology in the College of Veterinary Medicine of Iowa State University.

Dr. Dukes returned to Iowa State with the idea of initiating a visitation program to Iowa junior high and high schools with the purpose of "instilling knowledge and understanding and stimulating career interests in the health sciences, particularly veterinary medicine." Thus far, since November, 1961, Dr. Dukes has performed his demonstrations to more than 26,000 secondary school students in 92 sessions, and at the time, he had 60 more scheduled for the remainder of this school year and has had to turn down many more. In his program here at Ohio State, Dr. Dukes showed colored slides and a short movie of his demonstrations in which they appeared to be very excellent.

The picture at the top of the page shows Dr. Dukes with some of the apparatus used in his demonstrations.
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ALUMNI NEWS

BY BRUCE BRIGGS, Vet. Med. II

1912
Dr. Frank E. Jones of Greenville, Pennsylvania, died on May 13, 1962. He was retired from state government service.

1914
Dr. Earl J. Starbuck, Port William, Ohio, is enjoying retirement.

Dr. R. E. Rebrassier has been re-elected as the chairman of the AVMA Council on Education.

Dr. Joseph P. Scott, 72, Kansas City, Kansas, died September 9, 1962. He had retired several years prior to his death. Dr. Francis R. Wadsworth, Lindsey, Ohio, has retired.

1915
Dr. Harry S. Johnston is enjoying his retirement in Fort Lauderdale, Florida.

1916
Dr. Ray D. Miller, Marion, Ohio, has retired from practice.

Dr. Samuel A. Alexander is a veterinarian in Monroe, North Carolina.

1917
Dr. Joseph H. Stephens is enjoying his retirement under sunny skies at San Francisco, California.

1920
Dr. James C. Kile, Sr., West Jefferson, Ohio, has retired from active practice and is enjoying his retirement.

1921
Dr. Peter McKenzie, 68, Pembina, North Dakota, died September 11, 1962. Dr. McKenzie was animal quarantine inspector at Pembina. Prior to this he served as a field veterinarian for the U.S.D.A. from 1941 to 1957.

1928
Dr. R. L. Hectorne, Frankfort, Kentucky, has recently been elected as President of the Kentucky Veterinary Medicine Association replacing Dr. J. C. Luckett (1950) who served as past-president.

1929
Dr. William A. James operates the James Veterinary Hospital, Warren, Ohio.

1934
Dr. R. L. Knudson is the assistant director of the U.S.D.A. Animal Disease Eradication Division.

1935
Dr. Peter S. Roy, Jacksonville, Florida, was recently honored as Florida Veterinarian of the Year at the 33rd annual Florida State VMA meeting.

1936
Dr. D. E. Cooperrider, Kissimmee, Florida, is the secretary-treasurer of the American Association of Veterinary Pathologists.

Dr. Paul A. Rainey died October 12, 1962, at Horton, Alabama.

Dr. Curtis W. Cromley is a veterinarian in Ashville, Ohio.

1938
Dr. Fred J. Kingma is the associate director, Veterinary Division of Food and Drug Administration, Washington, D.C.

Dr. John R. Smith, a general practitioner in Fairbury, Illinois, for 24 years, died of a heart attack August 25, 1962.

Dr. Isaac H. Maxwell, a general practitioner in Lost Creek, West Virginia, was recently elected West Virginia’s "Veterinarian of the Year."

1939
Dr. Ralph D. Barner has joined the Washington staff of the Meat Inspection Division, U.S.D.A. From 1940-1946 he was a food inspector for the U.S. Army. Then Dr. Barner joined the staff at Michigan State University as professor of infectious animal diseases and meat hygiene for 13 years, after which he received his Ph.D. degree from Kansas State University in 1961.

Lt. Col. Martin A. Ross is Chief, Veterinary Pathology Division, Armed
Forces Institute of Pathology, Washington, D.C.

1940
Dr. Robert J. Gettys is head of the Department of Veterinary Anatomy at Iowa State University, Ames, Iowa.

1942
Dr. Joseph F. Knable, 44, of New Albany, Indiana, died November 3, 1962. Due to ill health, Dr. Knable had been in semi-retirement since 1957.

1943
Dr. C. R. Cole has recently been elected to serve as the secretary-treasurer for The American College of Veterinary Pathologists.
Dr. D. O. Jones is a professor of preventive medicine at The Ohio State State University.
Dr. William L. Abbott has been appointed as assistant State Supervisor of Meat and Poultry Inspection in North Carolina.
Dr. Robert F. Voss is now residing at 6750 Dix Avenue, Detroit 9, Michigan.

1944
Dr. C. Roger Smith has been re-elected to serve another term as Secretary of the AVMA Council on Research.

1945
Dr. Clarence L. Campbell Jr. is Director of the Division of Animal Industry with the Florida Dept. of Agriculture.
Dr. Clark W. Werner is a veterinarian in Charlestown, Indiana.

1946
Dr. Martin P. Hines of Raleigh, North Carolina, has been elected President-elect of the North Carolina Public Health Association.
Dr. Robert F. Cross, Lafayette, Indiana, successfully passed the 1962 examination for certification of veterinary pathologists and was elected to membership in the American College of Veterinary Pathologists.
Dr. W. H. Crago is president of the American Veterinary Radiology Society.

1949
Dr. Kenneth B. Haas is Director of Veterinary Services, Upjohn Company, Kalamazoo, Michigan.

1950
Dr. Donald S. Postle is a veterinarian in Eau Claire, Wisconsin.
Dr. Carey M. Parrett is heading technical services for Elanco (Agricultural Division of Eli Lily). Dr. Parrett was formerly in practice in Milford, Indiana.
Dr. Kenneth L. Crawford has recently moved to 716 Poplar Street, Carrboro, North Carolina.

1953
Dr. Richard D. Burns is the field veterinarian with Elanco (The Agricultural Division of Eli Lily). He is the marketing organizer for midwestern states and serves as liaison between veterinary colleges and pathology laboratories and Eli Lily.

1955
Dr. Everett Fleming Jr. is owner-operator of Allisonville Animal Hospital, Indianapolis, Indiana.

1956
Dr. W. Harold Davis is owner of Booth Animal Hospital, Elkhart, Indiana.
Dr. William R. Kerpsack operates the Kerpsack Veterinary Clinic, Youngstown, Ohio.
Dr. James S. Elder is a veterinarian in Youngstown, Ohio.
Dr. Deshler B. Cameron is the owner of the Berea Pet Hospital, Cleveland, Ohio.

1957
Dr. Robert J. Kilgore has moved from North Canton, Ohio, to 2057 Florida Avenue, Tallahassee, Florida.
Dr. Herman Rehder has been granted a leave of absence from the Cincinnati Health Department for the current school year in order to further his studies at the University of Michigan in quest of a Master of Public Health degree.
Dr. Olen Givens Jr. is a supervisor of the Disease Eradication Division for Livestock Sanitation with the State of Kentucky, Munfordville.
Dr. George R. Blind is the owner of the Barberton (Ohio) Veterinary Clinic.
1958

Dr. John E. Stump is teaching in the School of Veterinary Science and Medicine at Purdue University, Lafayette, Indiana.

1959

Dr. Charles B. Hardin is a veterinarian in Kingston, Ohio.
Dr. Sharron L. Martin (M.Sc. '62) is an instructor of veterinary medicine at Ohio State University.
Lt. Robert E. Via Jr. is serving with the Army Veterinary Corps, Denver, Colorado.

1960

Dr. Thomas D. Young has purchased a small animal practice in Toledo, Ohio. His address is 3217 Romaker Road, Toledo 15.
Dr. Philip G. Weida operates an animal hospital in East Lansing, Michigan.
Dr. Presley E. Winner is a veterinarian with the Agricultural Department in Greenville, Tennessee.
Dr. John F. Fessler is an assistant professor at Purdue University, Lafayette, Indiana.
Lt. Earl F. Jones is stationed at Tainan Air Station, Formosa, as base veterinarian.
Dr. Joseph F. Rapotic is a poultry inspection supervisor in Cleveland.
Dr. Larry L. Disher is a veterinarian at Logan County Animal Clinic, Russellville, Kentucky.
Dr. David W. McCauley operates the Lake Cable Veterinary Clinic, Canton, Ohio.
Dr. John C. Stoner is a clinical research veterinarian in Pennington, New Jersey.

1961

Dr. James T. Rosshirt is a veterinarian in Columbus, Ohio.
Dr. William M. Taylor Jr. is a veterinarian with USAID in Laos.
Dr. Samuel R. Thomas is a veterinarian in Bucyrus, Ohio.
Dr. Jimmie H. Hennegan is a veterinarian at Northern Heights Pet Hospital, Indianapolis, Indiana.
Dr. David A. Apel is veterinarian in charge of Quaker Oats Nutritional Research Kennels, Barrington, Illinois.

1962

1/Lt. Emerson Shroyer is currently serving in the Armed Services. His address is Quarters 1806A Willard Place, Port Detrick, Frederick, Maryland.
Dr. Thomas J. Clarke Jr. is interning with the Pathology Department of the Angell Memorial Animal Hospital, Boston, Massachusetts. Dr. Clarke is preparing a paper based on studies to be conducted in the field of urine steroids in dogs as related to growth patterns. Dr. Clarke and his wife are now living at 151 Park Drive, Boston.
Dr. Siegfried E. Sieber is an intern at Angell Memorial Animal Hospital, Boston, Massachusetts, studying in the field of animal ophthalmology. Dr. Sieber, his wife and daughter live at 11 Frawley Street, Boston.
Dr. Frederick L. Rader is a veterinarian at Lafayette Animal Hospital, Lafayette, Indiana.
Dr. Myrna L. Papurt is a veterinarian in Cleveland.
Dr. Kenneth H. Fox is traveling as a race track veterinarian.
Dr. Thomas L. Wilkey is a veterinarian with the Liberty Veterinary Clinic in Kentucky.
Dr. Donald G. Knapke is a veterinarian in Lima, Ohio.
Dr. Robert L. Donovan is with the Knapp Veterinary Hospital, Columbus, Ohio.
Dr. Roland Oliver is with the Knapp Veterinary Hospital, Columbus, Ohio.
Dr. Frederick J. Keller is a veterinarian in Akron, Ohio.
Dr. David Robinson and wife, Steubenville, Ohio, recently had a new addition to their family, Carrie Helene.
“When are the veterinary colleges going to start training veterinary technologists for the profession?”. This was the essence of a question asked by Dr. Wayne Riser at a symposium on graduate veterinary education held at the AVMA meeting in Minneapolis in 1955. Dr. Riser was moderator of this symposium which was sponsored by the American College of Veterinary Pathologists. The question he directed to the educators in the audience had been voiced before and has been asked since by veterinarians, forced by necessity to train their own technicians.

Technologist training has been the subject of articles and editorials in several veterinary publications. An editorial written by Dr. D. A. Price, Editor-in-Chief, The Journal of The AVMA, entitled “Veterinary Technologists” appeared in the April 15, 1961, issue of the Journal. Dr. Price discusses the pros and cons of training veterinary technologists.

A short time before this editorial appeared the Executive Committee of the College of Veterinary Medicine headed by Dean Walter R. Krill appointed a committee of faculty members of the college to study the feasibility of initiating a curriculum for veterinary technologists. The committee canvassed a portion of practicing veterinarians in Ohio by attending meetings of local veterinary associations and presenting the attending members a questionnaire which asked the individual’s opinion as to the need for veterinary technologists. At a meeting of the Stark County Veterinary Medical Association, Dr. L. K. Firth, speaking for the American Animal Hospital Association, offered to send the questionnaire to the members of this association.

This is a report of the findings of the committee appointed by Dean Krill.

A total of 88 Ohio veterinarians answered the questionnaire. Two key questions were answered as follows:

1. Is there a need for veterinary technologists in your particular area?

<table>
<thead>
<tr>
<th>Type of Practice</th>
<th>Yes</th>
<th>No</th>
<th>No Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>large animal</td>
<td>7</td>
<td>14</td>
<td>—</td>
</tr>
<tr>
<td>small animal</td>
<td>11</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>mixed practice</td>
<td>8</td>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td>commercial</td>
<td>—</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>regulatory</td>
<td>4</td>
<td>1</td>
<td>—</td>
</tr>
</tbody>
</table>

Total: 53 Yes, 30 No, 5 No Answer

2. Should a training program for technologists be started at this time?

<table>
<thead>
<tr>
<th>Type of Practice</th>
<th>Yes</th>
<th>No</th>
<th>No Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>large animal</td>
<td>4</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>small animal</td>
<td>9</td>
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<tr>
<td>regulatory</td>
<td>2</td>
<td>3</td>
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</tbody>
</table>

Total: 58 Yes, 22 No, 8 No Answer

Discounting the “no answer” there was a 5:3 ratio against initiating the training program for technologists at this time by Ohio veterinarians.

The questionnaire sent to the American Animal Hospital Association membership had one key question: “Do you feel there is a need for veterinary technologists in small animal practice?” There were 311 questionnaires returned to the committee. Approximately 9 out of 10 members of the AAHA who answered felt there was such a need (278 answered “yes”; 33 answered “no”).

The position of the committee on the subject of training for veterinary technologists was that of neutrality. We investigated the need for such a training program. The Ohio veterinarians who answered the questionnaire opposed the start of such a training program at a ratio of 5:3. They represented a cross...
section of the different types of practices in the state. When subdivided into types of practice it was noted that the large animal practitioners and the veterinarians with mixed practices opposed such a course by a ratio of 3:1. The small animal practitioners were about equally divided (11 for; 8 against). We can conclude (if this sampling of the veterinarians of the state is accepted) that such a training program would not have the support of a majority of veterinarians in the state of Ohio.

Conversely, from the results of the nationwide sampling of small animal practitioners we can conclude that there is a definite need shown for technical help in small animal practice. However, these veterinarians who indicated a need for such a training program varied widely in their opinion as to what the training should be. Some wanted clinical laboratory technologists; others wanted combination office-laboratory-kennel workers. Also, the opinions as to what the length of training should be varied from a 2-week short course to a complete 4-year college curriculum leading to a Bachelor of Science degree in veterinary medical technology.

Many practitioners had added comments supporting their views. The most frequently written comment of the ones against the training of technologists was the fear that inadequate controls would permit, even encourage, quackery. This same fear was voiced in the local meetings attended by the committee.

It was later pointed out at a meeting with the Educational Advisory Committee of the OSVMA that in order for a training program to be inaugurated at the College of Veterinary Medicine, new faculty members, new facilities and an additional budget would have to be provided. Without adequate support such a program is not feasible at the College.

With everything taken into consideration it was felt by the committee that a curriculum for veterinary technologists at the College of Veterinary Medicine is not feasible at this time.

STUDENT A. V. M. A. NEWS

BY ROGER K. BECK, Vet. Med. III

Plans for "Pre-Vet Day" have been progressing in full-swing. Co-chairmen Bob Rainier and Bob Linnabary have revealed the date as being May 4, 1963. Fliers and posters, publicizing the event, are out, so plan now to attend. The success of this event has continued to rise since its initiation in 1960. It is hoped that attendance will perhaps stimulate a continued interest, if not an initial interest, in the pursuit of a Veterinary Medical Career.

Probably one of the most unique and worthwhile projects to originate from the OSU Veterinary School (since the addition of the X-ray tube) is a new film about to be released. It's premiere will be in mid-April. Primarily responsible for the production of this film are Joe Judy and Milt Wyman, present members of the Senior Class. This idea, in their heads since their freshman year, is just now reaching realization as a finished product. The film is 27½ minutes long and therefore can be shown on television. Its purpose is several fold. It will be available through the Colleges of Veterinary Medicine throughout the country to Veterinarians as they talk to the various farm and community organizations and also to the lay organizations themselves. The film will aid in raising the prestige of the Veterinarian in the eye of the layman; it will provide a stimulus to the recruiting program; and, it will act in an educational capacity to further the people's idea of the training, both academic and practical, that each Veterinary Student must go through in order to serve them.

Also, another quite outstanding accomplishment of the Jr. Chapter of the A.V.M.A., in particular of Scott McOwen and Jack Hathaway, is the huge success of the Pre-Vet Club. Their numbers are high and their interest is very complementary. It is indeed hoped that this attitude will be carried on in their future endeavors and participation in Veterinary Medicine.
Excellent programs, planned by Vice-Pres. Milt Wyman and his committee, have concluded each of our meetings thus far. John Fuller, Manager of the Knowlton Hereford Farm, gave his “Expectations of a Veterinarian” at the January 16th meeting. His talk was both humorous and educational.

Dr. Rainier spoke at the Jan. 30th meeting. His topic, “First Year’s Errors in Practice” gave all of us something to look forward to.

“Progany Testing in Relation to Artificial Breeding” was presented by representatives of the American Artificial Breeders Assoc. at the Feb. 13th meeting. The program was introduced by Bob Rainier who was this year’s recipient of the scholarship. Our heartiest congratulations are extended to Bob at this time.

Coach Woody Hayes headlined our program on Feb. 27, 1963. His interest in Vet. Med. is perhaps a little greater than most coaches. (His brother was a Veterinarian, prior to his death in California.) Our sincere thanks are extended to Mr. Hayes for his gracious acceptance to speak and also for his continual boost to our profession.

ANNUAL SPRING CONFERENCE

THE OHIO STATE UNIVERSITY

June 10, 11, 12 and 13, 1963, the annual spring conference of the College of Veterinary Medicine, The Ohio State University will be held in Sisson Hall Auditorium, The Ohio State University Campus.

June 10 and 11 dates will deal with special short courses highlighting a meat inspection course that will be put on jointly by The Ohio Department of Health, College of Veterinary Medicine and the United States Meat Inspection Division.

June 12 a special course on Civilian Defense will take the major portion of the day. During the late afternoon the new Goss Laboratory Building will be dedicated.

June 13 a general large and small animal session will take place.

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A farmer phoned the veterinarian. “Say, Doc,” he said, “I’ve got a sick cat. He just lays around licking his paws, and doesn’t have any appetite. What shall I do for him?”

“Give him a pint of castor oil,” said the vet.

Somewhat dubious, the farmer forced the cat to take a pint of castor oil. A couple of days later he met the vet in town.

“How’s the sick calf?” inquired the vet.

“Sick calf! That was a sick cat I had.”

“Did you give him the pint of castor oil?”

“Sure did.”

“Well, what did he do?” asked the vet.

“Last time I seen him,” said the farmer, “he was going over the hill with five other cats. Two were digging, two were covering up, and one was scouting for new territory.”

The SPECULUM
Pre-Veterinary Medical Day—1963

By Frank Goldsmith, Publicity Chairman

May fourth is the date of the 1963 Pre-Veterinary Medical Day. This will be the fourth annual program which is designed to promote interest in the profession of Veterinary Medicine. Last year, over two hundred people toured the facilities of the College of Veterinary Medicine. The influence of this and other programs is reflected in the exceptional high quality of this year’s applicants for the freshman class. With this record of success behind us, we are determined to make this the biggest year for Pre-Vet. Day. With this objective, last year’s opening of the new Pathology facility, and the relocation of some of the clinic facilities, we have a program that will be of interest to everybody.

The most intensive publicity campaign possible will be undertaken by the students. If this were enough we would have no problems in attracting prospective students. To get more help we are appealing directly to all people reading this article to aid in directing people to the program. If practitioners would post the enclosed bulletin in their office and other people would tell as many people as possible about the program, our attendance would be greatly increased. We extend an invitation to all people reading this to attend Pre-Vet. Day and see the new facilities and how the college is functioning. We invite practitioners to contact local science clubs, 4-H clubs, and other interested organizations and spend one Saturday on public relations for the profession.

The festivities will start at 10:00 a.m. at Sisson Hall, 1900 Coffey Rd. on the west campus in Columbus. All facilities will be open for your inspection. Lunch will be served at a minimum charge. We will be looking forward to seeing a good turnout at Pre-Vet. Day and hope that a good many professional people will escort groups.
for teachers of radiology, veterinary students, practitioners and clinicians . . .

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The SPECULUM
Norden LACTONOC® is a new product and a different concept, for the treatment and prevention of scours in young animals. The concept is based on the principle of invading the digestive tract with "friendly" bacteria which, in turn, produce a biological barrier against enteric pathogens.

LACTONOC provides live *Lactobacillus acidophilus*, a component of the normal intestinal flora, preserved by desiccation and supplied in either bolette or powder form. Inoculation of the G.I. tract is easily attained by oral administration of the bolette, or by sprinkling the powder in milk or feed. *L. acidophilus* multiplies in overwhelming numbers in the gut, and its abundance, plus the likely benefits from its growth by-products, prevents most pathogens from gaining or maintaining a foothold.

Excellent to good results were obtained in over 90% of 200 pigs and in 82% of 335 calves treated with LACTONOC for enteritis in clinical tests. This product is also highly effective when used to render the healthy gut unreceptive to bacterial pathogens or to re-establish normal intestinal flora following antibiotic therapy. Availability: 10 vials of 4 bolettes; 10 vials of 12 Gm powder.

Norden Laboratories, Inc., Lincoln, Nebraska
Subsidiary of Smith Kline & French Laboratories
Serum is not required when you immunize healthy swine with Swivax

Swivax is a modified live virus vaccine produced by more than 400 consecutive serial passages in rabbits. Two cc. of Swivax stimulates rapid antibody production in healthy hogs. Solid immunity develops in just seven days, and lasts for two years or longer. Because Swivax is non-pathogenic, no accompanying anti-hog cholera serum is required when vaccinating normal, unexposed pigs. When immediate protection is essential, however, Swivax may be administered with anti-hog cholera serum or antibody concentrate. Swivax does not spread by contact, does not produce carriers, and does not revert to virulence, even when deliberately back-passaged twelve times.\(^1\)