

Bellwether

University of Pennsylvania

Summer 1987

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Dean Robert R. Marshak

Dr. Robert R. Marshak became the ninth dean of the School of Veterinary Medicine in September 1973, succeeding Dr.

Mark W. Allam.

Immediately after graduation from the New York State College of Veterinary Medicine at Cornell University in 1945, Dr. Marshak began what was to become a large dairy cattle practice in Springfield, Vermont. One of his clients was Dr. Alan M. Butler, who was professor of pediatrics at Harvard Medical School and a renowned clinical investigator of that era. Dr. Butler encouraged Dr. Marshak to engage in clinical investigation at the Massachusetts General Hospital, Boston. With this arrangement Dr. Marshak conducted studies on metabolic diseases in cattle, making frequent trips to Boston, often at night, with samples for laboratory analysis. At the same time he engaged in an intensive self-learning program in biochemistry. Dr. Marshak developed friendships with leading authorities in the field of metabolic diseases, and in 1956 he was organizing chairman for a prestigious conference on *Calcium and Phosphorus Metabolism in Man and Animals with Special Reference to Pregnancy and Lactation* at the New York Academy of Sciences.

These activities heightened a basic desire on the part of Dr. Marshak to pursue scholarly interests. At one time he considered moving to Boston so that he would be near Harvard University. At the time when he was engaged in these thoughts, Penn's Veterinary School was searching for someone to replace Dr. John D. Beck, professor of medicine, who was leaving after many years in residence at the School.

Dean Mark W. Allam had interviewed many candidates for the position but was unable to find the right individual. Through a series of circumstances, Dean Allam learned about this rather remarkable veterinarian from Vermont. At this time Dr. Alan Butler entered the picture and strongly recommended Dr. Marshak, who was invited to come to Penn for an interview. After the initial interview Dean Allam knew that the search for a professor of medicine had ended, and in 1956 Dr. Marshak was appointed to this position.

Penn's Veterinary School now had a professor with some extraordinary concepts about how clinical veterinary medicine should develop. Dr. Marshak was keenly concerned about the great disparity between the programs for clinical sciences in medical schools and those in veterinary schools, and he lost no time in attacking this situation in a variety of ways. Fundamental to Dr. Marshak's concepts is the premise that students should be taught basic principles of medicine

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Dean Robert R. Marshak

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versus the "cookbook" style of learning. For this reason he urged that the basic science departments be strengthened and this was done, leading to a much closer relationship between clinical and basic sciences. Next, he recruited individuals for the clinical science area who had established scientific reputations, or young people with a sincere desire to pursue graduate studies. Many of these became leaders in various clinical specialties. Dr. Marshak also engaged in a major revamping of work schedules for clinicians in the hospitals so that they would have time available for research, a situation which never before existed in the Veterinary School. This required major additions to the clinical staff and this took place.

All of these, and other changes, eventually forged a clinical department that is one of the best in the world. The pay-off from Dr. Marshak's foresight, determination, and hard work was a remarkable upgrading in clinical teaching, research, and service in the Veterinary School. Further, the renaissance of clinical science at Penn had an impact on the entire veterinary profession. Under Dr. Marshak's guidance clinical specialties, now a major part of veterinary medicine, were developed at Penn, and he is rightfully recognized as the "Father of Veterinary Clinical Specialties." Also, under Dr. Marshak the Veterinary School developed an international reputation as the leader in comparative medical research. Lastly, he was a prime mover in the creation of the core-elective curriculum, a revolutionary move in veterinary medical education.

The development of the specialties required the postgraduate training of numerous young men and women, and Dr. Marshak provided the opportunities for those individuals to engage in this experience. Today, many of those who underwent this training are leaders in their particular field.

Many other major changes and improvements occurred during Dr. Marshak's deanship. Some of these are: a major addition to the Large Animal Hos-

pital at New Bolton Center, and the creation of VHUP on the Philadelphia campus; completion of the C. Mahlon Kline Center for Orthopedics and Rehabilitation; creation of new, innovative programs such as a Program of Aquatic Animal Medicine (AQUAVET), and the Center for Interactions of Animals and Society; and major renovations in the old quadrangle building to provide much needed research space. During the years 1976 to 1982, Dr. Marshak directed fund-raising efforts which realized 27.5 million dollars from the private sector, and from 1974 until present the appropriation from the Commonwealth of Pennsylvania increased from \$1.7 million to over \$10.7 million. Since 1983, Dr. Marshak has directed a major fund-raising effort known as the Second Century Fund. To date, over 30 million dollars has been raised in this effort.

Dr. Marshak is a charter diplomate of the American College of Veterinary Internal Medicine and served as president of this group from 1975-1976. He has served on the editorial board of several journals, including the *American Journal of Veterinary Research*, the *Journal of the American Veterinary Radiology Society*, and the *Cornell Veterinarian*. From 1964 until 1967, Dr. Marshak was chairman, Committee on Postdoctoral Education of the American Association of Veterinary Clinicians, and from 1975 until 1978 he was a member of the Committee on Veterinary Medical Sciences of the National Academy of Sciences. During the period 1976 to 1981, he was a member of the Council on Research of the American Veterinary Medical Association. Dr. Marshak served on the Advisory Council of the New York State College of Veterinary Medicine at Cornell University from 1977 until 1980. He currently serves on the Board of Directors of the Bide-a-wee Home Association and the Pennsylvania Livestock Association, and is a member of the Advisory Council of the James A. Baker Institute for Animal Health, Cornell University, and of the Secretary's Animal Health Advisory Board of the Pennsylvania Department of Agriculture.

Dr. Marshak is a member of the American Association for the Advancement of Science, the American Association for Cancer Research, the American Veterinary Medical Association, the Pennsylvania Veterinary Medical Association, the American Association of Veterinary Clinicians, the Conference of Research Workers in Animal Diseases, and the College of Physicians of Philadelphia (fellow). He is also a member of The New York Farmers, the Philadelphia Society for Promoting Agriculture, and the Westminster Kennel Club.

Dr. Marshak has published over seventy scientific papers, many of them on the subject of bovine leukemia, but also on metabolic diseases and leptospirosis. He has published four major review articles.

Dr. Marshak's contributions to the profession were recognized in 1968 when the University of Bern awarded him an honorary degree of Dr. med. vet.

Despite the multifarious activities involved in administering the Deans Office, Dr. Marshak has kept uppermost the fundamental matters that nourish the Veterinary School: high academic standards, research, teaching, patient care, and community service. His resolute character and his zest have inspired the School. In spite of the great amount of time which he is required to spend in political and fund-raising activities, Dr. Marshak has become a major spokesman for the profession. He has been superbly articulate. He has embraced an extraordinarily broad constituency, including the legislature, the alumni, the Pennsylvania Veterinary Medical Association, agricultural groups, humane societies, the dog and cat world, zoo and wildlife groups, and aquatic medicine.

As Dr. Marshak retires from the Deanship on July 1, 1987, he leaves a legacy that not only encompasses his momentous professional and academic contributions, but brilliantly reflects his role as a compassionate and understanding human being. He cared!

—John E. Martin, V.M.D.

Vincent B. Murphy, Jr., Honored



During the May Board of Overseers meeting, Dean Marshak presented the School's Centennial Medal to Vincent B. Murphy, Jr., member of the School's Board of Overseers and chairman of the Veterinary School's Second Century Fund Campaign. Following is the laudation:

Linked to Pennsylvania by a shared devotion to animal welfare, Vincent B. Murphy, Jr., has worked selflessly to make the School of Veterinary Medicine a stronger, better, more responsive institution. A highly successful investment banker with extensive overseas responsibilities, he manages miraculously to find ample time for his large family as well as for a host of philanthropic interests. Central among these interests, born out of an enduring love for horses and for horsemanship, is the equine athlete. This is expressed in countless ways—as President of the United States

Equestrian Team, as the owner of top competition jumpers, as the father of daughters who are world-class competitors, as an Overseer and Chairman of the Veterinary School's Second Century Fund Campaign, and as one of the School's most generous benefactors. A close friend and advisor to two deans, he has helped the School to chart a successful course through hazardous financial shoals. Though a loyal Yale man, his strong ties to the Red and the Blue have never been in doubt.

In applauding Vincent Murphy's magnificent record of service to the School of Veterinary Medicine, his fellow Overseers join the Dean and the Faculty in inviting him to accept the Centennial Medal, the School's highest tribute.



New Laboratory

The laboratory in the Section of Medical Genetics was renovated to accommodate a new laboratory in medical genetics. The funds for the renovation were provided by the Mrs. Cheever Porter Foundation. Trustees of the Foundation visited the new laboratory in June. During the visit Dr. John Wolfe, who will be directing the laboratory, discussed his work.



Left to right, Mr. Clifford Starkins; Dr. Wolfe; Mr. Edgar Scott, Jr., chairman of the board of trustees, Mrs. Cheever Porter Foundation; and Dr. Patterson.

Left to right, Dr. Wolfe discussing his work with Mr. Alton E. Peters and Mr. Clifford E. Starkins of the Mrs. Cheever Porter Foundation.

Embryo Transfer in Horses

For a number of years, the dairy industry has used embryo transfer in order to increase the number of calves from select producers. Now this technology is being applied to produce more high quality performance horses. At the University of Pennsylvania's School of Veterinary Medicine as well as at other institutions, researchers are helping horse breeders to increase the number of offspring from superior mares.

Dr. Patricia L. Sertich, a lecturer in reproduction at Penn, is affiliated with the Georgia and Philip Hofmann Center for Reproduction at the Vet School's New Bolton Center campus. "We are into our fourth year of performing embryo transfer in the horse," she said. "Currently, more breed associations are accepting embryo transfer foals into their registries. It is permitted by the registries for Arabians, Quarter Horses, American Saddlebreds, Trakehners, and other European warmblood horses. Each registry has specific criteria which must be met for acceptance. Embryo transfer is not permitted by the Thoroughbred and Standardbred registries."

The horses Dr. Sertich works with are performance horses, predominantly show jumpers and dressage horses. Many are actively in training and competing on the show circuit, even while participating in the transfer program.

"We like to group the mares for breeding to increase the efficiency of the program. Usually, we breed more than one mare to the stallion," Dr. Sertich said. "The procedure is very labor intensive and requires a lot of attention to detail. Embryo transfer allows a mare to produce more than one foal in a year." Usually, the 11-month gestation period of the horse allows for production of only one foal per year, and serving as a broodmare interferes with the mare's training and performance schedule.



Top: Dr. Patricia Sertich examining a mare by ultrasound for detection of ovulation.
Bottom: A successful transfer.



One of the donor mares in competition.

Dr. Sertich explained that the donor mare (mare which is bred) and the recipient mare (mare which carries the foal) must be synchronized so that they are at the same stage in their heat cycles. "When the horses arrive at the Hofmann Center, they are given hormones to prevent them from coming into heat. These hormones are discontinued after ten days and the mares come into heat six days later. Each mare is teased daily to determine her receptivity toward the stallion, and her reproductive tract is palpated to detect ovulation. Follicle development is also monitored by ultrasound so the precise time of ovulation can be determined." Mares are bred just prior to ovulation.

Breeding is accomplished by artificial insemination. "It is physically safer for the horses and lowers the likelihood of spreading infection," she said. "Also, more than one mare can be bred from one semen collection." Frequently, the stallion is actively competing at shows. He is brought in for breeding at the proper time and then returned to competition.

Seven days after ovulation, the donor mare's uterus is flushed. A special embryo medium is infused and then collected. After flushing, the embryo, no larger than a pin head, is located and transferred transcervically into the recipient mare. The Hofmann Center is one of the few places where nonsurgical equine embryo transfer is successfully being performed. Throughout the procedure both the donor and the recipient mares are awake and comfortable.

"Inserting the embryo into the recipient's uterus must be done carefully so the recipient cervix and uterus won't 'recognize' that something is happening," said Dr. Sertich. "We use an insemination pipette, thread it into the cervix, gently negotiate the cervix, and insert the embryo into the uterus."

Dr. Sertich explained that the timing of a flush is critical. "If you flush as early as five days after ovulation, the embryo is still in the oviduct, whereas if you wait until after the ninth day, the embryo is so big that it can be easily damaged." After transfer, the equine embryo travels all around the uterus, touching the entire endometrium during the first 16 days of pregnancy.

The condition of the recipient mare is important. "We prefer to use young mares that have not foaled and that have a healthy reproductive tract. Using reproductively sound maiden mares, we were able to achieve a 70 percent transfer success rate. If poor

quality recipients are used in an embryo transfer program, the success rate can be expected to be much lower."

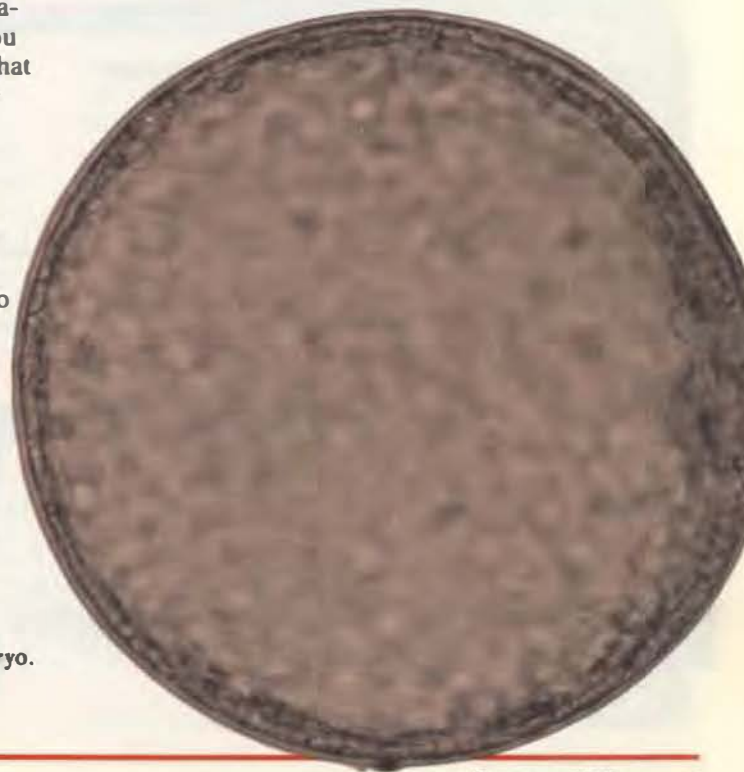
New Bolton Center does not provide the recipient mares. That is the responsibility of the donor mare's owner, who also must satisfy the requirements of the breed registry. If one elects to have the procedure performed, one must plan on the mares staying at least 28 days at the Hofmann Center. It is not an inexpensive procedure as it is very time consuming. "The mares are checked and palpated daily. It is very labor intensive. But the breeder may get more than one foal, and the donor mare is still available for competition."

After being flushed, the donor mare may simply return to competition or training. However, she can be brought to cycle again and rebred for a further flush. Of course, another recipient mare must be synchronized. In this way it is possible for one mare to produce two or even three foals during a single breeding season.

Although an embryo can remain viable for hours at room temperature, recovered embryos are usually transferred as soon as possible. Dr. Sertich has cooled embryos to 4°C for 24 hours before implanting them, achieving a 25 percent success rate. If this cooling technique can be perfected, embryos could be transferred throughout the nation or even the world.

"Embryo transfer provides us with an intensive breeding situation in a very controlled environment," said Dr. Sertich. "We are able to collect a great deal of data, and these studies provide an invaluable teaching and learning situation. We are performing research in a clinical setting. Thus, both students and horse breeders benefit."

Dr. Sertich graduated from the School in 1983; her primary research interest is in equine reproduction.



Seven-day equine embryo.

Mathematical Models for Parasite Control

Parasitic disease of livestock is costly to the agriculture industry. It is estimated that losses resulting from nematode infections of beef and dairy cattle in the United States alone will reach the \$600 million mark by the end of the decade. Farmers try to prevent losses by administering anthelmintic drugs, which are expensive, and through pasture rotation, which is labor intensive. An added problem is that some parasite populations are resistant to a number of commonly used anthelmintics.

Researchers, in the field and in the laboratory, have been studying means of controlling parasite infections for many years. Now, with the advent of powerful computers, these studies have taken on an added dimension. Computers can be used to develop mathematical models which can examine different means of parasite control. "We can use mathematical models of parasite population biology to see how the disease status of the infected livestock alters in time and space," explained Dr. Gary Smith, assistant professor of population biology and epidemiology at the University of Pennsylvania School of Veterinary Medicine. "Such models also allow us to examine different strategies for parasite control before they are tested in the field."

Dr. Smith pointed out that the modeling technique is the same whether the researcher is dealing with macroparasites (roundworms, tapeworms, flukes) or microparasites (viruses, bacteria, protozoa). "In the case of parasitic disease caused by worms, we construct an equation for each stage in the life cycle and simulate the course of infection during a grazing season for specific climatic conditions. We know the time needed for the development of infectious larvae, how long they can survive in the pasture, and how long it takes the worm to reach adulthood once ingested. To study the effect of an anthelmintic drug, we can alter the equations to reflect the drug's action on specific stages of the parasite and then determine the likely reduction in worm burden."

One such study examined different protocols to combat *Ostertagia ostertagia* (stomach worm) infection in grazing calves and yearlings in Europe and

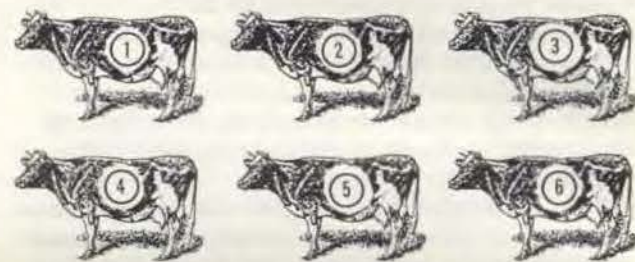
temperate regions in North America. Normally, the infection peaks in August and September and declines on its own, without drug intervention. "Traditionally farmers used to wait until the cattle showed signs of disease before treating them with anthelmintic drugs," said Dr. Smith. "Such a regimen works but requires repeated administration of the drug." The computer model simulated six protocols: a) no anthelmintic therapy; b) therapeutic administration of anthelmintic A at the time of peak infection; c) prophylactic administration of A at three, six, and nine weeks after turnout to pasture; d) movement of calves to a second pasture immediately following a prophylactic dose of anthelmintic A; e) prophylactic administration of anthelmintic B three and eight weeks after turnout to pasture; and f) prophylactic administration of anthelmintic C via an intraruminal time release device (bolus), which releases effective quantities of the anthelmintic for 80 to 100 days.

The model generated information demonstrating the impact of the various protocols on the worm burden in the cattle. All the prophylactic protocols (c to f) significantly reduced the worm burden at mid-summer. Dr. Smith pointed out that these protocols work by reducing the number of infectious larvae in the pasture. "The model allows us to study an approach in detail without doing a field study," he said. "It allows us to think about different approaches and examine the problem in depth prior to embarking on a field study." The model did not examine the costs of treatment and the financial return realized by the use of each of the different protocols.

Resistance to drugs is a big problem in parasite control. "Drug resistance is highest where long-term routine dosage is practiced," said Dr. Smith. "Resistance typically appears within ten to 50 generations of the routine application of a drug." It appears that parasites are always one step ahead of the drug companies. Resistance is a vexing problem for horse owners, as seven out of ten of the small strongyles have demonstrated drug resistance. Australian sheep farmers also have tremendous difficulties with drug-resistant sheep nematodes, which reduce the yield of wool and meat significantly. It is important to slow down the spread of such resistant strains, and

mathematical models can help. "We suspect that within each parasite population there may be individuals which are wholly resistant, not resistant, and partly resistant. If we assume that the wholly resistant and the non-resistant strains are homozygous for the trait and that the partly resistant strain is heterozygous, we can develop a model for each of these populations and can investigate when resistance is likely to appear." The model then can be used to determine the most efficient method of utilizing a drug without encouraging the rapid spread of resistant strains.

Dr. Smith pointed out that parasite populations are regulated by a number of natural processes. "For example, cattle will develop a natural immunity during each grazing season, and this causes a decrease in the worm burden later in the season," Dr. Smith is incorporating these natural regulatory processes in his models since they influence drug strategies. "The natural regulatory processes render the host-parasite system more or less refractory to perturbation, and so they tend to oppose the effects of anthelmintics."

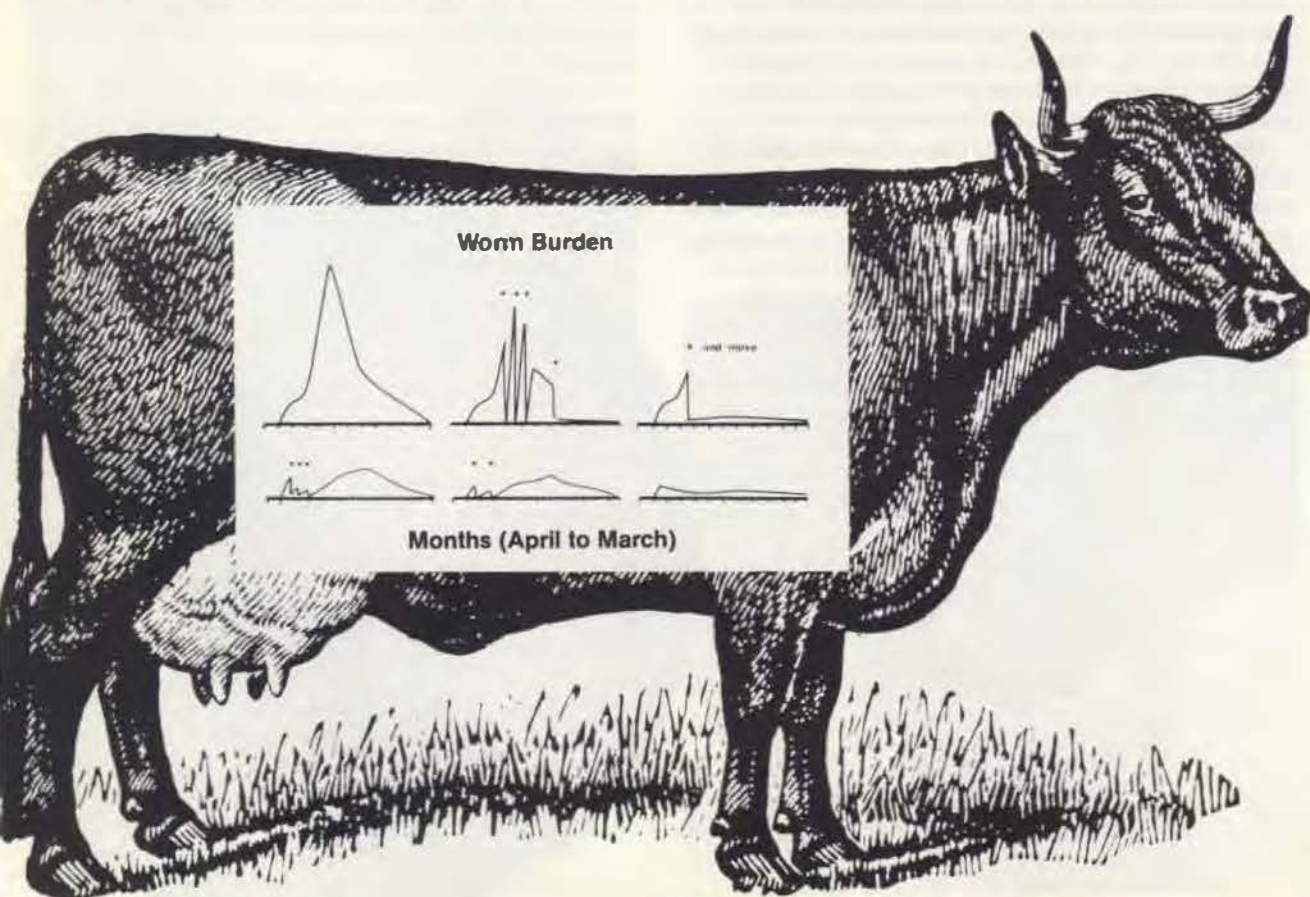


Use of mathematical models can reduce the number of field tests and make these more efficient. Such models also reduce the number of animals needed for field studies, though they will not entirely eliminate the need to use animals in such studies. "The model frees the researcher from the need to think about three or four things at once. Each variable and its impact can be examined methodically in a controlled situation without using animals. In essence, a model can be a rehearsal for a field study with animals, making the field study much more efficient."

Mathematical models can also be used to examine vaccination strategies prior to field testing. For example, it is possible to determine the number of vaccinated animals needed to halt the spread of an infectious disease such as rabies.

The economic benefits of a given strategy can also be examined using models. "We hope to be able to estimate the expected return from specific protocols and so assess the specific worth of veterinary intervention together with the risks involved," Dr. Smith is collaborating with Dr. David Galligan in the development of such a model.

Dr. Smith is a member of the Center for Animal Health and Productivity at New Bolton Center, and his research is funded by a grant from the Pennsylvania Department of Agriculture. He came to Penn from England in 1986.



Effects of protocols (a) to (f) on the average number of worms (*O. ostertagia*) per calf. Top left to bottom right, protocol (a), no treatment, to protocol (f), time release bolus.

Salmonellosis



ne of the major infectious diseases affecting horses is salmonellosis. Caused by bacteria, the disease strikes suddenly, often in animals stressed by transport, training, racing, or surgery. "The horse is fine one day and the next day it is febrile,

depressed, and has diarrhea," said Dr. Jonathan Palmer, assistant professor of medicine at the University of Pennsylvania School of Veterinary Medicine. "As these symptoms can indicate a number of different diseases, the veterinarian has to use the laboratory to make the diagnosis. It is important to give supportive therapy, to provide fluids and electrolytes to replenish what is lost through diarrhea."

Dr. Palmer explained that diagnosis of salmonellosis is not a quick process. "Fecal cultures are required to isolate and identify the presence of the organism, and that takes two to three days for each culture. Often the bacteria will not be evident in the first cultures, and many fecal specimens may have to be taken." While the specimens are being processed, the veterinarian will also perform more tests to rule out diseases with similar symptoms.

Salmonellosis occurs in mammals, fish, birds, and reptiles. More than 2,000 different serotypes have been identified but only about 15 to 20 of these are responsible for serious disease in the horse. Dr. Charles Benson, associate professor of microbiology at New Bolton Center, is working on the development of better approaches for both the isolation of *Salmonella* and the characterization of the different isolates. He is also evaluating a variety of techniques to 'fingerprint' the plasmid(s) present in these strains.

Plasmids are pieces of DNA that exist in the cytoplasm apart from the normal chromosomal material of the bacterium and are often referred to as extra-chromosomal elements. Plasmids may contain the genetic information for antibiotic resistance, increased virulence (ability to cause an infection), and a number of other characteristics. Different plasmids from different *Salmonella* may have a different combination of these genetic components. These plasmids may be extracted for analysis.

The attached figure is a picture of a plasmid analysis performed by electrophoretic separation in an agarose gel of the plasmids extracted from five different *Salmonella* isolates. Two of these strains have the same plasmids, and thus the patients were considered to have been infected from the same source. The mechanism for analysis of these plasmids is continuously being refined to gain as much information as possible. Note also that several of the strains had more than one type of plasmid coexisting inside the same bacterium.

Most plasmids are spread from one bacterium to another by conjugation. The mechanism of transfer includes a replication step so that only a copy of the plasmid is transferred to the recipient. The recipient of the plasmid gains the ability (by virtue of specific genes on the plasmid) to transfer a copy of the plasmid to another bacterium. In this fashion, a single bacterium carrying one or more plasmids may initiate a mini-epidemic among members of the bacterial colony, resulting in widespread distribution of the plasmid(s) as well as sending the plasmid(s) to bacteria other than *Salmonella*.

"By identifying the genetic pattern of plasmids from a *Salmonella* isolate, Dr. Benson and his associates can determine where the bacteria may have originated.

Dr. Benson is isolating the bacteria from samples collected here at the hospital as well as from specimens sent in by practitioners," said Dr. Palmer. "The genetic material contained in the plasmids is examined and compared to the genetic material from other *Salmonella*. The genetic composition of the chromosomes of the bacteria changes very slowly over time; changes in the plasmid composition are considered significant."

Recently this technique helped to identify a strain of *Salmonella* detected in a hospital patient. It was a strain not seen in this area but very common in another part of the country. It was determined that the horse had harbored the organism, and the stress of surgery had caused the disease. The patient had not picked up the infection at the hospital.

"The ability to identify the source of the bacteria is important to epidemiologists," said Dr. Palmer. "Outbreaks of salmonellosis have increased in recent years, and it is important to find out where the organism came from." Dr. Benson's method can help determine whether the bacteria originated from a herd of cattle, from a contaminated area of a slaughterhouse, processing plant, or store or whether they found their way into food through contaminated appliances in a kitchen. "At this point in time, a great deal of blame for human salmonellosis outbreaks is put on livestock producers," said Dr. Palmer. "By identifying the strain of bacteria the real source can be found. It may not be on the farm or in the feedlot but in a place removed from there."

About ten percent of horses have asymptomatic *Salmonella* infections. They show no sign of disease, yet they can act as a reservoir as they shed the bacteria from time to time. The disease is spread mainly through feces. In horses older than one year it causes diarrhea, fever, and depression. In foals and newborns, it may become systemic in that the bacteria invade the bloodstream, causing pneumonia and infection in the joints. Here the disease is treated with antibiotics in addition to the fluids. "In older horses antibiotics may slow down the disease but won't cure it," said Dr. Palmer. "Aggressive, supportive fluid therapy at this time is the best treatment. The diarrhea will run its course, and the horse will develop immunity which may protect it from future infections. Rarely do we get a readmission for salmonellosis."

Salmonellosis also affects livestock. It is particularly serious for newborn calves where the mortality rate is very high. "Cleanliness can reduce the incidence of the disease; suspected animals should be isolated and con-

taminated pastures should not be used." *Salmonella* infection in dairy cows can present a human health hazard if the milk is not pasteurized prior to processing or sale. Heat kills the bacteria.

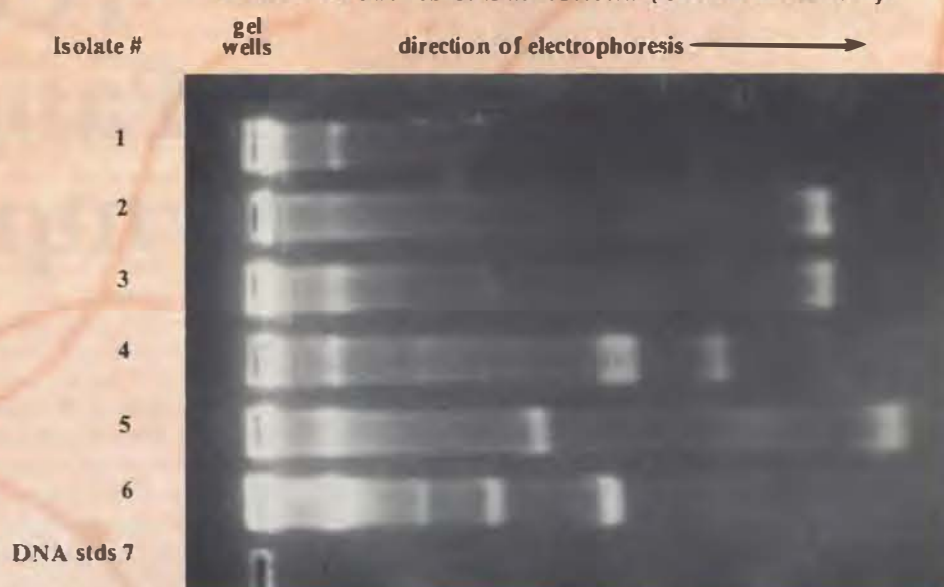
Salmonellosis is always suspected when a horse or a food animal is admitted to the hospital with diarrhea. Such patients are placed in the isolation unit at New Bolton Center and are tested repeatedly for the disease. Only when at least five clean cultures have been obtained is salmonellosis ruled out. Each animal is in its own stall, and veterinarians and technicians wear overalls and boots, which are changed before entering the next stall or leaving the building. Also, before a patient is handled, the clinician and the technician scrub their hands. When a patient is discharged the stall is cleaned and disinfected and cultures are taken. Only after successive clean cultures is the stall used for the next patient.

The *Salmonella* organism may be anywhere, in the ground or in water. In stables and on pastures it can be shed by rodents, birds, and wildlife. Thus, horses and livestock are frequently exposed to it. "*Salmonella* usually will not affect a healthy animal, but when such animal is stressed, the infection can take hold," said Dr. Palmer. "Veterinarians carefully monitor their surgical patients for salmonellosis to begin treatment at once should the disease surface." At this time, there is no completely effective vaccine. Dr. Benson and his colleagues at New Bolton Center are working on developing one, as are researchers at other institutions.

While suspected salmonellosis cases make up the largest contingent of patients in the isolation unit at New Bolton Center, horses and livestock with other infectious diseases are also admitted there. "Animals with diseases such as herpes myelitis or Potomac Horse Fever are placed in isolation, as are cattle with John's disease and sheep and goats with caseous lymphadenitis," said Dr. Palmer. "Other infectious diseases like strangles or equine influenza can be treated on the farm where the animals can be kept isolated."

The isolation barn at New Bolton Center has been renovated and refurbished during the last year. Shortly, each of the six stalls will be individually ventilated and heated in the winter. The ventilation system will be such that only fresh air will be circulated. The renovations and the new air handling system were made possible by a generous donation from the Mrs. Cheever Porter Foundation.

Plasmid Profiles of *Salmonella* (Clinical Isolates)





10th Annual Feline Fanciers Symposium

The School of Veterinary Medicine, University of Pennsylvania, hosted the 10th Annual Feline Fanciers Symposium on March 28, 1987, at VHUP. Following are summaries of the two clinical presentations.



Dental and Gum Problems in Cats

Dr. Colin Harvey, professor of surgery, discussed dental and gum problems in cats. He explained that cats have 30 teeth, compared to dogs which have 42. The skull and mandible of the cat are generally shorter and the head shape is more uniform than in dogs.

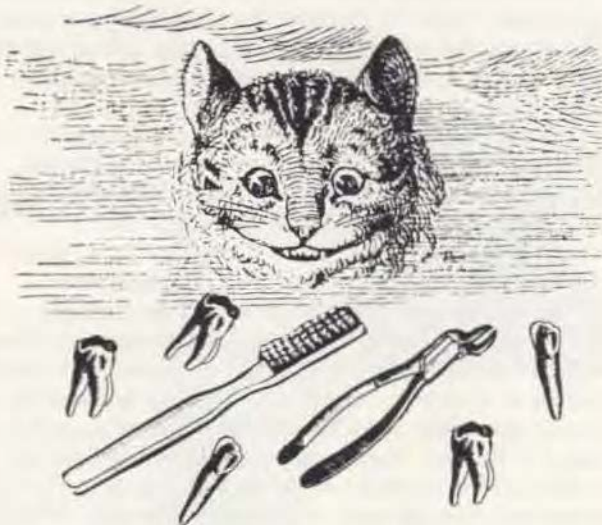
The cat's upper jaw has eight teeth on each side, and the lower jaw has seven on each side. The incisor teeth each have a single root; the canine teeth each have one large root, the visible crown being only one third of the tooth. The large carnassial tooth on the upper jaw has three roots and the other cheek teeth each have two roots. In a normal healthy mouth the teeth are clean and the gums are light cream or pink in color.

Often though, the normal healthy mouth is seen only in younger cats. As the animal gets older, gum and dental disease develop. "Gum disease is the most frequent disease seen in veterinary dental practice," said Dr. Harvey. "Periodontal disease is the most common infectious disease in the world and it affects dogs, people, and all other species." He pointed out that gum disease is usually regarded as a benign disease not causing a great deal of pain, except in the cat where its effects can become a very serious medical problem.

Periodontal disease is caused by bacteria that flourish in the mouth and form plaque, a substance which coats the teeth. If it is not removed through dietary abrasion or brushing, calculus, a hard mineral substance, will form. It adheres to the teeth, particularly at the gum line. This irritates the tissue, causing inflammation. Bacteria exacerbate the situation. In the beginning of the disease process, the bacteria flourishing are aerobic, but after a short while anaerobic bacteria take over. These are more destructive as they produce enzymes which attack the gum and bone tissues. If infection goes unchecked, the gingivae can become so inflamed that they pull away from the teeth, and bacteria can penetrate into the pockets and reach the bone and affect it. The disease also attacks the ligaments that hold the teeth in place and that act as shock absorbers when one bites down. In advanced disease, teeth will loosen and fall out.

Periodontal disease in the cat has an added dimension. Not only are gums and bone tissues affected but also the teeth. The actual structure of the teeth is attacked by the cat's own cells that line the teeth. Active lesions ("neck lesions") develop and the cementum disappears, leaving the sensitive dentin exposed. It is a very painful condition, as the tooth nerves are no longer protected. When a cat has neck lesions it may refuse to eat or drink because of the pain. Left untreated, the condition can become life threatening because of dehydration.

Another abnormal feature of periodontal disease in cats is extensive soft-tissue proliferation and ulceration, which develops in some animals. It usually affects the cheek lining that separates the jaws, and the lining of the throat. This condition has been referred to as "plasmacytic-lymphocytic gingivitis-stomatitis."



Dr. Harvey explained that dental and gum disease in cats can be successfully treated if detected early. "The animal is anesthetized, and the teeth are cleaned thoroughly to remove plaque and calculus. Then the owner has to follow up with home care to prevent the reformation of plaque and calculus. If the disease is advanced, we need to treat the animal with antibiotics and anti-inflammatory drugs to reduce the inflammation. Only then can the teeth be thoroughly cleaned while the animal is anesthetized. In severe cases, teeth

may have to be pulled." He explained that the teeth most often affected are those in the cheeks. "We can pull them and leave the canine and incisor teeth. The cat can eat and will be fine." The rate of cure for cats with severe, non-responsive gum disease is about 70 percent, following extraction of all teeth in affected areas of the mouth.

Dr. Harvey then explained proper oral hygiene to prevent gum and dental disease in cats. He recommended feeding a dry food and brushing a cat's teeth several times a week. One needs a soft child's toothbrush, a dentifrice specifically for cats, and patience to brush a cat's teeth. Substances containing sodium benzoate should not be used as that is toxic to cats. To acquaint the animal with having its teeth brushed, the owner should gently hold the cat's mouth closed and then just lightly brush the outside of the front teeth with a brush dipped in water. After about a week the brushing should be extended to the back teeth, still only on the outside. After a few weeks the cat's jaw should be opened and the inside of the teeth brushed. He cautioned that some cats will not allow brushing on the inside of the teeth, and he recommended to continue brushing the outside.

Prior to embarking on a brushing regimen, the owner should make sure that the teeth and gums are clean. If they are not, then the cat should be taken to the veterinarian for teeth cleaning. Then brushing should be commenced.

Dr. Harvey then briefly discussed orthodontic abnormalities which can cause malocclusion. These are seen commonly among brachycephalic breeds and occasionally in some modern strains of Siamese cats which have extremely long jaws.

Trauma is a common cause of oral disease. Cats often fracture the jaw when falling from heights, or they may dislocate the jaw. Fractured teeth can be retained if endodontic treatment is performed. Chewing on electrical cords also results in injury of the mouth.

Dr. Harvey currently is engaged in a research project studying the types of virus found in oral cavities of cats. His work is being supported by a grant from the Winn Foundation, and it is carried out at Penn and at the University of Liverpool, England.

Behavior Problems in Cats

Dr. Victoria L. Voith, adjunct assistant professor of medicine, discussed feline behavior. She pointed out that cats can be very social and have individual ways of expressing themselves. Sometimes their communications may be interpreted as aggression by owners. She stated that cats have a flexible social system, that they can live either alone or in small groups, and that they communicate by hissing, growling, swatting, and scratching. "These signals are not evil; they are means to communicate," she said. "But owners sometimes misinterpret them. Cats hiss at each other and sometimes at owners. We must remember that they often use grosser signals than dogs."

About 25 percent of the cat behavior calls received by the clinic pertain to aggression. "In many cases it is just play aggression and this can be treated easily. However, we have seen cases of severe aggression

ally he was to place the food closer and closer to himself until the cat was next to him. Only then was he to attempt to pet it. It took two months for the cat to lose its fear and cease the aggression episodes.

Other cases of aggression involved a cat which had attacked a dog and then had turned on the owner. In another case the cat had become aroused by a peculiar odor and became aggressive when the owner reached for the cat to pet it.

"Cats take offense when scared or aroused," said Dr. Voith. "They remain aroused for a long time and may direct their aggression toward someone who comes close while they are in this state." She recommended to not interact with a cat that is aroused and to wait until the cat is calm and relaxed, exhibiting other behaviors like grooming or eating. "If one approaches a cat that is in an aroused state, the result

build up."

She pointed out that if cats do not scratch in a litterbox they may eventually stop using it. If they dislike the litter they will find another substrate. In order to discourage the cat from using the carpet or another surface in the house, the owner should clean the area and then change the texture of the surface. It can be covered with plastic, for example.

The owner should change the litter, use a different product, and take the cat over to the box several times a day. In some cases several boxes with different litter may have to be set up. Also, owners can try to prevent a cat from using an area for elimination by putting food or water there or the cat's bed. Under no circumstances should one punish the cat and then put it in the litterbox as it will then associate the box with punishment.



involving biting and scratching and the sudden pursuit of an owner."

Dr. Voith then cited a case history, seen by her and Dr. Chapman. The cat, a six-year old domestic short-haired cat, lived indoors and one day suddenly attacked the husband and displayed aggressive behavior toward him for a period of time. The cat was taken to the veterinarian for an examination and received a clean bill of health. Then it was referred to the behavior clinic.

During consultation at the behavior clinic, a thorough history was taken. It was found that on the day the cat first exhibited this behavior the family had had visitors with children. The cat had run outside into the garden and hidden under a bush. The husband had tried to catch it, but the cat had hissed at him and had pursued him, walking on its hindlegs, batting its paws. The man had left and returned with a blanket, and used it to capture the cat. After that, whenever the cat saw the husband, it threatened him.

Dr. Voith diagnosed the behavior as fear-elicited aggression. "The cat was afraid outside," she said. "It was apprehensive, very aroused, and primed to be defensive towards anything. When the husband caught it and the cat directed its aggression toward him, the cat was further frightened by its capture and remained defensive toward the husband." The cat was treated with a combination of techniques. The husband was advised not to directly interact with the animal, to just put down its food but not reach for the cat. Eventu-

ally he was to place the food closer and closer to himself until the cat was next to him. Only then was he to attempt to pet it. It took two months for the cat to lose its fear and cease the aggression episodes.

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She recommended to not interact with a cat that is aroused and to wait until the cat is calm and relaxed, exhibiting other behaviors like grooming or eating. "If one approaches a cat that is in an aroused state, the result can be redirected aggression. The person may then react in a way which causes the cat to become more afraid. It then takes a long time to get the animal back to its normal self." She did say that cats exhibiting sudden aggressive behavior should be seen by a veterinarian to rule out disease.

Dr. Voith briefly discussed spraying and said that it can be elicited by environmental factors, such as other cats seen from a window. Castration is very effective in controlling spraying; spraying of females helps sometimes. About 10 percent of cats continue to spray; these animals can be treated with drugs and/or behavioral techniques to stop such behavior.

When trying to diagnose a behavior problem, a complete history is needed so the clinician can determine the factors eliciting the undesirable behavior. A complete medical evaluation is also necessary to rule out behavior problems caused by disease.

In the afternoon Mr. Richard Gebhardt, past president of the Cat Fanciers Association and a noted cat show judge, discussed judging procedure. He also explained the breed standards for ten breeds of cats which had been brought to the symposium. His presentation was followed by "A Spectator's Guide to Cat Shows," given by Mr. Gene Phillips, director of the Cat Fanciers Data Center. The final speaker of the day was Dr. Jane R. Bicks, who gave an interesting talk on "Practical Feline Nutrition."

Ethics and Clinical Practice— a New Course

Ethics issues arising in clinical practice are addressed by Ethics 9009, a core course for all students at Penn's School of Veterinary Medicine. The course, first offered in the Fall of 1986, is presented in the format of Ethical Grand Rounds, a technique designed to mimic the medical and surgical discussions students will encounter in their later years at school.

For the last decade, medical students have taken courses dealing with ethics and clinical practice. Veterinary schools just recently have begun to address this issue. "In lectures and laboratories, veterinary students are taught to identify and treat animal diseases, relieve pain, and care for livestock to ensure plentiful food products, and they are encouraged to participate in research to advance medical knowledge," said Dr. Sheldon Steinberg, professor of neurology and one of the organizers of the course. "These tasks appear to be quite well defined, yet in practice they often are less clear and judgment is required. The reality is that veterinary medical practice (as every other of life's significant endeavors) requires judgment. That judgment is not restricted to the patient's clinical status and the significance of test results alone but includes questions also of the propriety of running those tests, treating or not, of performing euthanasia or not. These judgments must be made because the mere availability of technical or medical means or legal prerogatives is not necessarily a sufficient basis for making decisions. Such issues are not stressed in lectures where the emphasis is on identifying diseases and on modes of treatment."

Ethics 9009 acquaints students with the conflicts encountered by practitioners. The six-week course consists of the weekly presentation of a problem, discussion by groups of students and faculty moderators, and a summarization of the viewpoints from the six discussion groups and the clinician presenter.

"As we explore the issue of judgment, we find that more than one position has a measure of 'rightness'," said Dr. Steinberg. "Hence there is a conflict. In this course the topic and the issue of concern is 'Ethics and Clinical Practice—When Good Positions Conflict'." The purpose of the course is 1) to bring real-life ethical issues to the students' attention, 2) to discuss these and hence encourage students to discover and consider other issues as they arise, 3) to demonstrate that even questions without clear answers require rigorous, clear thinking, 4) to demonstrate that careful and critical exploration of conflicting issues may help us to choose from among the issues, and 5) to demonstrate that listening to opposing views may strengthen or change one's own opinion."

The problems presented by practitioners and faculty members ranged from the question "Should research animals be used to train veterinary students" to "Treatment of the terminal cancer patient: how much, how far, and how often." The course participants examined issues such as treating an injured animal brought to the veterinarian by a bystander and it having a) an owner who cannot be reached, b) an owner who owes money for previous treatment, c) an unknown owner who authorized treatment and promises to come by the next day. In another problem the

issue was one of referral, how much testing or explorative surgery should be done when a specific disorder is suspected but its scope is not fully known, and should the case be referred to a teaching hospital which offers more sophisticated tests before or after testing/explorative surgery. Students discussed informed consent and how much and what specific information to give so a decision for the treatment of an animal can be made. Here the students had to deal with the definition of informed consent, which requires the veterinarian to provide information about the nature of the medical condition, the nature and purpose of the proposed treatment and procedures, the likelihood of success, the risks involved or possible side effects, and the alternatives to the procedure and treatment (if any) and their possible consequences. During these discussions it emerged that informed consent is not a simple issue and that the client's perception of the medical reality depends greatly on the veterinarian's presentation of facts as well as the manner in which they are conveyed. The veterinarian's own convictions also play an important role in the client's decision-making process.

The final exam, a take-home essay, required the students to deal with such issues as informed consent, experimental treatment, fees, and a pending research grant. They also had to address the general issue of animal research, the prospect of improved human health, and the importance of professional growth, and they were required to present alternate points of view and their response to them.

"We deliberately offer this course early in the students' veterinary training," said Dr. Steinberg. "They can zero in on the ethical issues unhampered by medical facts. Of course, they are given pertinent medical information within the context of the problem. We want them to be aware that veterinary medical practice requires judgment and that the issues discussed in the course are just the beginning of a career-long concern."

In the first course, problems derived from practice were offered by Drs. F. Rude, S. McDonough, N. Oakley, J. Simms, and H. S. Steinberg. Drs. G. Kaufman, S. Helfand, and S. Schiffer from the faculty presented problems from VHUP. The faculty moderators were Drs. Alan Beck, Colin Harvey, Joan Hendricks, Meryl Littman, William Moyer, David Nunamaker, and Robert Orsher.

The course was developed by Dr. Steinberg and Dr. Donald A. Abt, professor of epidemiology and biostatistics. "We hope to interest our alumni and to have them participate in the course," said Dr. Steinberg. "We want them to become involved and to present problems encountered in practice to our students. Only if we have a broad practitioner participation can we expose the students to the wide range of ethical dilemmas encountered by practicing veterinarians. I do hope to hear from alumni willing to contribute to this course."



ETHICS 9009

Final Examination

Please identify the ethical issue(s) that Dr. Nobell faces. State your solution(s) to those issues and defend your solution(s) against any objection(s) that a reasonable person might raise against your view(s).

Since your understanding of the issues is what we wish to evaluate, you are all to work independently on this case.

Case Presentation

The only bull owned by the Black & White Holstein Stud Service of Freemartin, CT, has become suddenly and mysteriously sterile. The distraught owners seek the advice and service of Dr. Nobell, a well-known and respected veterinarian in this field of medicine. Dr. Nobell diagnoses the disorder and decides that his new corrective surgery might be indicated. Dr. Nobell knows:

1. That the technique has helped 88 percent of the experimental rats he has treated;
2. That only 4 percent of his rats have died;
3. That the existing standard treatment for bulls is very safe, but results are only fair; i.e., about 40 percent of bulls are helped;
4. That his \$4,000 fee for various supplies and professional services is:
 - a. affordable, and
 - b. a modest cost relative to the healthy bull's value;
5. Further, Dr. Nobell knows that his pending research grant would be enhanced if he tests his method on a bull (even if the attempt fails). If successful in rats and bulls, there is reason to believe that this treatment will also be beneficial to humans with a similar problem.

Unhappily, if Dr. Nobell fails, no other treatment will be possible for this bull. Also, any prior treatment will preclude employing this new surgical treatment.





Animal Crackers

Bloat in Dogs

Each year it is estimated that there are at least 65,000 cases of bloat (acute gastric dilation). The cause is not known. It is a life-threatening condition and prompt treatment is necessary. The dilation of the stomach may lead to torsion (volvulus), which requires surgical correction.

Bloat usually occurs in the larger breeds. There is no hard evidence that there is a relationship to feeding practices, although many recommend small meals two or three times a day, with no exercise immediately after feeding.

An immediate priority is research on the epidemiology of the condition. This would include studying a number of cases of bloat along with the same number of dogs that do not have the problem. Feeding practices, diet, breed, housing, exercise, and any related factor would be analyzed. Is there an anatomic factor? Could there be some inherited defect? What are predisposing factors?

Until we know the cause, we cannot tell how to prevent bloat. Studies have shown that there is abnormal gas and fluid production in the stomach of affected dogs. Increased numbers of gas-producing bacteria have been found in some cases, but not in others. What is needed are controlled studies to establish a pattern to show what pre-existing conditions may lead to bloating.

Hypoglycemia in Dogs

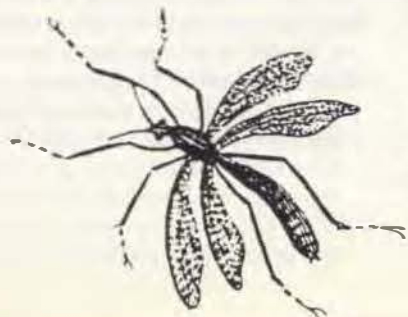
Hypoglycemia (decreased blood glucose) is not a disease in itself but occurs in a number of different situations. Generally, the signs are neurological—weakness of the hind legs, generalized weakness, muscle twitching, seizures, and behavioral abnormalities.

Neonatal hypoglycemia occurs in very young puppies and may be due to trauma, dehydration, or hypothermia. If signs occur, some source of glucose should be given (Karo syrup, honey, or dextrose solution). The puppy must be kept warm.

Juvenile hypoglycemia ("toy breed" hypoglycemia) is seen in puppies of small breeds under six months of age. It can be precipitated by stress (shipping, exposure to cold), fasting, gastrointestinal disturbances, infectious disease, and parasitism. The condition usually responds promptly to glucose administration.

"Hunting dog" hypoglycemia has been reported in lean, high-strung hunters that may become weak and confused after several hours of work, and might have grand mal seizures. If hypoglycemic signs occur, a source of glucose should be given—some suggest candy bars as the most available in the field.

The above conditions are considered functional. They occur infrequently but can cause great concern. There are other more serious causes of hypoglycemia. If there is not prompt response to administration of glucose, veterinary advice is indicated.



Veterinary Students

The American Veterinary Medical Association reports that there will be 2,140 new veterinarians graduating in the United States. The University of Pennsylvania School of Veterinary Medicine had 113 graduates in the Class of 1987 (73 women and 40 men). There are 109 students in the Class of 1991, entering in September 1987. Approximately 60 percent of applicants are women, 40 percent are men. The new First Year Class includes 71 from Pennsylvania, 28 from contract states (New Jersey 15, Maryland 5, Connecticut 2, Delaware 2, Vermont 2, New Hampshire 1, and Maine 1), and 10 from other states. There are no foreign students in this class.

"Contract States" are those that make agreements with Pennsylvania to accept a designated number of students from those states each year. Maine and Puerto Rico send one student every other year.

There have been 4,281 veterinarians graduated from the University of Pennsylvania since the first class in 1887.

AIDS

Recently, researchers at the University of California School of Veterinary Medicine discovered a new retrovirus in cats, named Feline T-Lymphotropic Virus (FTLV). In cats, FTLV suppresses the immune system, resulting in increased susceptibility to a wide variety of infections. FTLV is contagious and spread by intimate and prolonged contact. Much publicity has been given this discovery, particularly as a model in human AIDS research. Investigations are underway to determine the geographic extent of FTLV in cats. There is no evidence that FTLV is transmissible to humans.

At the present time, the virus causing AIDS in humans is not known to infect dogs or cats. No AIDS-like virus has been isolated from dogs.

There has been much inaccurate information published about the relationship between FeLV, FTLV, and human AIDS. Also, many reports have been misinterpreted. More is being learned every day and continuing research will provide answers to many questions.

Heartworm Disease Prevention

The drug *ivermectin* is now available by prescription from a veterinarian in tablet form (*Heartgard-30*). Given in the recommended dose once a month, it is effective against the developing tissue stage of *Dirofilaria immitis*. The proper dose should be given at monthly intervals during the period when mosquitoes are active. The initial dose must be given within a month after the first exposure to mosquitoes and the final dose within a month after the last exposure to mosquitoes.

The drug is not effective against adult heartworms and is not recommended for heartworm-positive dogs.

Some veterinarians seem to prefer using *diethyl-carbamazine* (DEC) which must be given daily. Because *ivermectin* is a prescription drug, discuss its use with your veterinarian.

Pregnancy in the Bitch

In the bitch, the number of days between mating and birth ranges from 58 to 71 days. Several methods are available to confirm pregnancy—abdominal palpation, radiography, and ultrasonography. An experienced person may detect the fetus by palpation at 21 to 28 days. Large bitches are more difficult to palpate. Radiographs will show the fetal skeleton after 45 days. Although this is relatively late in gestation, it remains the most accurate method of estimating litter size. Ultrasound examination can detect the fetus as early as 18 days. A painless, harmless procedure, ultrasound is a good method for confirming pregnancy, but is not as accurate as radiography for estimating number of puppies.

The problem of over-population is a serious one. Millions of abandoned or unwanted dogs and cats are euthanized each year by humane societies. A bitch should not be bred if the owner does not accept the responsibility for lifetime care of the puppies. Spaying (ovariohysterectomy) is the best method for canine birth control. This can be done easily and safely during the first three weeks of pregnancy. Reversible contraception is possible using drugs but there are many problems reported when such attempts are made to prevent estrus and postpone litters. Continuing research may develop pharmacologic agents that can be used as abortifacients or to prevent conception.

Many breeders of purebred dogs have puppies that they feel are not suitable for breeding. If there is a written agreement between the buyer and seller, signed by the buyer before the dog leaves the seller's premises, American Kennel Club registration papers will not be furnished to the buyer until the seller has been furnished with evidence that the dog has been neutered or spayed. Spay-Neuter Contracts are acceptable under A.K.C. rules.

Popular Breeds

American Kennel Club registration statistics for 1986 show that Cocker Spaniels are the most popular breeds, followed by Poodles and Labrador Retrievers. The Cocker is number one for the fourth year in a row. The others in the "Top Ten" are Golden Retrievers, German Shepherds, Chow Chows, Beagles, Miniature Schnauzers, Dachshunds, and Shetland Sheepdogs.

In 1986, 1,106,399 individual dogs were registered. There is evidence that there is a rising interest in the smaller breeds. Senior citizens looking for companions find smaller dogs more manageable. Young urban couples may prefer smaller dogs because they require less space.



Rosettes & Ribbons

Dr. Darryl N. Biery, professor of radiology, and chairman, Department of Clinical Studies (Philadelphia), received the 1987 AAHA Annual Award at the organization's annual meeting in Phoenix, AZ.

Dr. Kenneth C. Bovee, Corinne R. and Henry Bower Professor of Medicine, and chief, Section of Small Animal Medicine, has been elected representative of the faculty constituency of the Senate Executive Committee and the University Council.

Dr. Charles Newton, professor of orthopedic surgery, and chief, Section of Surgery, received the Lindback Foundation award for excellence in teaching.

Dr. Robert E. Davies, Benjamin Franklin and University Professor of Molecular Biology, has been elected to the 1987/88 University Council Steering Committee.

Dr. Gerhard Schad, professor of parasitology, traveled to Shanghai and Hangchow, China, with Dr. Michael Philips from the Medical School and Dr. George Davis from the Philadelphia Academy of Science to explore the organization of a collaborative venture in infectious disease research. In July, Dr. Schad lectured on parasites at the School of Veterinary Medicine, Federal University of Bahia, Salvador, Brazil. The trip was sponsored by the Latin America Visiting Professor Program, sponsored by the American Society for Microbiology.

Dr. Ralph E. Werner (V'68) has been elected president of the New Jersey Veterinary Medical Association.

Dr. Stuart Porter (V'74), professor of veterinary technology at Blue Ridge Community College, Weyers Cave, VA, received the 1987 Outstanding Faculty Award from Virginia Governor Gerald L. Baliles.

Dr. James W. Buchanan, professor of medicine (cardiology), presented papers on bioprosthetic heart valve calcification at the Academy of Surgical Research in Clemson, SC, in November; the International Association for Cardiac Biologic Implants in Chicago, IL, in April; and the Society for Biomaterials in New York, in June. He also presented three papers on heart surgery in animals at the European Society for Veterinary Cardiology meeting in Rome, Italy, in May.

Dr. Lin V. Klein (V'70), associate professor of anesthesia, participated as an invited speaker in a research meeting held in association with the International Symposium *Clinical Neuromuscular Pharmacology: 1987* in Palm Springs, CA.

Dr. Judith A. Rutkowski, resident in surgery at New Bolton Center, presented a paper entitled *Xylazine/butorphanol: Effects on cecal arterial blood flow, cecal mechanical activity* at the American College of Veterinary Surgeons meeting in San Antonio, TX, in February.

Dr. Gary Smith, assistant professor of population biology and epidemiology, presented the keynote address at the 32nd Annual Meeting of the American Association of Veterinary Parasitologists in Chicago, IL, in June.

Dr. Robert Kenney, professor of animal reproduction, received a special diploma of appreciation from the Academy of Agriculture in Krakow, Poland, as well as a medal awarded in memory of Professor Ladislai Bielanski.

Dr. Alan M. Beck of the Center for the Interaction of Animals and Society is on the planning committee of the NIH Assessment Workshop on the Health Benefits of Pets. He and **Dr. Aron Katcher** will present papers during the conference. The Center received a grant of \$45,000 from Geraldine R. Dodge Foundation to study *The influence of human-animal interaction on learning*. The foundation also provided a challenge grant of \$35,000 for the project *Veterinary and education strategies for the control of rabies in domestic animals and humans*. This grant was matched by the Department of Public Health, City of Philadelphia. The Pet Industry Joint Advisory Council awarded two grants of \$17,710 each to the Center for the study of *The ferret, ferret owner and person-ferret interaction* and for *The role of the pet in the single parent home*. Dr. Beck will be the principal investigator for these two studies.

Dr. Wilfred T. Weber, professor of pathology and chairman, department of pathobiology, was one of the editors of *Avian Immunology*, *Progress in Clinical and Biological Research*, Vol. 238.

Dr. Mark M. Smith (V'82) attained diplomate status in the American College of Veterinary Surgeons.

Dr. Brinster Elected to National Academy of Sciences

In April, 1987, the outstanding work of Dr. Ralph Brinster on gene transplantation was recognized by his election to the National Academy of Sciences. Many scientists consider election to the Academy as an honor second only to the Nobel Prize.

Essentially, Dr. Brinster and his principal colleague, Dr. Richard Palmiter, through their pioneering work with gene transplantation have demonstrated that genes can be moved from one mammalian species to another and that the genes can function in the new animal. Dr. Palmiter is a nuclear biologist at the Howard Hughes Medical Institute at the University of Washington. In 1982, the Brinster-Palmiter team achieved national attention when they successfully transferred a human growth hormone structural gene which caused mice to grow to twice normal levels.

While this procedure was a scintillating breakthrough, its potential value in medical research is even greater. For example, the researchers have been able to transplant individual oncogenes into mouse eggs and produce mice that develop specific types of cancer. This approach enables scientists to identify exact DNA coding sequences in animal genes that cause cancer and target it to specific cells.

The gene transplantation technique offers exciting possibilities in animal industry, such as the production of animals that grow larger, produce more milk, and gain weight more efficiently. Further, there is the possibility that animals receiving transplanted genes may become "gene farms" to grow valuable human sub-



stances such as blood factor 9, which is vital to blood clotting.

Dr. Brinster received his V.M.D. degree in 1960 and immediately began postgraduate work in the Graduate School of Arts and Sciences, being awarded his Ph.D. degree in physiology in 1964. Six years later he became professor of physiology, and in 1975 he was named the Richard King Mellon Professor of Reproductive Physiology. He developed an early interest in studies on embryonic death, followed by research on embryo differentiation, fertilization, and regulation of gene action.

The National Academy of Sciences was established by a congressional act in 1963, and on request it acts as the official advisor to the federal government on scientific matters. It currently has 1,523 living members.

Charlotte Newton Sheppard

Mrs. Charlotte Newton Sheppard, Chairman of the Board of Hanover Shoe Farms, died April 18, 1987, at age 88, following a long illness. Since the death of her husband, Lawrence B., in 1968, Mrs. Sheppard had devoted most of her energies to perpetuating his dream of making the vast Pennsylvania Standardbred nursery one of the greatest breeding farms in the world.

The most famous race horse bred and raced by Mrs. Sheppard was Triple Crown winner Ayres (3:1:56.4). A stake winner in this country and Europe, her great race mare, Elma, also became a very productive broodmare as the dam of Texas, Jappa, and Super Elma. Another outstanding member of Mrs. Sheppard's stable was the fine pacing mare, Pretty Hanover.

Just as her husband did in 1967 when he endowed a Chair in Veterinary Surgery, Mrs. Sheppard established the Charlotte Newton Sheppard Professorship in Veterinary Medicine. This endowed Chair is held by Dr. Donald Patterson, a renowned medical geneticist.

Mrs. Sheppard played a leading role in managing the Hanover Shoe Farms, a valued supporter of the University of Pennsylvania School of Veterinary Medicine New Bolton Center campus.

Mrs. Sheppard is survived by three daughters, Charlotte, Patricia, and Alma.

Dr. Peter Ihrke (V'72), associate professor of dermatology at the University of California, Davis, School of Veterinary Medicine, was elected the incoming president of the American Academy of Veterinary Dermatology. In December, Dr. Ihrke received the HAL Award for contribution to veterinary dermatology given by the World Small Animal Veterinary Medical Association at their international meeting held in Paris, France.

The Research Foundation of the University of Pennsylvania awarded a grant to **Dr. Charles E. Benson**, associate professor of microbiology, for a printer for a scintillation counter. **Dr. Peter J. Hand (V'61)**, professor of anatomy, and **Dr. Jacqueline Metzler (V'85)** also received a grant for the project *Correlates of sensory disuse and recovery of function: Autoradiographic deoxyglucose studies of functional plasticity in the rat vibrissa-cortical barrel system*.

Dr. Robert H. Whitlock, Marilyn M. Simpson Professor in Equine Medicine, was an invited speaker at the American Guernsey Association National Meeting in Pittsburgh. His topic was *Johne's Disease in Cattle*.

Dr. Whitlock, Dr. Voith, and Dr. Gail K. Smith (V'74), assistant professor of orthopedics, presented papers at the 39th Annual Meeting of the Morris Animal Foundation in Indianapolis, IN, in June.

Dr. Corrinne Sweeney, assistant professor of medicine, participated in a panel discussion at the Arizona Veterinary Medical Association's Continuing Education seminar in Sedona, AZ, in August.

Drs. Charles Benson, Jonathan Palmer (V'77), Ellen Ziemer, Richard Meinersmann (V'85), and Robert Whitlock presented papers at a national workshop on Potomac Horse Fever in Louisville, KY, in May.

Dr. Thomas J. Divers, associate professor of medicine, was an invited speaker at the University of Montreal May Conference and presented three seminars. Dr. Divers spoke at the Arizona Veterinary Medical Association's Continuing Education seminar in Phoenix in July and presented a seminar on *Practical antimicrobial, fluid and electrolyte therapy in equine practice*.



Mark T. Lutschaunig received the 1987 Pfizer Veterinary Student Award.

Dr. Jay P. Farrell, associate professor of parasitology, is participating in the WHO Immunology Research and Training Group at the University of Lausanne, Switzerland.

Dr. Victoria Voith, adjunct assistant professor of medicine, presented three papers at the international meeting, *The Dog in the Service of Humanity*, held in Geilo, Norway, in May.

Dr. Lawrence R. Soma (V'57), professor of anesthesia, presented a paper, *Steady state levels of anesthesia*, at the Colloquium on Recognition and Alleviation of Animal Pain and Distress, sponsored by the American Veterinary Medical Association, held in May in Chicago, IL.

Dr. Carl E. Kirkpatrick (V'81), assistant professor in veterinary pathobiology at the University of Illinois, College of Veterinary Medicine, recently received a National Institutes of Health Investigator Award for a project entitled *Cutaneous leishmaniasis: Role of skin in host resistance*.

Dr. Gert W. Niebauer, assistant professor of surgery, represented Dean Marshak at the Bicentenary of Veterinary Education in Hungary at the University of Veterinary Science, Budapest, in May. During the scientific meeting, Dr. Niebauer presented a paper, *Surgery of neoplasms of the canine skull: Indicators—limitations*.

Dr. Israel Live (V'34), emeritus professor of microbiology, presented a paper at the 1987 Annual Meeting of the American Society for Microbiology.

Dr. Sally O. Walshaw (V'75), an associate professor in the Veterinary Technology Program at Michigan State University, has been named the Michigan State winner of the Bustad Companion Animal Veterinarian Award for the second year in a row.

Edward Resovsky, formerly director of development at the School, has been appointed to a new position in the University development office. He has been named director of principal gifts within the major gifts program.

The W. Alton Jones Cell Science Center, Lake Placid, NY, held the *Third Annual Symposium on Cellular Endocrinology*; this year's event was held in honor of **Dr. Ralph L. Brinster (V'60)**, Richard King Mellon Professor of Reproductive Physiology, and **Dr. LeRoy C. Stevens**.

Dr. William A. Moyer, associate professor of sports medicine, participated in the Second Annual Bluegrass Laminitis Symposium held in June in Lexington, KY.

Dr. George C. Farnbach (V'74), associate director, corporate sponsored research, has been appointed adjunct assistant professor of neurology.

Dr. Martin M. Kaplan (V'40) received the Honorary Doctor of Science Degree from the University of Wisconsin.

Dr. Sheldon A. Steinberg (V'59), professor of neurology, has been elected president of the specialty neurology, American College of Veterinary Internal Medicine.

Teaching Awards



The Veterinary Student Government at the School presented the Annual Awards for Excellence in Teaching on April 24. **Dr. Dudley E. Johnston**, professor of surgery, received the Class of 1988 award; the recipient of the Class of 1989 award was **Dr. Lawrence T. Glickman (V'72)**, professor of epidemiology; **Dr. Joan Hendricks (V'79)**, assistant professor of medicine, received the Class of 1990 award; **Dr. Daniel Dreyfuss**, intern in medicine and surgery, New Bolton Center, received the Class of 1987 award. The Class of 1987 also presented Excellence in Teaching awards to **Dr. William Bernard**, resident in medicine, New Bolton Center; **Ms. Sharon Swift**, anesthesia nurse, VHUP; and **Dr. Jeffrey A. Wortman (V'69)**, assistant professor of radiology.

Back row, left to right: **Dr. Daniel Dreyfuss, Dr. William Bernard, Dr. Jeffrey Wortman, Dr. Dudley Johnston, Dr. Lawrence Glickman**. Front row, left to right: **Dr. Ellen Ziemer, Dr. Joan Hendricks, Sharon Swift**.

The Veterinary Student Government Award for Excellence in Teaching has been designed to enable each of the four classes of the School to honor an individual who exemplifies the highest degree of proficiency in teaching.

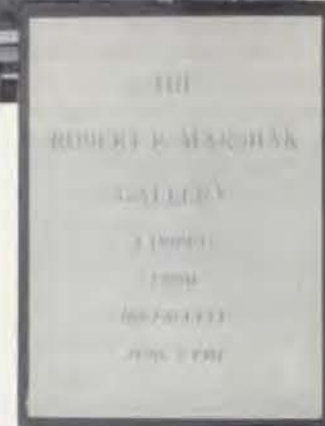
The reception was co-sponsored by Bertholon Rowland Agencies, American Animal Hospital Association, Pennsylvania Veterinary Medical Association, Veterinary Medical Alumni Society, and The Upjohn Company.

Dean Marshak Honored

On May 21, 1987, the Board of Overseers of the School of Veterinary Medicine unveiled a portrait of **Dr. Robert R. Marshak**. The portrait, a gift from the Board, will hang in the Small Animal Hospital's newly-dedicated Robert R. Marshak Gallery.



Mr. Charles Wolf, Sr., and Dean Marshak.



A Salute to a Remarkable Lady

I987 marks the fifty-third year of Dr. M. Josephine Deubler's association with the Veterinary School. She entered the School as a student in 1934, and in 1938 she became the first woman graduate. After receiving her V.M.D. degree, Jo, as she is affectionately known to a multitude of friends, earned her master's degree in 1941, and in 1944 she was granted a Ph.D. degree. These were the first graduate degrees received by a woman veterinarian.

Dr. Deubler's choice of veterinary medicine as a career has a strong hereditary aspect. Her father, Dr. Ernest C. Deubler (V'11) was a well-known practitioner and played a key role in the early development of the Veterinary School. Her brother, Dr. James A. Deubler (V'43), has a bovine practice, and, in addition, an uncle was a veterinarian, as are two cousins.

Beginning in her early years, Jo had a close relationship with farm animals, dogs, and horses. As a young lady she won many ribbons and trophies for horse show competition.

When Dr. Deubler entered veterinary school, she had a serious hearing problem which she compensated for by lip reading during lectures. Also, she became a voracious reader of veterinary literature, a practice which has continued. Her graduate thesis was on periodic ophthalmia in horses, and after receiving her Ph.D. she spent two years teaching tropical medicine at Jefferson Medical College in Philadelphia. Dr. Deubler was appointed as an assistant in pathology in the Veterinary School in 1941, and in 1955 she became



assistant professor of pathology, a position which she still holds. During the years 1946 to 1952, she worked with Dean Raymond A. Kelser in bacteriology, including research on feline panleukopenia and bovine keratitis. She was in charge of the clinical pathology laboratory from 1950 until 1959.

One of Jo's lifelong interests has been the Veterinary School Alumni Society. She has served as historian of the Society since 1949 and has endeared herself to hundreds of graduates through this and many other duties.

Jo began judging at dog shows in 1960 and is now an internationally known judge. Over the years she has owned and bred Smooth Fox Terriers, Irish Terriers, Kerry Blues, Dachshunds, and her favorite, Dandie Dinmont Terriers. Her Dandies won Best of



Show at the Dandie Dinmont Terrier Club of America Show in 1957, '58, and '59. In 1956 she won Best of Breed at the Westminster Show with her Dandie Dinmont, Salismore Silversand.

Dr. Deubler currently judges all hound breeds, all terrier breeds, and best in show. She is show chairman of the Montgomery County K.C. and Bucks County K.C. shows. The Montgomery County Show is the largest Terrier Show in the world.

Without question, Dr. Deubler is the premier ambassador of the Veterinary School to the dog world. For many years she was a columnist for the publication, *Popular Dogs*, and she writes the widely acclaimed column, "Animal Crackers" for the Veterinary School's newsmagazine, *Bellwether*. On three occasions Jo has received the "Fido Award," one of the most prestigious awards in the dog world.

We salute Jo Deubler for her unstinting devotion to the School of Veterinary Medicine, and we wish her all of the best in the years to come.

—John E. Martin, V.M.D.

The School and many of her friends honored Dr. Deubler on June 3 during a dinner. Here Dean Marshak announced that the M. Josephine Deubler Scholarship Fund has been established at the School. He stated that \$82,000 had been raised for the fund so far.

David George Jones

Mr. David George Jones died at his residence on Sunday, April 12, 1987, at the age of 85.

David Jones, the husband of the late Marion Dilley, was a graduate of the University of Pennsylvania Wharton School, Class of 1924.

Mr. Jones pursued many avenues of business. In 1924, he became production manager of Miller Lock Company. He moved on to assume responsibilities as an executive of N. W. Ayres Company, and then in 1940 as the manager of radio station WLAW in Massachusetts. Later, he was an executive at the publishing house of McGraw Hill, a post he held for many years and from which he retired in 1960.

David Jones was very active in local affairs, serving as past president of the Marlton Rotary Club. He also chaired the Evesham Township Planning Board for five years.

As a member of the Philadelphia Society for Promoting Agriculture and the Quaker City Farmers, he contributed much to the advancement of agriculture. An avid dairy farmer in New Jersey, Mr. Jones also served as president of the New Jersey Society of Pennsylvania. Through his interest in conservation, he acquired a sizable tract of land in Maine, which he maintained as timberland until shortly before his death.

In 1977, he created "The Marion Dilley and David George Jones Allam House Fund" to support and maintain the Allam House on the New Bolton Center campus.

In 1983, a charitable remainder unitrust was formed by David Jones as a tribute to the work of the School of Veterinary Medicine. With commendable foresight, this distinguished University of Pennsylvania alumnus



has provided for support of the Allam House, the Marion Dilley and David George Jones Chair in Reproduction associated with The Georgia and Philip Hofmann Center for Animal Reproduction, and also student aid.

Mr. Jones is survived by three sisters, Gertrude Welker and Edythe Geesey, both of Wilkes-Barre, and Margaret R. Hardin of Winnetka, Illinois.

New Laboratory Director

Dr. Elaine D. Watson, Research Assistant at the University of Bristol (England) Veterinary School, has accepted a position of Assistant Professor of Reproduction, Department of Clinical Studies, New Bolton Center, School of Veterinary Medicine, University of Pennsylvania, effective June 1, 1987.

Dr. Watson will be the Director of the Endocrinology Laboratory for the Section of Theriogenology and the Widener Hospital at New Bolton Center, as well as having clinical responsibility in the Hofmann Center and Widener Hospital, teaching veterinary students, and conducting research in her areas of expertise.

Luce Fellowship

Dr. Gary Tabor (V'87) will spend a year as a Luce Scholar, living and working in an Asian country selected by the Henry Luce Foundation. Dr. Tabor hopes to extend his knowledge of tropical ecology and to apply his passion for conservation and wildlife veterinary medicine to new environments in Asia through his Luce fellowship.

Although he has not yet been to Asia, Dr. Tabor has already seen a great deal of the world's shrinking natural habitats. After earning his bachelor's degree in biology and ecology from Cornell University, he spent three years as a field technician in nature preserves from East Africa to Central America.

He has studied chimpanzees in Uganda, bears in Alaska, and birds in Panama. While a veterinary student at Penn, he served as class president and as vice-president of the wildlife service.

He also took time away from his studies at Penn to complete a six-week internship at the Center for Disease Control's Division of Environmental Hazards and Health Effects.

Tabor, a native of Baltimore, looks forward to contributing eventually to the development of conservation strategies for wildlife on a global scale.

Commencement

Commencement exercises for the 102nd graduating class were held on May 18, 1987, at the Zellerbach Theatre. The Commencement Address was given by Baruch S. Blumberg, M.D., Ph.D., University Professor of Medicine and Anthropology, University of Pennsylvania, and Nobel Laureate in Medicine. Dean Robert Marshak then presented the diplomas to 113 members of the Class of 1987 and one member of the class of 1986.

Class of 1987

Maureen Ellen Altman
Stephen Mitchell Askin
Amy Iris Attas
Elizabeth Ann Soper A'Zary
Deborah Diehl Becker
Patricia Lynn
Birmingham**
Nina Ruth Beyer
James Lee Bianco
Rachel Hahn Blakey
Susan Jean Botts
Mary Gardner Boy*
Thomas Joseph Mark Brady
Jacqueline Burke*
Annette Michelle Carricato
Wendy Villalba Caudill
Susan Judith Colbassani
Evelyn Marie Crish
Joseph Albert Crowley
Starr Cummin
Lynn Marie Danesi
Thomas Wayne Dowling
Judy Lynne Downs
Beth Vearling Dronson
Kyle Wayne Dutt
Andrew Haas Elser
William Philip Feeney
Diana Ellen Feldbaumer
Susanne Rachael Felser
Bruce Daniel Freedman
Richard Howard Fried***
Deborah Jean Ganster
Christopher Nicholas
Garruba, Jr.
William Robert Graf, II
Barbara Jean Gregory*
Andrea Gabrielle Hayes
Steven Jay Heyman*
Brian Scott Hillegass
Lori Michelle Rahming
Holland
Thurman Hornbuckle, II
Patricia Natalie Jackson
Carol Elaine Johnson
Wayne Martin Johnson
Lance Parker Keil
Robert Seth Kieval***
Joyce M. Kille
John Ross Kinney
William Clark
Kittleberger, III
Judy Ann Korman*
Cathleen Alma Hanlon
Lanutti
James Bruce Lawhead***
Eugene Joseph Lengerich
Damien Lin
Jack Lance Lipken
Lori Lee Love
Marcia Joan Margolis
Carol Anne Marusak
Abby Diehl Maxson**
Clyde Strock McMillen

Cathyann Mcgella
Donald Gibson Meredith
Wendy Louise Miller
Pamela Alexandra Mills
Robert Joseph Moffatt
Twila Anne Moore
Carol Jean Morello
Carla Marie Narducci
Nancy Joan Nelson
Roger Erich Niedermeier
Virginia Pierce
Rose Marie Quagliaricello
Virginia Theresa Rentko
Carla Richter
Joan Mary Ritchie*
Karen Sue Royer
Trina Renee Russell
Maria Grace Salvaggio
Christine Santiago
Margot Beth Schwag**
Amy M. Sclarsky
Sara Jane Shaw
Nicole Suzanne Shultz
William Whitmer Slaymaker
Patricia Lynne Sleppy
Lois Elaine Sloan
Diane Marie Sol
Charles Barton
Spainhour, Jr.***
Richard Norman Spencer, Jr.
Drew Frederick Sporer*
Steve Craig Stephan
Barbara Jan Strock
Gary Martin Tabor
James Wayne Takacs
Nachum Tavory
John Russell Terry, Jr.
Cynthia Ann Terway**
Marjorie Ann Stevenson
Thaler
Annette Rhonda Thomas
Sharon Lee Toll***
Mary Regina F. Toner
Alan Kent Toothaker
Michael Eric Treitler
Virginia Pennock
Trexler-Myren
Holly Robin Trief
Eugenia Rowland Barry
Tubman
Valorie Antoinette Vaughn
Francisco Javier Velazquez
Lynn Mirbach Walker
Cynthia Ruth Ward
Elizabeth Brewster
Robinson Weintraub
Alexander Howard Werner
Ann Eliason Whereat
Linda Marie Wood
Joan Marie Yarnall**

December 22, 1986
Cheryl Marsha Penn

***Summa Cum Laude
**Magna Cum Laude
*Cum Laude

Award Recipients

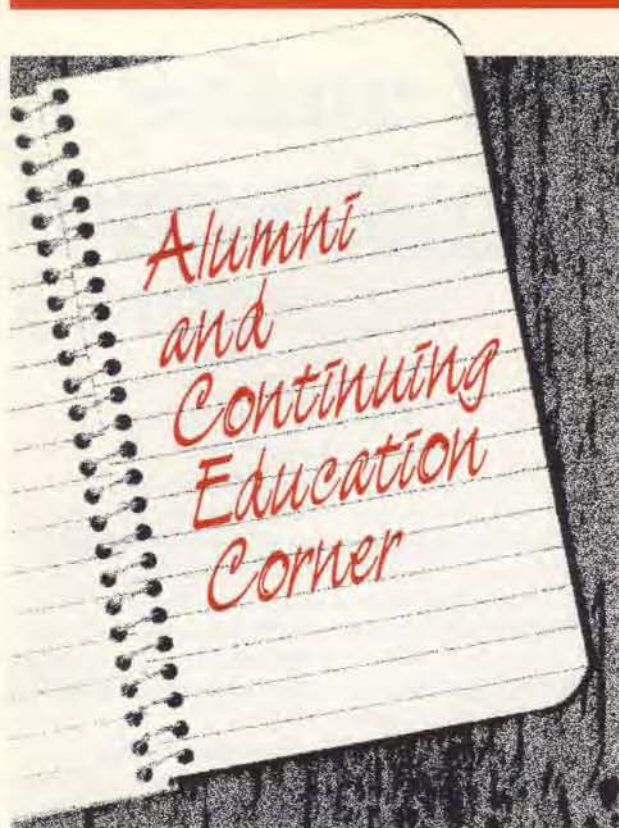
The Leonard Pearson Prize
Robert Seth Kieval
The J. B. Lippincott Prize
Sharon Lee Toll
Robert Seth Kieval
The 1930 Class Prize
Susan Judith Colbassani
The Women's Auxiliary to the American Veterinary Medical Association Prize
Lynn Mirbach Walker
The Women's Auxiliary to the Pennsylvania Veterinary Medical Association Prize
Mary Gardner Boy
The 1956 Class Medal for Achievement in Pathology
Sharon Lee Toll
The James Hazlett Jones Prize in Biochemistry
Patricia Lynn Birmingham
Sharon Lee Toll
Michael Eric Treitler
The Milmark Prize
Clyde Strock McMillen
American Animal Hospital Association Award
Joan Marie Yarnall
Merck Awards
John Ross Kinney
Richard Howard Fried
George M. Palmer Award
Abby Diehl Maxson
Phi Zeta Award
Robert Seth Kieval
Everingham Prize for Cardiology
Charles Barton Spainhour, Jr.
E. L. Stubbs Avian Medicine Award
Gary Martin Tabor
The Large Animal Surgery Prize
Abby Diehl Maxson
The Morris L. Ziskind Prize in Swine Medicine
Francisco Javier Velazquez
The Morris L. Ziskind Prize in Public Health
Susanne Rachael Felser
EVSCO Award
Virginia Pennock Trexler-Myren
Hill Award for Nutrition
Beth Vearling Dronson
Virginia Theresa Rentko
Lynn Marie Danesi
Hill Award for Hospital Design
Jack Lance Lipken
Conference of Public Health Veterinarians Award
Cathleen Alma Hanlon Lanutti
The Purina Award for Swine Medicine
John Ross Kinney
Upjohn Awards
James Bruce Lawhead
Sharon Lee Toll
Auxiliary to the Student Chapter of the American Veterinary Medical Association Prize
Robert Seth Kieval

One faculty member was honored during the commencement. Dr. Ellen L. Ziemer, lecturer in large animal medicine, was the recipient of the 1987 Norden Distinguished Teacher Award.



1. A diploma is presented.
2. Dr. Morris L. Ziskind (V'36).
3. Dr. Roger G. Smith, Jr., (V'57), president of PVMA, administers The Veterinarian's Oath.
4. Dr. Baruch S. Blumberg, the commencement speaker.
5. Dean Marshak and Charles Wolf, chairman of the School's Board of Overseers.
6. The faculty.





The Class of 1937— A Spectacular 50th Reunion

THE NEED: Renovation of several rooms in the Small Animal Hospital to provide a hospitality suite and overnight accommodations for visiting faculty and guests and a showcase for antique veterinary books and instruments.

THE RESPONSE: \$23,000 raised by the members of the Class of 1937.

THE RESULT: THE CLASS OF 1937 ALUMNI ROOM.

Two furnished bedrooms, a kitchen and shared bath allowing visiting faculty an attractive apartment, plus conference/hospitality suite.

A hand-made display cabinet has been specially designed to provide space for a rotating exhibit of antique veterinary books and instruments.

The dean, faculty, and students gratefully acknowledge the support of the members of the Class of 1937, whose generosity made the room possible,

Special thanks to Dr. Harry F. B. Bartoletti, Dr. David Crisman, and Dr. Sydney Rosenberg for organizing this effort.

Continuing Education Courses—September 1987 through June 1988

**Dr. Charles Newton and Dr. Thomas Divers
Program Chairmen**

The focus for the School's 1987-1988 Continuing Education Program for graduate veterinarians is "hands-on" experience. Many of the courses are limited to ensure an excellent learning experience. For additional information and registration on the following program, contact:

Asbra P. Markowitz
Office of Continuing Education
University of Pennsylvania
School of Veterinary Medicine
3800 Spruce Street
Philadelphia, PA 19104-6008
(215) 898-1882

Course Title	Date
Systemic and Hematologic Immune-Mediated Disorders in Dogs	Sept. 30, 1987
Lasers in Veterinary Medicine and Surgery	Oct. 27, 1987
Update: Bovine Leukosis	Oct. 28, 1987
Western Pennsylvania—Topics in Orthopaedics	Nov. 18, 1987
Surgical Soft Tissue Laboratory	Dec. 3, 1987
Non-Plating Orthopaedics	Jan. 20, 1988
Small Animal Echocardiography and Abdominal Ultrasound (lecture only)	Jan. 28, 1988
Small Animal Echocardiography and Abdominal Ultrasound (lecture and laboratory)	Jan. 28 & 29, 1988
Surgical Approaches to the Bones and Joints of Dogs (laboratory)	Feb. 17, 1988
Surgical Drainage and Biopsy Laboratory, Indications and Techniques	Mar. 2, 1988
Dermatology	May 18, 1988
Small Animal Radiology Laboratory, Part I—Chest and Abdomen	May 25, 1988
Small Animal Radiology Laboratory, Part II—Skeletal	June 1, 1988
Reconstructive Stifle Surgery Laboratory	June 8, 1988



Good Bye and Hello

A "Thank You and Best Wishes" party was held on June 23 for interns and residents who had completed their training at VHUP. Missed will be the interns Dr. Frank Kearse, Dr. Clare Mainwaring, Dr. Cynthia Otto, Dr. Kimberly Robertson, and Dr. Richard Sielicki. Interns Dr. James Jeffers, Dr. A. Jon Nannos, and Dr. Errol Treger will begin residencies; Dr. Jeffers in dermatology, Dr. Nannos in orthopedic surgery, and Dr. Treger in medicine.

The residents leaving are Drs. Clayton Kilrain, Barbara Chapman, Jean Cloran, and Lorraine de Jager. Residents Dr. David L. Diefenderfer, Dr. Caroline Prymak, and Dr. Betsy Dayrell-Hart have been appointed lecturers.

The new interns and residents began their duties on July 1. The interns are: Dr. Kevin Concannon, University of Missouri; Dr. Susan DeVries, Michigan State University; Dr. Elisa Dowd, University of California, Davis; Dr. Richard Fried (V'87); Dr. Terrance Hamilton, University of Illinois; Dr. Steven Heyman (V'87); Dr. Robert O'Brien, Ohio State University; Dr. Erik Peterson, University of Tennessee; Dr. Virginia Rentko (V'87); Dr. Marc Vingerhoets, University of Bern, Switzerland.

The new residents at VHUP are Dr. Elizabeth

Farrar, Dr. Leslie King, medicine; Dr. Karin Sorenmo, oncology; Dr. Kenneth Drobatz, emergency medicine; Dr. David Holt, soft tissue surgery; Dr. Barbara Hotz, radiology; Dr. Michael Tomasic, anesthesia; Dr. Cecelia A. Helenski, cardiology; Dr. Vincent C. Biourge, small animal nutrition; Dr. Joel Rubin, laboratory animal medicine.

The interns leaving New Bolton Center were Dr. Renee Bayha, Dr. Patrick McCue, Dr. Jenny Johnson, Dr. Kate Gropp, and Dr. William Asbury. Dr. Sandra Ehnen completed her residency. Interns Dr. David Young, Dr. Dan Dreyfuss, and Dr. Elizabeth Hausner began their residencies; Drs. Young and Dreyfuss in surgery, and Dr. Hausner in Field Service.

The new interns at New Bolton Center are Dr. Patricia Brooks, Colorado State University; Dr. Virginia Kauffman, Maryland-Virginia College of Veterinary Medicine; Dr. Joseph Mankowski, Cornell University; Dr. Abby Maxson (V'87); Dr. Alan Ruggles, Cornell University; Dr. Gregory Staller, University of California, Davis; Dr. Rachel Blakey (V'87), and Dr. Fernando Riera.

The new residents are: Dr. Sarah Gardner and Dr. Yves Rossier in medicine; Dr. Wendy Freeman in Field Service; Dr. Linda Baker and Dr. Susan Whitehead in nutrition.

Scholarships

Donna Marina Dambach, Kris Haight, and Mary Kirk are the recipients of a \$1,000 scholarship each, provided by the Lancaster Kennel Club, Inc. **Frederick P. Schuler** is the recipient of the Mrs. Bianca Leonard Scholarship provided by Ms. Sharon Rhineland, McDonough, NY. **Linda Molesworth** received the Amlan Scholarship.

The New York Farmers have made a \$5,000 contribution to The New York Farmers Scholarship Fund at the School. The Board of the Princeton Small Animal Rescue League has underwritten a Janet Cottier Scholarship in the amount of \$5,500 per year to assist in the education of one of the students for a four-year period starting in the fall of 1987 and running through the end of the academic year, 1991.

The Reidler Foundation of Hazleton has made a \$1,000 contribution to the scholarship fund. Dr. Lisa Hopen (V'84) contributed \$1,000 for the David L. and Victoria R. Greenberg Memorial Scholarship Fund. The recipients of the funds are **Janet Crawford** and **Andrea Lerner**.

Alumni Day 1987— New Bolton Center

Alumni from as far as California and Bogota, Colombia, enjoyed a warm and sun-filled ALUMNI DAY at New Bolton Center on Saturday, May 16, 1987. Three hundred guests filled Alumni Hall for the Veterinary Medical Alumni Society Annual Meeting followed by a buffet lunch and tours of Longwood Gardens, Winterthur Museum, and New Bolton Center. One picture is worth a thousand words:

VETERINARY MEDICAL ALUMNI SOCIETY AWARD OF MERIT

This award is presented annually during Alumni Day to honor distinguished graduates of the School.

1. Loy C. Awkerman, V.M.D., Class of 1952
2. William B. Boucher, V.M.D., Class of 1940
3. John H. Brown, V.M.D., Class of 1932
4. John E. Martin, V.M.D., Class of 1942
5. Michael A. Obenski, V.M.D., Class of 1972
6. Vernon R. Yingling, V.M.D., Class of 1957



1.



2.



3.



4.



5.



6.



Class of 1937



Class of 1942



Class of 1947



Class of 1952



Class of 1962



Class of 1967



Class of 1972



Class of 1977



Class of 1982



Three generations of deans, left to right: Mark W. Allam, V.M.D., 1952-1973; Edwin J. Andrews, V.M.D., Ph.D., 1987-; Robert R. Marshak, D.V.M., 1973-1987.

Harry F. B. Bartoletti, V.M.D., 1937 Class Agent, 50th Year Reunion.



Lunch under the trees.



A future veterinarian???



1987-1988 Officers of the Veterinary Medical Alumni Society. From left to right: Peter Craig, Class of 1955 (Past President); Lawrence Gerson, Class of 1975 (President); Jay Simmons, Class of 1956 (First Vice-President); Max Hernan, Class of 1959 (Second Vice-President).

Marie A. Moore

Marie A. Moore died on June 10, 1987, at her home in The Plains, Virginia. Mrs. Moore has endowed the Marie A. Moore Chair in Humane Ethics and Animal Welfare here at the School of Veterinary Medicine. This professorship, the first of its kind in the nation, when filled, will confer an essential measure of recognition and prestige on humane ethics and animal welfare as a legitimate field of scholarship.

Mrs. Moore devoted much of her life to the welfare of animals. For many years she investigated cases of animal abuse for the Virginia Federation of Humane Societies. Recognizing the dire need for an animal shelter in Fauquier County, VA, she established one on her farm in The Plains. She almost singlehandedly ran it for 12 years and took in and cared for 22,870 dogs, large numbers of homeless cats, horses, occasional cows, and wildlife. The shelter closed in 1970 when the Humane Society of the United States established a shelter in her area.

For her animal welfare work, Marie A. Moore was honored by the Washington Animal Rescue League, which presented her with the Award of Merit. She served on the President's Council of the Humane Society of the United States and was an honorary



member of the Fairfax County Humane Society, the Humane Society of New York, and the American Horse Protective Society.

For many years Mrs. Moore bred and raced Thoroughbreds here and in England. She devoted a great deal of effort to the Mastiff breed at a time when the breed was being reestablished after devastating losses of breeding stock during WWII. Her book, *The Mastiff*, was published in 1978; it provides an overview of the history and development of the breed.

Mrs. Moore was an AKC licensed judge, and her many assignments took her all over North and South America, England, and South Africa.

Annual Interns and Residents Picnic

All area practitioners are invited to attend the School's Annual Interns and Residents Picnic at the Philadelphia Zoo on Wednesday, September 9, 1987, at 6 p.m.

This is a unique opportunity to reacquire yourself with your colleagues and to meet your new colleagues who have recently joined the staff at Penn. The picnic will be held on the lawn by the Impala House (in the reptile house in case of inclement weather), and hamburgers, hot dogs, barbecued chicken, spare ribs, and all the trimmings will be available.

The cost is \$10 per person. Please make your check payable to *Keystone VMA* and send to:

James E. Simpson, Jr., V.M.D.
4331 Main Street
Philadelphia, PA 19127

Any questions should be directed to Ashra Markowitz at the Veterinary School at 215-898-4234.

Bellwether 21

Summer 1987

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Mark your calendar for the
1988 Penn Annual Conference
Wednesday, Jan. 27, and Thursday, Jan. 28, 1988
Adams Mark Hotel
City Line and Monument Avenue
Philadelphia, Pennsylvania

Bellwether

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