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The Animal Health and Diagnostic Commission of the Commonwealth of Pennsylvania has established a comprehensive mammalian diagnostic laboratory system to provide services to the agriculture industry. The School's laboratory of large animal pathology is an integral part of the new three-laboratory network.

"Basic services are provided at each of the three locations," said Dr. Helen Acland, associate professor of pathology and head of the laboratory of large animal pathology. "In addition each of the laboratories offers specific specialized diagnostic services. This eliminates duplication and is more cost-effective."

Penn's laboratory at New Bolton offers, in addition to basic services, specialized services in microbiology and toxicology, the latter in cooperation with West Chester University. The other two laboratories in the network, the Commonwealth Department of Agriculture Diagnostic Laboratory at Summerdale and the laboratory at Penn State University, have their own specialties. The Summerdale location concentrates on regulatory serology and the Penn State facility handles diagnostic virology.

"A client can bring the animal or blood or other samples to any of the three locations," said Dr. Acland. "If specialized tests are required, the receiving laboratory sends the samples to the appropriate laboratory and be the contact with the client." Fees for these services are subsidized by the Commonwealth, resulting in minimal expenses to the livestock owner.

"Prompt identification of an infectious disease or a toxic substance can prevent losses in a herd or flock," said Dr. Acland.

"As each laboratory is equipped to accept any kind of a problem, the livestock owner has to deal only with one facility and not worry about having to send samples to different locations."

The New Bolton Center laboratory for large animal pathology works closely with the School's microbiology and clinical pathology laboratories and thus is able to offer a multitude of tests, ranging from biopsy analysis to culture and sensitivity tests to clinical chemistry. The pathology laboratory services are available around the clock for emergencies. "We have always been a major diagnostic resource to the agriculture industry," said Dr. Acland. "Now as part of the Commonwealth Animal Health and Diagnostic System we can provide even more comprehensive services to our clients and expand our training facilities for veterinary students."

Clients can reach the laboratory at (215) 444-5800, extension 2211, to make arrangements to drop off samples or animals for necropsy.
Dear Friends:

Many schools and colleges of veterinary medicine have gone through a transition from an era of economic growth and academic complacency, to one of financial constraint and academic reality. What is happening in veterinary medicine is no different than in higher education in the United States, which is clearly under financial siege. Veterinary education has been struggling to clarify its identity for the next century. The profession itself faces a diminishing influence as the agricultural enterprise of the country continues to shrink and the competitiveness and entrepreneurial nature of veterinary practice changes.

As an institution built on a historic foundation of leadership, we have survived through this economic strife. By the time that this message is printed, I am hopeful that we will have once again justified a restoration and, in fact, an increase in our support from the Commonwealth of Pennsylvania. Our ability to maintain a quality core will always depend on state funding. However, our ability to grow, meet new demands and optimize our strengths, will depend on new sources of funding.

In my recent five year report to the faculty, I detailed our many accomplishments through the difficult times. I also reflected on the planning and task force efforts which resulted from the Pew Process, and which suggested that the School's greatest strength lies in its research ethic. Our focus for the future, therefore, is clear.

First, we must maintain all of our sources of core funding, most importantly that from the State. Second, we must develop a means of funding our growth, our new initiatives and, the further strengthening of our existing programs. Third, we need to direct our focus to research in all of its dimensions, but without sacrificing the quality of our educational or service programs.

Those educational institutions with a clear purpose and sustained funding will be the leaders in the next century. This is especially true of schools and colleges of veterinary medicine. We at Penn have every intention of being at the top of that category.

Your continued support of our efforts and interest in the School is appreciated.

Edwin J. Andrews, V.M.D., Ph.D.
Dean

Dorothy Russell Havemeyer Barn

The Weaver Barn, located at the Hofmann Center, was renamed and dedicated the Dorothy Russell Havemeyer Barn on April 9, 1992. The 19th century Pennsylvania bank barn was recently renovated to house an equine reproductive behavior and physiology research facility. The renovations, funded by the Dorothy Russell Havemeyer Foundation, Inc., included tie and box stalls for ponies, a small office area, a laboratory, storage and an observation area. They also included repair of interior structural elements, and exterior elements such as existing windows and doorways, to preserve the appearance of this historic structure while providing up-to-date animal facilities and research space.

New Chairman for Board of Overseers

Mr. William Schawbel was appointed the new chairman of the School's Board of Overseers. Mr. Schawbel is a 1961 graduate of the Wharton School at the University of Pennsylvania. He spent 19 years at The Gillette Company where, among other assignments, he served as general manager, Gillette-Japan, and president of its Braun North America division. In 1981 Mr. Schawbel formed the Schawbel Corporation in order to acquire Braun North America from The Gillette Company. The Gillette Appliance Division was acquired the following year. The acquisitions were the forerunners of the company's involvement in the personal care appliance business. In 1993 the company was expanded by its addition of H.A. Hovey Company, an institutional food distributor. The Schawbel Corporation has developed and been involved in the creation of numerous business and products in the housewares, hardware, food, and consumer industries, and, with its patented ThermaCELL technology, one of the world's largest manufacturers of butane powered personal care appliances and hardware products.

Mr. Schawbel and his family reside in Needham MA. He serves as co-chair of the Minority Permanence Committee of the University of Pennsylvania, and is a member of the Board of Advisors at the Wharton Entrepreneurial School. Mr. Schawbel also serves on the board of The Boston Latin School Foundation, is chairman of their Case Study Committee, and serves on the board of A Different September Foundation, and Junior Achievement of Eastern Massachusetts.

At the dedication of the Havemeyer Barn (l. to r.) Mr. William Schawbel, chairman, board of overseers, Mr. Gene Pranzo and Mr. Roy Turlow, trustees, Dorothy Russell Havemeyer Foundation, Dean Edwin J. Andrews.
Regaining a Perfect Stride

Thoroughbred horse owners recognize the disease known as “wobbles” but very few are bold enough to admit one of their horses has the disease. In the past diagnosis of wobbler syndrome has meant the future for the horse was bleak at best. The disease is particularly prevalent in Thoroughbred horses, Wobbles is characterized by incoordination, ataxia and leg weakness that usually begins in the hind legs but can progress to involve the forelimbs as well. There are several diseases which can cause "wobbles" in young horses but in each disease the spinal cord in the neck is damaged. The most common causes of spinal cord disease in young Thoroughbred horses are cervical vertebral malformation/malarticulation (CVM), equine degenerative myeloencephalopathy (EDM); equine herpes virus-1 myeloencephalitis; equine protozoal myeloencephalitis (EPM); spinal cord trauma; and, trauma to the vertebrae of the neck. These diseases can occur at any time in a horse's life but are more commonly seen during the first two years.

Unfortunately, early subtle signs of these diseases can be overlooked or be initially attributed to clumsiness. Even when dramatic acute signs are observed, diagnosis based on clinical signs and ancillary tests may not be possible. In spite of the progress made by veterinarians in recent years, improved techniques for diagnosis and treatment of young horses are still needed. Early, specific diagnosis and treatment could limit damage to the spinal cord and allow affected horses to recover completely. At the University of Pennsylvania’s School of Veterinary Medicine, we have concentrated our efforts on methods to improve the diagnosis and treatment of cervical vertebral malformation/malarticulation (CVM) of young horses.

CVM is a very real and common disease. Fortunately, we have been able to improve the diagnosis and treatment of young horses. The neck bones of horses are examined for such things as narrow spinal canal, abnormal growth of the joints connecting the neck bones, abnormal growth plates at the ends of the neck bones and enlarged bony roofs over the spinal canal. The changes were graded for each of the seven bones of the neck and the radiographs on each foal were given an overall CVM score. The scale was zero (perfect) to 35. Through experience, we found that when the overall CVM score was greater than 12 there was a very high probability that the young horse would never develop neurologic signs of CVM. Hundreds of radiographs have been scored and the results have been entered into a computer so that when new horses are examined they can be compared with horses seen in the past. In this way, the accuracy of our diagnostic methods has continued to improve with time. We can now examine a set of neck radiographs taken with the young horse standing, not under anesthesia, and based on the radiographic score, predict whether there is cause for concern.

All of the foals, weanlings and yearlings, on the Kentucky farm were examined every three to four weeks during our studies of the young horses. The farm experienced a weekly basis to monitor their growth rates. From experience we know the horses will grow and reach their predestined potential, but it is hard to convince others in the midst of treatment. The future holds great promise. The accuracy of our ability to diagnose CVM will undoubtedly improve as our base of information increases. Further study will enable us to determine what specific dietary changes are making the most impact in treatment of the disease. The knowledge gained during our studies of the horse may have broad application to other species including man. For the Thoroughbred industry, the role of diet for the young horse must be underscored as breeders think towards the future and their chances for success of consistently making it to the winners circle.

William J. Donawick, D.V.M.
Mork Whittier and Lila Griscold Allam
Professor of Surgery
The most common signs of hypothyroidism are skin changes, mood changes, and weight gain. In older dogs, these signs may be increased as the dog gets older, and one of the common signs of hypothyroidism is a decrease in energy. Such dogs often exhibit staphylococcal infections in the skin, which are commonly stained from the saliva of the dog. The skin may become oily or waxy, and keratin often adheres to it. Thus it is extremely important to wash the hair shafts. The coat often has a dull and dirty appearance. The skin on the nose and pads also may become affected by abnormal keratinization. Neutered male dogs with seborrhea have responded well to vitamin E supplementation.

Seborrhea is often confused with ringworm and mange, causing problems in diagnosis. As with atopic allergies and other dermatologic diseases as seborrhea, it is important to bear in mind that the skin is affected by that which is on the inside and that which is on the outside. This in-between position between two worlds often makes it difficult for veterinarians to understand the complexity of the various diseases they have to treat.

**Vaccinations: The Good and the Bad**

Distemper used to be a major killer of dogs, but today, thanks to vaccines, it is rarely seen by veterinarians. Even the most recent canine viral disease, parvo, has been curtailed through vaccination programs. Dr. Peter F. Jezyk, adjunct associate professor of medical genetics, presented an overview of the immune system, how vaccines stimulate it into action, and why vaccines may cause problems. Vaccination can be defined as the administration of an agent to induce specific immunity to an organism or related organism. It is not a drug. There are two types of vaccines: live and killed. Subunit vaccines, killed vaccines consisting of virus proteins, are very safe, but produce limited response. Killed virus vaccines produce a more diversified response, but limited duration of immunity. Modified live vaccines best fulfill the requirements for a vaccine. Here the virus has been modified to lose its disease-producing qualities, while retaining its antibody-stimulating properties, which produce the best response. Live vaccines are very safe, but produce limited response. Killed virus vaccines produce a more diversified response, but limited duration of immunity. Modified live vaccines best fulfill the requirements for a vaccine. Here the virus has been modified to lose its disease-producing qualities, while retaining its antibody-stimulating properties, which produce the best response. Live vaccines are very safe, but produce limited response. Killed virus vaccines produce a more diversified response, but limited duration of immunity. Modified live vaccines best fulfill the requirements for a vaccine. Here the virus has been modified to lose its disease-producing qualities, while retaining its antibody-stimulating properties, which produce the best response.

Dr. Jezyk explained that many different defense mechanisms are brought into action when an animal is exposed to a specific disease. The goal of vaccination is to activate these defenses so they can "remember" and go into action when the animal is challenged by infectious disease. Each disease organism has specific proteins (antigens). When disease organisms infect an animal, antibodies are produced to destroy invading viruses or bacteria. There are different kinds of antibodies. The initial immune response produces IgM antibodies which are not as selective and often not as effective as IgG antibodies, which are produced after the initial defense mechanism, and can destroy cells infected by a virus. One of the first lines of defense is the mucosa, where secretory antibodies and cell mediated immunity are most important. This system attacks and destroys invading organisms before they spread to the rest of the body.

**A vaccine should induce these various responses without causing disease.** Once such a response has occurred, the stimulated immune cells develop a memory. If the animal is challenged again, a response will occur and will help prevent cellular memory fades, thus regular booster vaccinations are needed to stimulate antibody production. Also, to be protected against some diseases, a series of initial vaccinations are needed to stimulate immune response in a young puppy. At birth puppies have only about 3 to 5% of maternal antibody serum titers. They receive 80 to 90% of their maternal antibodies from the colostrum while nursing during the first eight hours of life. Maternal antibodies are absorbed through the gut only during the first 24 hours of life, with absorption declining after several days. This maternal antibody is an important that pups nurse as soon as possible after birth. Maternal antibodies decrease by half every nine days in the young puppy. They provide vital protection during the early weeks of life as a puppy's immune system is immature. This is the time for adequate cell-mediated responses until about 12 weeks of age. Thus initial repeated vaccinations are needed and timing is critical.

Dr. Jezyk pointed out that the immune response varies from animal to animal and that it is genetically controlled. Some animals may develop a response after one vaccination while others need repeated doses. There are some animals which may develop no immune response to certain antigens. Vaccines which are formulated to elicit a broad response therefore protect the largest possible population.

Dr. Jezyk pointed out that vaccines are not without problems. Such problems are not due to the vaccine but to the animal's general condition or a disordered regulation of its immune system. One should vaccinate only healthy animals as infectious agents can interact in an undesirable way with a vaccine. Some immunosuppression can result from interaction of the distemper and adenovirus components and increase susceptibility to infection. Vaccines also can provoke an autoimmune response, such as immune mediated hemolytic anemia, but this occurs in animals genetically predisposed to such disease.

Dr. Jezyk stressed the importance of the proper routine of administration of a vaccine. If the mucosal defenses need to be activated, then the vaccine should be administered oronasally. Other vaccines are more effective if given intramuscularly or subcutaneously. It is important to follow the manufacturer's instructions to get the most effective protection.

During the question and answer period Dr. Jezyk touched briefly on vaccination programs and pointed out that such programs depend on the animal's lifestyle. A backyard dog is much less likely to be exposed to infectious diseases than a show or hunting dog or a dog that runs in city parks. It is best to check with the veterinarian for the most effective vaccination program. He also pointed out that older dogs need regular vaccination boosters because the immune responses slow down as the animal ages. Vaccines are an inexpensive and effective way to control infectious diseases and prevent the spread of such diseases.
Diagnosis, Screening and the Prevention of Heartworm Infection

By treating with prescribed dosages of existing filarial drugs, dog owners can effectively prevent heartworm infection - *Dirofilaria immitis* - from affecting their dogs, according to Dr. David H. Knight, professor of cardiology. In his lecture, Dr. Knight discussed heartworm infections, screening methods, prophylaxis and treatment of infection.

"Caused by the parasite, *Dirofilaria immitis*, "heartworm" is somewhat of a misnomer, as adult parasites settle primarily in the pulmonary arteries, where they can obstruct blood flow and cause pulmonary hypertension, chronic congestive heart failure and formation of granulomas in the lung parenchyma.

The female worms, which reach about 30 cm at adulthood, mate with the slightly smaller males. The offspring, microfilariae, are released into the blood stream, from which they are eventually extracted by feeding mosquitoes. After the ingested microfilariae mature into infective larvae, they are returned to dogs when the infected mosquito feeds again. The larvae migrate through the tissue for 50-70 days, then they penetrate the veins and travel through the blood stream to the pulmonary arteries to mature and procreate. The entire life cycle takes six and a half to seven months, and the worms can continue to release microfilariae for several years.

Among the signs of infection caused by adult worms are cough, weight loss, fatigue and sometimes in the worst cases, fluid accumulates in the abdomen, which develops as they develop heart failure. Kidney and lung damage may also be caused by microfilariae.

One of the most critical risk factors for heartworm infection is exposure to blood-sucking mosquitoes. In the eastern seaboard, Gulf states and drainage area of the Mississippi River were hotbeds of infection. But today, even the West Coast, where coyotes are also a important reservoir of infection, experiences a high incidence of heartworm in some areas.

Transmission of heartworm infection is a seasonal phenomenon. A dog is more apt to become infected at a time of year when mosquitoes are in abundance, such as during July and August. Transmission has not been documented from December to April, even in southern states. In the Philadelphia area during the season is probably limited to late May to the first of November most years.

While probability of eventually contracting heartworm infection increases with the age of the dog and the frequency of contact with mosquitoes, Dr. Knight said, risk of heartworm infection can be eliminated in any dog with the use of prophylaxis. Puppies should begin monthly prophylaxis with *ivermectin* or *milbemycin*, at weaning time if risk of heartworm exposure exists at that time. Prophylaxis should be continued at prescribed dosages monthly from June 1 to November 1.

The *ivermectin*-like preventives, prescribed in tablet sizes which vary with the dog’s weight, provide retroactive protection that spans four to six weeks. Hence, a dose administered in early June will interrupt the life cycle of a parasite that infected the dog in April. While with the 28-30 day schedule should be attempted, there is at least a two week grace period, i.e. efficacy is maintained at intervals two weeks beyond the end of the recommended four week treatment cycle.

At the recommended dose, adverse reactions to the monthly preventatives are rare. There is no scientific evidence of adverse side effects when these drugs are given to pregnant bitches. At microfilarial dosage levels, dogs experiment minor anaphylactic reactions resulting from the sudden release of parasite proteins as the microfilariae are rapidly destroyed. These adverse side effects are usually limited to listlessness, nausea and low blood pressure and are usually self-limiting.

![Course of development of *Dirofilaria immitis* in the dog.](Image: course_of_development_of_dirofilaria_immitis_in_the_dog.png)

At prophylaxis dosages *ivermectin* has an 8 to 16-fold margin of safety for collies which exhibit a particularly low toxic threshold.

*Diethylcarbamazine* is another option for chemoprophylaxis. However, it is often not the best choice, Dr. Knight said, because it must be administered on a daily basis. A treatment interruption, even of a few days, may provide an opportunity for infection. Because *diethylcarbamazine* is not as rapidly effective, to obtain the best results, treatment should begin one month before infection is expected, and should continue for a couple months after mosquitoes have disappeared. Dr. Knight recommended that dogs receiving *DEC prophylaxis* in the northeastern U.S. be treated from May 1 to December 31.

*Diethylcarbamazine* can be toxic when given in a mel to ten times the prescribed dosage. While heartworm prevention is generally recommended, continual surveillance of untreated dogs is essential. The most useful screening methods utilize serologic tests, which detect the presence of antigens from adult parasites. Antigen tests identify infected dogs and complement radiographic examinations which are used to determine the extent of heartworm disease.

Many veterinarians also perform parasitologic tests, which can detect the presence of microfilariae in the blood. This test is not always reliable because 20-25% of infected dogs do not have microfilariae in their blood. Many of these dogs do not have circulating microfilariae, even though the adult worms are present and reproducing because they become immunized to this life cycle stage.

Consequently, the offspring are destroyed as they are released and never appear in the blood. Microfilariae are also absent from the blood when only one sex of adults is present in the host. Preventive treatment administered by owners unaware that their dogs already harbors worm often suppresses microfilariae without affecting the adult worms.

Practitioners should also keep in mind the worms’ lengthy prepatent period - six to seven months - during which time neither the antigen test nor the microfilaria test will diagnose infection. A few dogs (less than 1%) test positive for microfilariae, but have too few worms to test positive for antigens. As a general rule, the heavier the infection, the greater the chance a dog will have a positive serology test. By combining the antigen and microfilaria tests, one may determine with greater accuracy whether infection exists.

Several guidelines should be followed when testing for heartworm. First of all, testing a puppy under seven months of age or an adult dog exposed previously less than this length of time is futile, since heartworm cannot be detected until at least six or seven months after it is contracted. Change of seasons should also be considered. A young dog that has just gotten through its first summer should not be tested until the following spring, for the same reason cited above.

Annual screening of dogs undergoing prophylactic treatment is only recommended if drug compliance is in doubt. If a dog exhibits symptoms of heartworm infection - chronic cough, labored breathing and listlessness, etc. - it should be immediately screened for infection. Disease symptoms from heartworm infection most commonly occurs in dogs four to five years of age, because they have had time to accumulate worms during several transmission seasons. A few parasites usually can be tolerated, and clinical signs are normally absent in lightly infected dogs.

Preventive drugs, which cost $15-$20 per year for a 50 lb. dog, are preferable to treatment of infection. No single drug kills both adult worms and microfilariae. IV doses of an organic arsenic compound are used to kill adult worms, while high doses of *ivermectin* are prescribed to eliminate microfilariae. Treatment of infection, which ranges between $250 and $350 depending on the diagnostic tests performed, is not 100% effective against adult worms. But when it is, the dog may temporarily suffer pulmonary embolism and thrombosis with bleeding in the lungs which must absorb and remove the dead parasites. Approximately one week after adult heartworm treatment, the dog may develop a fever and show signs of respiratory distress, so it is best to treat lightly infected dogs before the disease becomes serious.

Heartworm today maintains a strong foothold around the world, after a tremendous surge in the last 20-30 years. Clearly, compliance with effective regimes for prevention must be encouraged.

**J.C.**

Common Parasites of Canines and Their Control

In his discussion of common canine parasites, Dr. Thomas Nolan, clinical veterinary parasitologist at VHUP, focused on parasite life cycles, routes of transmission, infection and disease symptoms, and control measures.

Dr. Nolan stated that parasites were found in 25% of the 908 fecal studies done in the VHUP's parasitology laboratory last year. He differentiated between infection and disease, infection occurring when an animal harbors a parasite, and disease being manifested in damage caused by a large number of parasites in the infected animal. lnfection results in disease in puppies (dogs under one year) more frequently than in adult dogs because puppies immune systems are immature.

*Continued*
Strides in Biomedical Research

Researchers Have Conquered Diseases and Discovered Better Medical Treatments Through Work With Animal Models

The use of animals in research has dramatically changed the face of human existence. Over the last century, medications using animal research have been made by the health organizations such as the National Institutes of Health, pharmaceutical firms and universities, to stamp out diseases such as tuberculosis, polio and diphtheria. This research has also led to improved treatment for current major killers: heart disease, cancer and diabetes.

Since the 1950s, deaths from heart disease have dropped by 6 percent each year, death from strokes has decreased 2 percent annually. Approximately 50 million Americans would be at risk of death from hypertension are alive because of medical discoveries to treat their conditions.Animal research helped perfect coronary bypass surgery, which has benefited an estimated 200,000 bypass patients annually.

The recent development of a mouse model for AIDS, and promising work in the development of an AIDS vaccine using primates, will help scientists make greater progress in determining the best way to treat that disease. Half a million insulin-dependent diabetics survive today because of the discovery of insulin and current diabetes research with animal models.

Dialysis extends the lives of patients in kidney failure, and techniques using animal research is being used, offer 7,500 patients a second chance at life each year.

Childhood diseases, such as rubella and whooping cough, have virtually disappeared due to vaccines developed through animal research. Jonas Salk developed the polio vaccine using monkeys in 1953. Now more than 30 years later, a vaccine for chicken pox, developed using animals, is undergoing clinical trials in the United States.

Animal research has led to the discovery of penicillin and other antibiotics to treat infections. Because of these discoveries, deaths due to bacterial infection have become a rarity in the United States and many other parts of the world.

Without animal models, cancer patients would not have the options of radiation and chemotherapy. The study of treatments of the cure of arthritis in animals, can now be used to cure human arthritis.

Every major medical advance to cure or treat disease has been developed using research animals. These discoveries and treatments touch every human life in some way from the moment of birth.

The following is a synopsis of earlier medical breakthroughs and advances as well as ongoing biomedical research intended to improve the lives of humans and animals.
Cardiovascular Disease
Renowned open-heart surgery pioneer Dr. Michael DeBakey describes the link between animal research and heart disease in these terms: "Every major medical advance we've had in cardiovascular research from surgery to the heart-lung machine to coronary bypass surgery in which it was necessary to use animals."

Dr. DeBakey, chairman of the department of surgery and director of The DeBakey Heart Center at Baylor College of Medicine, said neither the heart-lung machine used in the 40,000 open-heart operations performed by surgeon or four techniques would exist today without animal research. The heart-lung machine required over 20 years of experimental work before it was perfected for use in human beings," he said. "Even today's technology. I would not use a computer to develop the roller pump that made open-heart surgery possible, or the artificial artery that restored to health previously doomed patients with aneurysms. Nor could we have attempted the first successful coronary artery bypass or implanted the first temporary mechanical heart, with which we saved a patient's life two decades ago. Think of all the infants with congenital heart failure who have died. Now, 90 percent of all congenital heart cases are cured."

Most cardiovascular treatments were obtained through research on a variety of animals, including rodents, dogs, cats, rabbits, and sheep. Scientists have used dogs to develop the cardiac pacemaker and surgical techniques used in coronary artery bypass surgery and heart transplantation. Rats are the most important model for researchers studying hypertension, because certain types of rats develop hypertension spontaneously. Research with rabbits has pointed to the relationship between genetics and blood pressure, and aided researchers in the study of stress-induced cardiomyopathy and atherosclerosis.

Dr. DeBakey emphasized that current research in a permanent arrhythmia using horses, calves and pigs because the animals have cardiac systems that resemble those in humans. "The truth is that there are no satisfactory insentiment models at present for certain types of medical research and testing," Dr. DeBakey said. "A computer is not a living system and could not alone have produced the dramatic medical advances of the past decades."

Cancer
In the early 1980s, few cancer patients had any hope of long-term survival. The disease was still a major killer, with an estimated 1,375,000 people dying of cancer in the United States. But due to treatments developed through animal research and testing, and the discovery of four drugs that are effective against 14 out of 10 cancer patients, will still be alive five years after diagnosis. A decade ago many patients with cancers such as Hodgkin's disease, Ewing's sarcoma (a form of bone cancer), and lymphocytic leukemia had a poor prognosis. Today, many of those patients are cured.

Animal research led to the discoveries of most cancer treatments. Most of the first studies on chemotherapy were done with tumors in mice. Rats have played an important role in the treatment of breast cancer, due to similarities between human breast cancer and rat mammary carcinoma. Rats have helped physicians learn about the effectiveness of new drugs, and which treatments work best. Scientists have tested on animals new therapies, such as interferon, interleukin-2 and other biologic response modifiers, which researchers hope will enhance the body's own disease-fighting systems.

According to Dr. Heiner Fiebig, who conducted research for the National Cancer Institute (NCI), animal models play a major role in the testing of compounds to treat cancer. "Between 1955 and the mid-1970s, 40 promising compounds were identified using animal models," he said. "Animals have also played a very important role on the use of chemotherapy." Animal research helped NCI make significant strides in the areas of leukemia, lymphoma and testicular cancer. Dr. Fiebig noted.

Diabetes
Researchers Sir Frederick Banting and Charles Best used dogs in their experiments that eventually identified insulin as an important hormone in carbohydrate metabolism. Their work led to the discovery of insulin for diabetes in 1922.

Research with rodents is helping scientists understand the causes of diabetes, and in particular, insulin-dependent (juvenile) diabetes. A group at Stanford University Medical Center made significant strides in 1985 when they engineered an antibody that could inhibit insulin production in mice. This year's National Research Council demonstrated that a special monoclonal antibody could block the destructive action of a T-cell lymphocyte that is believed to help trigger diabetes. The research has helped to lead to studies of diabetes, including work on pancreatic transplants, and ocular and vascular complications associated with the disease. However, the number of dogs used in diabetes research is declining as the knowledge gained through earlier work allows researchers to use their techniques and models.

Alzheimer's Disease
Current research on Alzheimer's disease, a degenerative brain disorder affecting about 2.5 million Americans, has focused on both discovering its causes and potential treatments. Estimates show that one in 20 people over the age 65 and one in five people over age 85 has the disease. Research has pointed to an important characteristic of the disease, which is the abundance of neuritic plaques, or clusters of nerve endings, in the cerebral cortex. A small number of elderly dogs has been studied because they often exhibit these neuritic plaques.

Researchers in California and Massachusetts have done studies with rats that may help avoid memory loss, a major effect of Alzheimer's. Researchers discovered that it is possible to keep "memory-related" cells in the brain from dying by injecting the cells with nerve growth factor.

Research for the Benefit of Animals
Animals have also benefited from medical breakthroughs. Veterinarians use many techniques and treatments to save animals, including orthopedic surgery, pacemakers, transplants and radiation therapy.

Most drugs, diagnostic tests and surgical techniques used in veterinary medicine today come directly from research or from human medical or surgical practices that was originally based on animal research, said Dr. Dean Loew, dean of the University School of Veterinary Medicine. "The discovery process is often worked out on animals with the specific intent of being used on people, and if it is successful, veterinarians often find if economically feasible to use the same techniques on animals. Hip replacements are a good example. Over 100,000 hip replacements are done in the U.S. each year, due to research first done on dogs. Now this technique is being used on dogs."

Animal research has led to preventive treatments, including medications to kill parasites, such as heartworms and hookworms that can infect pets, and vaccines to avoid rabies, feline leukemia, distemper and hepatitis. Research led to the development of a vaccine against parvovirus, a new disease that killed thousands of young dogs in the 1970s.

Approximately half of all pets over the age of 10 die from leukemia or bone, skin or breast cancer. However, new surgical techniques, radiation therapy, chemotherapy, cryosurgery and hyperthermia have helped many animals live longer.

Kidney failure, another cause of death in dogs and cats, is treatable with new micro-surgical techniques and organ transplants using the latest immunosuppressive drugs to prevent rejection.

Domestic animals, such as horses, cattle, sheep, hogs and chickens also benefit from research on breeding and nutrition. New vaccines helped protect against influenza and encephalomyelitis in horses, rinderpest in cattle, and gastroenteritis in pigs.

Biomedical research has also had a lasting effect on wildlife. Research on reproduction, nutrition, toxicology and medicine has helped save endangered species, such as the bald eagle, alligator, red wolf and Florida panther.

Significant Medical Advances Using Animal Models
Animals have played an integral role in the discovery of medical cures, treatments and vaccines. Since 1901, 47 Nobel Prizes in physiology and medicine have been awarded for research done with animals. The following is a sampling of some of the major medical breakthroughs that have been made using animal models.

Advances Using Animal Models

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<td>Heart Disease: study of disease</td>
<td>rat, dog, cat, sheep &amp; treatments</td>
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<td>Heart/Lung Machine: development and testing</td>
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<td>Cardiac Pacemaker: development and testing</td>
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<td>Sutures and Grafts: development/development of suturing techniques</td>
<td>dog</td>
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(Sources: JAMA, Perspectives in Biology & Medicine, Newsweek)

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Spring 1992 7
Nation’s First Animal Bloodmobile

"It is vital to remember that very few of those animals would have survived if it hadn’t been for the blood or blood products," Giger said. Canine donors must be one year old, weigh at least 50 pounds, be current on all vaccinations, and not on any medication other than heartworm preventative. A complete blood count and heartworm test are performed prior to donation. An eligible dog can safely donate one pint of blood every six weeks.

"During the procedure, which takes about five minutes, the dogs are relaxed and resting," Oakley said. Afterwards, donors are offered a tasty snack and fresh water, and the owners are given the dog’s officials blood donor card. The collected blood is tested for infectious agents, the bloodtype is determined, and the blood is separated into different blood components which will be used in transfusions.

"The bloodmobile not only increases our supply of blood, but also helps us to have on hand blood with different bloodtypes," Giger said.

The nation’s first animal bloodmobile was put into service on November 7, 1991 at VHUP. The dedication ceremony was attended by donors, friends, faculty, staff, students and a number of canine blood donors.

The acquisition of the specially designed and equipped vehicle was made possible through generous contributions from the Bernice Barbour Foundation, Mr. and Mrs. John H. Remer, Jr., Mrs. Louie White, Devon Dog Show Association, Chester Valley Kennel Club, Doggen Industries, Inc., Mr. and Mrs. Peter Nero, Penn Ridge Kennel Club, Penn Treaty Kennel Club, Mr. Dan Buckley, Dr. Dan Bleicher, Neshaminy Valley Dog Club (in memory of Elizabeth Irwin), Ms. Nancy Martino, Southern New Jersey German Shepherd Dog Club, Delaware Valley German Shepherd Dog Club (in memory of Betty Jane Irwin), Berks County Dog Training Club, Inc., West Chester Obedience Club, Inc., Lower Bucks County Dog Training Club, Inc., Elizabeth Hayes, Bernese Mountain Dog Club of Watchung, Inc., Mrs. Saul Freedman (in memory of Martha S. Hayes).

Since November the vehicle and Donna Oakley, blood bank director, have "gone on the road" at least twice a week to collect blood from dogs at blood drives organized by individuals and dog clubs. The vehicle makes blood donation more convenient for dogs and their owners, said Donna Oakley, VHUP head nurse and blood bank director.

"The idea of people and their pets helping other people and their pets is what makes Penn’s blood donor program so special," Oakley said. "The bloodmobile makes it easier for animals to participate, and increases the supply of blood that is so critical to saving animals’ lives.

The blood donor program is an important part of Penn’s veterinary transfusion medicine program, according to Dr. Urs Giger, associate professor of medicine and head of the program. "Transfusion medicine, a relatively new field in veterinary medicine, focuses on the safe and effective administration of blood and its components," he said. "During the past 10 years, the number of transfusions has been increasing dramatically because of the advances in medical and surgical care available at VHUP."

The custom-made vehicle is equipped with a hydraulic-lift examining table with a built-in scale, blood testing and collecting equipment, and a bloodbank refrigerator for proper storage of the collected units of blood.

VHUP’s blood donor program began in 1987 to meet the needs of the hospital’s patients; more than 60 dogs are currently enrolled. Once an animal donates blood, it becomes a member of Penn’s blood bank. The idea for the bloodmobile grew because many people wanted to participate in the program, but found it difficult to get to the hospital with their pets, Oakley said.

The hospital performs approximately five transfusions a day, a procedure that has increased the survival rate of critically ill animals. Of the nearly 600 animals that needed blood or blood products last year, about two-thirds survived and were discharged.

The Penn Azabu Veterinary School Link

Penn’s Veterinary School is known for its “open doors” for veterinarians from other parts of the world. Current residents and interns hail from Australia, Canada, Great Britain, Kenya, the Netherlands, South Africa and Switzerland. Faculty from schools in Europe, Israel and Australia come for brief and long stays to view American veterinary medicine, and Penn faculty cross the oceans to lecture at schools all over the world.

During a recent trip, Mr. Dan Buckley, blood bank director, and Mrs. Nancy Martino, Southern New Jersey German Shepherd Dog Club, spent several weeks at Azabu University near Tokyo, Japan, as part of the Veterinary School at Azabu University’s ongoing exchange program.

Since its founding in 1907, Azabu University has been working to create a school of veterinary medicine of international standing. In 1987, the University signed a Memorandum on Academic Cooperation with the University of Pennsylvania School of Veterinary Medicine, and the Veterinary School of Veterinary Medicine of Azabu University was signed. Both schools agreed to promote cooperation in the areas of research and education and to exchange academic materials, publications and other materials. Both schools will promote exchanges between the two faculties and encourage exchanges between students once a year during summer vacation.

Currently Dr. Yoshi Watanabi, assistant professor of surgery at Azabu’s veterinary school, is at VHUP working with Dr. Bovee on the hypertension research project.

Dr. Ms. Dunn is looking forward to the visit of the fifth group of approximately 10 Azabu students and their teachers. This summer New Bolton Center will host a few students for the ten day long stay. We are attempting to arrange a pen pal connection between the Azabu veterinary students and the Penn veterinary students before the Azabu vet students arrive in Philadelphia in August 1992.

Quintuplets

Five lambs were born to a two-year-old ewe at New Bolton Center. The lambs, four females at six pounds each and one male, at four pounds, and their dam were cared for in the Graham French Neonatal Intensive Care Unit for a few days. The ewe is part of the School’s teaching flock.
**VHUP Birthday**

VHUP celebrated its 10th birthday in October - the original move-in took place between Oct. 5 and Oct. 19, 1981. To mark the occasion, two parties were held. On Oct. 10 donors and special friends joined the dean and school officials to celebrate 10 years of VHUP. On Oct. 23 the School, faculty, staff and students, took over the Marshak Gallery for a birthday party.

Since VHUP opened its doors in 1981, more than 100,000 animal patients have been cared for here. The following new services have been added since the hospital opened its doors: blood bank and bloodmobile, ultrasound, including color enhanced doppler unit, endoscopy, dental clinic, Center for Veterinary Critical Care, hip dysplasia clinic, and inherited eye disease clinic.

To celebrate the occasion several donors and veterinary associations made gifts to purchase a set of new cages for the Emergency Service. The donors were: Bucks-Montgomery Veterinary Medical Association, Bucks County Kennel Club, Dr. M. Josephine Deubler, Pennsylvania Veterinary Medical Association, Mr. Roger Rechler, Schuylkill Valley Veterinary Medical Association, Dr. and Mrs. Will Spear.

**ICU Party**

The Center for Veterinary Critical Care gave a party for Very Important Pets to mark the renovations of the Intensive Care Unit.

On December 14 former ICU patients, accompanied by their human escorts, came to VHUP to enjoy cat and dog party trays and to leave pawprints for the “Wall of Stars.”

Doctors and nurses fussed over former patients and renewed bonds established during the stays in ICU.

The renovated ICU now has an adjoining room where patients and owners can visit and where rounds are held. A door was added so that there is access from two corridors and the cabinets were repainted in a cheerful blue.

These renovations were made possible through a gift from the estate of Pauline L. Whittier and hospital funds.

**SmithKline Beecham Animal Health Awards**

**Grant to School of Veterinary Medicine**

SmithKline Beecham Animal Health, a leading provider of health products for livestock and companion animals, has awarded $100,000 to the School of Veterinary Medicine at the University of Pennsylvania. These funds, which will be disbursed over the next three calendar years, will be used to fund veterinarians who wish to further their education at the Ph.D. level. The grant will allow two students per year to complete all formal course work prior to a laboratory research assignment at the University’s medical or veterinary schools.

Dr. Susan Westmoreland, a 1991 graduate of Penn, has been selected as a first year grant recipient. She is currently completing a rotating internship at the Veterinary Hospital of the University of Pennsylvania and will enter the Graduate Group of Pathology this fall.

“The School of Veterinary Medicine is extremely pleased with the grant from SmithKline Beecham Animal Health and appreciates their support of graduate education,” said Jeffrey P. Roberts, associate dean for development and planning. “Not only will the grant assist individuals in commencing a Ph.D. program, it will also help to fill the need for veterinarians specializing in important scientific disciplines,” he said.

**Dr. Kotlikoff receives Award**

Dr. Michael Kotlikoff, associate professor of pharmacology, was one of the winners of the 1991 Hildegard Doenckamp-Gerhard Zbinden Foundation Award. The award recognizes research scientists for their contribution to the refinement, reduction or replacement of animals in experimental studies. The 1991 award acknowledges landmark work in the development of non-whole animal methods for research on cardiopulmonary function and bronchial asthma.

The prize of DM 50,000 was split. A first prize of DM 15,000 was awarded to Dr. Anna M. Wobus, Institut fur Genetik und Kulturpflanzenforschung, Gatersleben, Dr. Gerd Wallukat, Institut fur Herz-Kreislaufforschung, Berlin, and Dr. Jürgen Hescheler, Institut fur Pharmakologie, Berlin, for their work in engineering a line of mouse embryonic stem cells that differentiates into cardiomyocyte tissue which can be used to test responses to neurotransmitters and drugs.

Dr. Kotlikoff received a second prize of DM 15,000 for his work on the development of a human airway smooth muscle cell line and single-cell systems to study airway smooth muscle excitation/contraction coupling. The work has led to a fuller understanding of the inflammatory processes involved in asthma, and the cells have been used to study membrane ion channels and their cellular regulation.

While Dr. Kotlikoff’s research was not designed specifically toward the development of alternatives to animal research, he accepted the award “as someone concerned with animal welfare, as well as the advancement of scientific knowledge.”

The awards were presented in April at the 10th Anniversary Symposium of the Center for Alternatives to Animal Testing at Johns Hopkins School of Public Health, Baltimore, MD.
Dr. Peter Theran, V'61, vice president of the MSPCA's Health and Hospital Division, was named president of the Massachusetts Veterinary Medical Association.

Dr. Joseph Stoyak, V'52, was the recipient of the Massachusetts Veterinary Medical Association's Distinguished Services Award. Dr. Stoyak is chief-of-staff at the MSPCA's Angell Memorial Hospital.

Dr. Adrian Morrison, professor of anatomy, was awarded a Burroughs-Wellcome Visiting Professorship and Medal by the Royal Society of Medicine, London. While in England, he participated in a symposium, "Sleep and Rest in Man and Animals" at the Royal Society of Medicine, as well as the annual meeting of the Association of Veterinary Teachers and Research Workers in Scarborough. Dr. Morrison has been named to the Boards of Trustees of Americans for Medical Progress and the National Animal Interest Alliance. Both organizations have been formed to educate the public about the responsible use of animals and the dangers posed to the public's health by the animal rights movement.

Dr. David Krzicia, Visitar Professor of Biochemistry, was Burroughs-Wellcome Visiting Professor in Nutrition at the University of Alabama School of Veterinary Medicine. Dr. Krzicia is the recipient of the 1992 Robert H. Herman Memorial Award, presented by the American Society of Clinical Nutrition for "sustained research efforts and achievements in clinical nutrition."

Dr. Wilbur Amand, V'66, adjunct associate professor of zoology, has been appointed to the Board of Directors of the American Association of Zoological Parks and Aquariums. At the general meeting of the World Association of Wildlife Veterinarians in August in Rio de Janeiro, Brazil, Dr. Amand was elected chairman of the AAWV.

Dr. Urs Giger, associate professor of medical genetics, and his collaborators received the Shannon Award, a newly established award from NIH, for their studies on canine muscle phosphofructokinase deficiency, an inherited enzymatic deficiency and metabolic myopathy in English springer spaniels. The Robert H. Winn Foundation awarded a research grant to Dr. Giger and Dr. Margaret Casel, resident in medical genetics, to study "Transfer of colostial antibodies to the neonatal kitten: prevention against infection and cause of neonatal steeorrhoea."

Dr. Kevin Shanley, assistant professor of dermatology, received the "Warm Fuzzy Award" from the Philadelphia area veterinary medical association. The award is presented annually to "recognize excellent service to referring veterinarians and clients.

Dr. Mattie Hendrick, V'78, assistant professor of pathology, was awarded a research grant by the Robert H. Winn Foundation to study the "Epidemiology of vaccine induced sarcomas in the cat."

Dr. Edwin J. Andrews, V'67, has been invited to serve a four year term on the National Advisory Research Resource Council of the National Institutes of Health.

Janice Hayden, research specialist in the laboratory of pathobiology at the 1991 Nikon Small World Competition for his darkfield micrograph "Canine Epithelium with Compound Hair Follicles." The photo appeared in the 1992 Nikon Small World Calendar.

Dr. Leon Z. Saunders was honored with an International Symposium on The History and Science of Veterinary Pathology at the National Library of Medicine, Bethesda, MD in December.

Dr. Ralph L. Brinster, Richard King Mellon Professor of Reproductive Physiology, was awarded the 1992 Embryo Transfer Pioneer Award by Thriogenology, an international journal of animal reproduction.

Dr. William Brice, V'78, is a host on a weekly cable TV show, "Let's Talk Pets," broadcast in Chester County, PA.

Dr. E. Neil Moore, professor of physiology, has been re-appointed visiting professor of medicine in the Department of Medicine at Johns Hopkins University Medical School and re-appointed as adjunct professor of medicine at Hahnemann University School of Medicine. Dr. Moore presented a paper and co-chaired the symposium at the 10th International Symposium on Frontiers of Arrhythmia held in Maraira, Italy. In the fall Dr. Moore presented a paper at a symposium on "Tachycardia Mechanism Management" sponsored by the Futura Medical Meetings. He co-chaired a two-day meeting on "New Drugs and Devices," and presented a paper at a seminar sponsored by the American College of Cardiology.

Dr. Peter J. Ilbeke, V'72, was named an Honorary Life Member of the Swedish Veterinary Dermatology Study Group and of the British Veterinary Dermatology Study Group. Dr. Ilbeke presented a paper at the World Small Animal Veterinary Association meeting in Vienna in October.

Dr. Narayan G. Avadhani, Harriet Ellison Woodward Professor of Biochemistry, has accepted to serve as member of the Physical Biochemistry Study Section, Division of Research Grants, at the National Institute of Health, for a four year term.

Dr. Daniel F. Vernon, V'59, has turned vintner. His winery in Oldwick, NJ produces between 10,000 to 14,000 gallons of wine a year.

Dr. Sydney Evans, V'77, assistant professor of radiology, was honored by the alumni association of Cook College of Rutgers University and awarded the George H. Cook Award during 1992 graduation ceremonies.

Dr. Harry Reynolds, V'56, was recognized at a reception during the 1991 annual meeting of the American College of Veterinary Pathologists for "sustained excellence in the teaching of veterinary pathology." The award, the first of its kind, was presented by the C.L. Davis Foundation for the Advancement of Veterinary Pathology. Dr. Reynolds retired in August 1991 after 32 years of service from the University of Illinois, College of Veterinary Medicine, where he was chair of pathology and assistant head of the Department of Veterinary Pathology.

New Bolton Center was well represented at the American Association of Equine Practitioners meeting in December. Papers were presented by Dr. Benson Martin, V'70, assistant professor of equine sports medicine, Dr. William Moyer, professor of equine sports medicine, Dr. David Nonemaker, V'68, Jacques Jenny Professor of Orthopedic Surgery, Dr. Virginia Reef, associate professor of medicine, Dr. Michael Ross, assistant professor of surgery, and Mr. Robert Sigafous, farrier.

Dr. Robert Eckroade, associate professor of poultry pathology, and Dr. Charles Benson, associate professor of microbiology, presented papers at the Symposium on the Diagnosis and Control of Salmonella, sponsored by the United States Animal Health Association and the American Association of Veterinary Laboratory Diagnosticians, in October in San Diego, CA. Dr. Max Van Beskirk, Jr., V'56, was a program moderator at the event.

Dr. M. Phyllis Lose, V'57, has revised and updated her book, Blessed are the Broodmares. The second edition is published by Howell Book House.

Dr. John E. Martin, V'42, received the PVMA's Distinguished Public Service Award for his roles as "educator, author, editor, researcher, historian and friend... in a career that has spanned 50 years."

The organization's 1991 Public Service Award of Merit was presented to Dr. Henry L. Croft, V'78, for his "outstanding achievements in working with young people to encourage respect and responsibility for nature, animals and the environment."

Dr. John Cable, V'56, and Dr. Joseph O. Simington, V'43, were elected to corresponding (life) status in the PVMA.

Mr. Charles S. Wolf, chairman-emeritus of the School's Board of Overseers was elected to honorary membership of the PVMA.

Dr. Edward Dionne, V'68, is a volunteer for the Heifer Project International. In September he accompanied 88 heifers and six bulls to Egypt to ensure that they were transported safely. Heifer Project International, based in Little Rock, AR, tries to eliminate hunger worldwide by sending farm animals, cows, pigs, chickens, goats and even bees, to small villages in the Third World.

Elizabeth K. Stanley, V'93, was one of 26 students from around the country selected to participate in the Pfizer Animal Health Student Representative Program. The program provides one student from each U.S. veterinary school with the opportunity to plan and implement selected educational activities tailored to complement the veterinary school curriculum and to increase exposure to the principles of veterinary pharmacology and therapeutics.

Dr. Jeffrey M. Ott, V'77, was elected president of the Pennsylvania Veterinary Medical Association.
Dr. Manuel A. Gilman, V'45, was named the 1991 recipient of The Jockey Club Medal. The medal is awarded each year in recognition of an individual's outstanding contribution to the Thoroughbred racing and breeding industry.

The Dinosauria, a book edited by Dr. Peter Dodson, associate professor of anatomy, David A. Weishampel and Halszka Osmolka, was named Best Geosciences Reference Book by the Geosciences Information Society.

Dr. Sherry Ostrich, V'63, was presented the 1991 Regional Outstanding Service Award by the American Animal Hospital Association at the AAHA Northeast Region meeting in November. Dr. Paul Dice, V'65, was named the 1991 Outstanding Practitioner for the Northwest Region by AAHA.

Dr. H. Wesley Towers, Jr., V'68, was recently elected president of the National Assembly of Chief Livestock Health Officials. He has also been elected as second vice president of the United States Animal Health Association. Dr. Towers recently received the George M. Worrall Award, presented by the University of Delaware, "For outstanding service to agriculture by a College of Agriculture graduate."

Dr. Towers is employed by the Delaware Department of Agriculture and is the Delaware State Veterinarian.

Dr. Gerhard A. Schad, professor of parasitology, is the author, together with C.S. Pavlovski and G.J. Stott, of Hookworm Infection and Anemia, Approaches to Prevention and Control, a manual published by the World Health Organization, Geneva.

A number of faculty members and alumni presented papers at the 42nd Annual Meeting of the American College of Veterinary Pathologists in December in Orlando, FL. They were: Dr. Maron B. Calderwood-Mays, V'68, Dr. Larry Gilckman, V'72, Dr. Michael Gochschnidt, associate professor of pathology, Dr. Margaret L. Harbinson, V'74, Dr. Karen Kubi, resident in dermatology, Dr. Kevin Shanley, assistant professor in dermatology, and Dr. Emily J. Walder, V'77.

Dr. Dan Bleicher, V'53, received the Governor's Award from the Pennsylvania Commission on Crime and Delinquency for his work in the Townwatch Program for Abington Township, Montgomery County, PA. Dr. Bleicher also received a Certificate of Commendation from the Pennsylvania Senate and the Pennsylvania House of Representatives.

Dr. Dieter M. Schifferli, assistant professor of microbiology, received a grant from the University of Pennsylvania Research Foundation for his project "1987 B Frumblin Export in Escherichia Coli.

The Seeing Eye, Inc. honored the following alumni through its Veterinarian Recognition Program: Dr. Marcia McMurcy Bergman, V'70, Dr. Brian D. Farleigh, V'73, Dr. Gene Fink, V'83, Dr. Brenda J. King, V'76, Dr. Jacob Levenson, V'SI, Dr. Frederick Mars Jr., V'SI, Dr. Dan R. Rufus, V'76, Dr. Joseph S. Stilk, V'S3, and Dr. Margaret Yeaw, V'S0.

Dr. Charles Newton, professor of orthopedic surgery, has been appointed associate dean of the School.

Dr. Gail Smith, V'74, associate professor of orthopedic surgery, and chief, section of surgery, made a scientific presentation on hip dysplasia at the annual meeting of the American College of Veterinary Surgeons in San Francisco. Dr. Smith was an invited lecturer at the Western States Conference in February in Nevada. He presented a number of papers at the annual meeting of the Veterinary Orthopaedic Society in Colorado in March. He gave a scientific presentation on the dog as a model for human orthopaedics to the Winn Fund at the Winn Foundation in Washington in February. The Seeing Eye Foundation renewed its grant for the study of hip dysplasia and patella luxation in cats. Co-investigators with Dr. Smith are Dr. Urs Giger, associate professor of medical genetics and Dr. Pamela Green, resident in radiology. Dr. Green is the recipient of the 1992 Devon Sois Award for her "tireless work and dedicated research in the conditions of patellar luxation and hip dysplasia in cats."

Dr. Alan Bachrach, V'68, was the subject of a feature article in the Boston Herald Sunday Magazine. Dr. Bachrach is a veterinary ophthalmologist in Lincoln, MA.

Barry Siupine, associate dean and director of VHUP, has been appointed special assistant to Marna C. Whittington, executive vice president of the University.

Dr. Sherrill Davison, V'83, assistant professor in veterinary medicine and pathology, was a speaker at a meeting on Salmonella enteritidis for poultry producers in March in Lancaster, PA.

Mr. Richard W. Newpher, a member of the School's Board of Overseers, has been appointed executive director of the Washington D.C. office of the American Farm Bureau Federation.

Dr. Michael I. Kollikoff was promoted to associate professor of pharmacology in animal biology.

Dr. Alan Ruggles, lecturer in surgery, NBC, and Dr. David Holt, lecturer in surgery, VHUP, are new diplomates of the American College of Veterinary Surgeons. Dr. Ellen Zimer, post-doctoral researcher, has become a diplomate of the American College of Veterinary Pathologists. Dr. Lesley King, lecturer in medicine, has become a diplomate of the American College of Veterinary Internal Medicine, and Dr. James G. Jeffers, V'S6, consultant in dermatology, has become a diplomate of the American College of Veterinary Dermatology.

Dr. Annette M. Carricato, V'S7, is the author of Veterinary Notes for Dog Breeders, a book published by Howell Book House.

Dr. Donald A. Alt, V'S4, Robert R. Marshak Term Professor of Aquatic Animal Medicine, was appointed Head of the Laboratory of Aquatic Animal Medicine and Pathology.

Dr. Leon Weaver, V'71, was recently named director of the University of California, Davis, School of Veterinary Medicine's Veterinary Medicine Teaching and Research Center (VMTRC) located in Tulare, CA. Dr. Weaver also serves as chief of service for the school's Dairy Medicine Production clinical training program.

Dr. Robert Shomer, V'S4, traveled to Israel in October to deliver a four-months old yellow Labrador retriever named "Shark" to the Israel Guide Dog Center for the Blind. The dog was donated by the Seeing Eye, Inc., of Morris-town, NJ, to become part of the breeding program of the Israeli organization. Dr. Shomer was a member of the board of directors of the Israeli Guide Dog Center for the Blind, headquartered in Warrington, PA. Dr. Shomer was presented to the Israel Nature Reserves Authority for having funded a veterinary clinic at Hai Bar Carmel, a preserve for the breeding of endangered species such as fallow deer, oxeyes, ibexes, and other rare animals.

Dr. Robert Washabau, V'S2, assistant professor of medicine, attended the annual meeting of the American Gastroenterology Association in San Francisco in May and presented a paper on "Signal Transduction in Gastrointestinal Smooth Muscle."

Dr. Donald F. Patterson, Charlotte Newton Sheppard Professor of Medicine, presented the First Transduction in Gastrointestinal Smooth Muscle."
Llamas

In recent years, llama raising has become a multimillion dollar industry. Western Hemisphere camelids include the alpaca, guanaco, vicuna and llama, and in the Eastern Hemisphere there are the dromedary and bactrian camels. Llamas are raised for use as pack animals and as companion animals. Their wool may be of value but they need several years to grow back a new coat. In the American West, they are being used as watch animals for sheep. They are aggressive toward coyotes and many shepherds say they are more effective than dogs, guns, electric fences, and chemical repellents.

Llamas may sell for $5,000 to over $50,000 or even more. The stud fee for a male can be as much as $1,500. Most llama farms are in the West but it is said that there are about 100 farms in Pennsylvania. Four to six llamas can live comfortably on the same acreage as a single horse. They eat chow in the winter months and hay and grass in the warm weather. Their thick wool helps the llamas in cold weather but can make them uncomfortable in the summer. Births almost always take place in the fall and spring, avoiding very hot and cold weather. The gestation period is about a year and delivery almost always comes about noon.

Llama trekking is popular in the West. They are not built for riding (they weigh 300 to 400 pounds) but as an alternative to back packing, they transport supplies for camping trips to high country. Llamas have keen eyesight and hearing and often alert their human companions to wildlife along the trail. They are remarkably quiet and gentle animals, domesticated thousands of years ago in South America for use as a pack animal.

Before you decide on any exotic animal as a pet, investigate! Be sure you know what is required and what you can expect. Many people want something different but cannot cope after a few months.

In the language of the Incas, llama is pronounced “yama,” the pronunciation sometimes used instead of “llama.” However you say it, do some studying before you try to make a fortune with llamas.

Campylobacteriosis

Campylobacter species are one of the causes of gastroenteritis in man and animals, including dogs and cats. It is worldwide in distribution and the incidence appears to be increasing. However, this could be because special culture techniques are required, and the special media now are available commercially.

Clinical signs of campylobacteriosis are non-specific and typical of any acute gastroenteritis (severe diarrhea sometimes with vomiting). The most severely affected are young, debilitated or immunocompromised animals. The treatment includes fluids and antibiotics. In some cases, there may be chronic, recurrent infections.

There is some controversy over the importance of Campylobacter infections because the organism may be isolated from normal and diarrheic animals. It may be considered an opportunistic pathogen and can be a problem in crowded, unsanitary quarters. There is possibility of transmission from pets to humans and severely affected animals should be handled carefully.

Artificial Insemination

The use of frozen or fresh extended semen is becoming quite common. The semen may be shipped overnight for artificial insemination rather than shipping any of the dogs involved. The conception rate is about 75% which compares favorably to natural breedings.

Regardless of the breeding method used, proper ovulation timing is crucial. Special kits for progestosterone testing are commercially available for use by veterinarians, along with vaginal smears, to determine correct time for insemination.

Recently the American Kennel Club has approved the use of imported semen from any country whose stud book is recognized by the AKC. There are special requirements, including prior approval. The extraction, storage, shipping and insemination must be done under veterinarian supervision. For some time, American frozen semen has been shipped abroad with successful results. There are a number of semen freezing centers in this country as well as some in Australia, New Zealand and France.

Popular Dog Breeds

In 1991, the American Kennel Club registered 1,379,544 dogs. The Labrador retrievers were in first place, becoming the sixth breed to head the list in the last 65 years. The German shepherd was most popular 1926-1928, the Boston terrier from 1929-1935, the cocker spaniel from 1936-1952 and from 1983-1990, the beagle from 1953-1959 and the poodle from 1960-1992.

Following the Labradors in the “Top Ten” were cocker spaniels, poodles, Rottweilers, German shepherd dogs, golden retrievers, beagles, dachshunds, chow chows and Shetland sheepdogs. There were 134 breeds on the 1991 list. Three breeds were added — Australian shepherds, Chinese crested and miniature bull terriers. There are 146 breeds and varieties competing at championship shows. For show purposes, the American Kennel Club designates varieties in nine breeds. Cocker spaniels are black, ASCOB (all solid colors other than black) and parti-color; bull terriers are colored or white; English toy spaniels are King Charles and Ruby (solid-colored) and Blenheim and Prince Charles (broken-colored). Three breeds are divided by coat — dachshunds are long-haired, smooth and wire-haired, while collies are rough or smooth and Chihuahuas are smooth coat or long coat. Size divides the other three breeds — beagles are not exceeding 13 in. and 13 in. but not exceeding 15 in.; poodles are toy, miniature and standard and Manchester terriers are standard and toy. The standards for the breeds give a complete description of the varieties.

Many more breeds of dogs are recognized in different countries and by other registries in the United States. The American Kennel Club is the principal agency for registration of pure-bred dogs in this country. It is an independent, non-profit organization and its efforts include public education on responsible dog ownership. In 1991, there were 1,143 Dog Shows held under American Kennel Club rules.

Book Reviews

The Complete Cat Book by Richard H. Gebhardt (Howell Book House, $9.95 paperback). Cats have surpassed dogs as the most popular pets in America. This book gives expert advice on every aspect of owning, owning and caring for a cat.

A chart gives evaluations of activity level and grooming needs — high, medium or low. Of the 44 breeds listed, 16 may produce kittens which are not showable (the Scottish Fold may have straight-eared kittens). Nine breeds have genetic concerns (susceptibility to kidney problems in Abyssinians and spinocerebellar ataxia in Persians).

The cat fancy in the United States was officially born in 1895 when a cat show was held in Madison Square Garden in New York. It is probable that cats were fully domesticated in Egypt about 1600 B.C. In 1990, the six North American registries sponsored 824 shows. The largest breed is the Ragdoll and the smallest is the Singapura. There are color photographs of the breeds, with notes on their origin, development as well as CFA Standards.

About the origin of the Devon Rex, we read “In 1960 a kitten with wavy hair was discovered in a litter of straight-coated feral kittens in Devonshire, England. The father of this litter was believed to have been a tomcat with a similar wavy coat who lived in an abandoned tin mine near Buckfastleigh in Devonshire. The mother of the litter was a tortie-and-white normal-coated stray that raised her kittens in a field....”

The Siamese is well over two centuries old, and perhaps a good deal older. The Persian is the most prized and plentiful of all pedigreed cats. They are comes the Persian is the most prized — and plentiful — of all pedigreed cats. They are

Prized and plentiful of all pedigreed cats. They are...
Puppy Problem Prevention Class

Beginning in September 1992 the Behavior Clinic at VHUP will reinstate its Puppy Problem Prevention Class. Started in the Spring of 1992 with a trial run, it will now be given weekly since it was such a resounding success. The Puppy Problem Prevention Class is not an obedience class; it is a single two-hour session that focuses on normal behavior and the importance of early socialization. During the session clients learn appropriate verbal and physical techniques to correct puppies and how to teach them desired behaviors. Puppies interact with each other in play as a way of illustrating appropriate behaviors and techniques to owners. Additionally, vaccination schedules, heartworm prophylaxis, intestinal parasitism, diet, exercise, neutering v. breeding, and general health concerns are discussed. Clients are provided with handout packages that emphasize the goals of the class. The visit costs only $25. It includes a complete physical exam, and occurs in groups of no more than six puppies. Preference is given to puppies six months of age and under. Appointments are scheduled on Saturday mornings and can be made by calling 215-898-3347.

As an offshoot of the Puppy Problem Prevention Class the Behavior Clinic at VHUP has received a grant from Miles Laboratories to investigate the extent to which early intervention prevents future behavior problems. 150-200 puppies six months of age or under, are being actively solicited for this study. Puppies will be followed for at least a year. The first appointment will be a standard Puppy Problem Prevention Class; thereafter, re-exam appointments will be scheduled every three months. Clients will be asked to complete a questionnaire about their puppy's behavior prior to the first appointment. This same questionnaire will be completed at three-month intervals during re-exams. All puppies will be videotaped while being asked to perform specific behaviors separately and in groups during all exams.

Some puppies will be fitted with PROMISE System canine head halters without cost to the client. Clients will complete a weekly one page diary of puppy activities and will discuss any questions they might have with an assistant in the clinic on a weekly basis. There is an initial $25 fee for the first class; however, clients choosing to participate in the study will receive the following free of charge: DHLPP and rabies vaccines for the duration of the study (including any incomplete puppy vaccines), twice yearly fecals and appropriate medications, and annual heartworm tests. Initial appointments are 2 hours and are on Saturdays. Follow-up appointments are 1/2-1 hour and are usually on Saturdays, but can be at other times to accommodate clients schedules. Referring veterinarians will receive periodic updates on patient's progress. For information and/or to schedule an appointment, please call 215-898-3679.

Penn Annual Conference

The 1992 Penn Annual Conference was a great success and we offer our thanks to the 750 veterinarians, 155 technicians and 80 exhibitors who attended. A special thanks to the following exhibitors who sponsored lectures at the Conference:

- Hills Pet Products
- Peterson Imaging, Inc.
- DVM Pharmaceuticals, Inc.
- A.J. Buck and Son

The 1993 Penn Annual Conference will be held at the newly-renovated Adam's Mark Hotel on Wednesday, January 20 and Thursday, January 21, 1993. We hope to see you there.
Scholarships

Susan Bauman, V’95, has been named Hall’s Pet Products Dean’s Scholar. Joseph K. Gaydos, V’94, has received the Lois F. Fairchild Scholarship in Veterinary Public Service. The Berks County Kennel Club awarded a scholarship to John Mrsiczek, V’92. The recipient of a scholarship from the Mid Susquehanna Kennel Club is Catherine Micek, V’92.

Linda A. Casper, V’92 is the recipient of the Dr. Samuel Schady Memorial Scholarship. The Dr. Guss Memorial Scholarship was awarded to Rebecca L. Frankey, V’92. Ann E. Bastian, V’93, received the Dr. Palace Setz Memorial Scholarship. These three awards were made by the Pennsylvania Veterinary Foundation.

The Pocono Mountain Kennel Club awarded a scholarship to Elizabeth Wade, V’94. Pamela Bendick, V’92, and Tiffany Bogart, V’92, are the recipients of the Richard Dorr Scholarships. Debra Buchanan, V’95, received a scholarship from the Trushel Scholarship Trust. Sharon Lachette, V’92 is the recipient of the David J. and Victoria R. Greenberg Memorial Scholarship. Joanna Manz, V’92, was awarded a scholarship by the New York Farmers, Inc.

The William Goldman Foundation awarded four scholarships. The recipients are: Lori Ludwig, V’92, Martha Rodgers, V’92, Christine Czernecki, V’93, and Johanna Lee, V’94. Rebecca Frankey, V’92, and Brenda Kaufman, V’94 were recipients of Bruce J. Heim Dean Scholarships. Billhardt Dean’s Scholarships were awarded to Evan Feinberg, V’93 and Joseph Sito, V’93. Corrine Dunagan, V’92, received a scholarship from the Mispillion Kennel Club.

W. Edward McGough Memorial Fund Established

Many friends of the late Dr. W. Edward McGough asked how they might create a listing and living memorial at the School for this eminent psychiatrist, well-known and respected member of the Dog Fancy, and long-time member of the School’s Board of Overseers. Since education was always a special priority for Ed, memorial gifts are being used to establish an endowed Dean’s Scholarship in his name. In the event that gifts total less than $50,000, the amount required to fund a Dean’s Scholarship, the funds will be added to the School’s general scholarship fund.

We thank those individuals and dog clubs listed below for their thoughtful gifts in Ed’s memory. Additional funding is needed to create the W. Edward McGough Dean’s Scholarship, and we invite other people who knew and admired Ed to make this special tribute to his memory possible.

The donors are as follows:

Louis Auslander
Robert K. Caldwell & Helen B. Jones
K. Carol Carlson
Frances B. Deis
Dr. M. Josephine Deubler
Samuel E. Ewing Jr.
Steven D. Gladstone
Mrs. Donna E. Hausman
Mrs. James H. Higgins
Paul J. Jarecki
The Kennel Club of Philadelphia
Dr. James W. Mackenzie
James J. McTernan
Monmouth County Kennel Club
Rock River Valley Kennel Club
Daniel J. Shoemaker

John T. McGrath, V’43

Dr. John T. McGrath, emeritus professor of pathology at the University of Pennsylvania School of Veterinary Medicine, died Oct. 10, 1991. A world-renowned veterinary neuropathologist, Dr. McGrath served on the Veterinary School’s faculty for 41 years. He was acting chairman of the department of veterinary biology (later department of pathology) from 1958 to 1961 when he was appointed chairman. He served in that capacity until 1963.

Dr. McGrath received his veterinary degree from Pennsylvania in 1943. He then served as captain in the Army Veterinary Corps until 1946. The following year he joined the School’s faculty. In 1953 he received his board certification by the American College of Veterinary Pathologists. Dr. McGrath’s research interests included epilepsy and neurologic tumors in animals and he wrote the textbook Neurological Examination of the Dog, a standard for examination and diagnosis of neurological disease in dogs. In addition, he published nearly fifty papers in journals and contributed chapters to other textbooks.

During his long and distinguished career, Dr. McGrath received many honors. In 1961 he was selected Veterinarian of the Year by the American Veterinary Medical Association and in 1966 he received the same honor from the American Animal Hospital Association. In 1967 he was the recipient of the Norden Teaching Award. In 1969, in recognition of his outstanding contributions to neuropathology, he was awarded an honorary veterinary degree by the School of Veterinary Medicine, University of Turin, Italy, and in 1974 he received the Kloboak Medal from the School of Veterinary Medicine, Brno, Czechoslovakia. The Pennsylvania Veterinary Medical Association presented him his Distinguished Veterinarian Award in 1988.

Dr. McGrath, an accomplished musician, played the saxophone and the clarinet. As a young man he performed with his father’s band in Wildwood and the Willow Grove amusement park. While attending veterinary school, he performed with a band at a dance hall on Walnut Street and studied his veterinary notes, taken on the back of sheet music, during intermissions. Many here at the School remember his playing at parties and get-togethers.

Dr. McGrath served on local and national science fairs and lectured nationally and abroad. He served as a consulting veterinarian for companies such as DuPont, Merck, and SmithKline. He was a member of the AVMA, PVMA, World Federation of Neurology, International Academy of Pathologists, and the Philadelphia Neurology and Pathology Societies.

Dr. McGrath is survived by his wife, Elva C.; sons T. Timothy, Dr. J. Terrence (V’79) and J. Thomas; one brother, two sisters, and six grandchildren.

Memorial contributions can be made to the John T. McGrath Scholarship Fund, care of the University of Pennsylvania School of Veterinary Medicine.

The following have contributed to the John T. McGrath Scholarship Fund:

Dr. Gustavo D. Aguirre
Dr. and Mrs. Mark Allen
Dr. Edwin J. Andrews
Ms. Noreen P. Babino
Ms. Ann Marie Rama
Dr. Darrell N. Beley
Mr. and Mrs. Marvin Blair
Dr. Kenneth C. Brown
Mr. and Mrs. Jeffrey A. Burgess & Family
Mr. James S. Burns
Dr. and Mrs. Charles Cushon & Family.
Mrs. John Capan
Dr. Patricia Ann Don Jolliff
Dr. Josephine Deubler
Dr. and Mrs. Josephine Devitt
Dr. Albert S. Ehr
Dr. A. Bud Fennon
Ms. Sandra T. Flugtello
Dr. Patricia E. Fritz
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Dr. Dawn G. Goodman
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Ms. Mary Emily Hamilton
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Gary and Don Hudson
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Mrs. Vincent B. Janson
Hayes and Ruth Johnson
Dr. Margaret J. Jones
Dr. and Mrs. William K. Kane
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Mr. Richard B. Kein
Dr. Rebecca Kirby
Dr. and Mrs. Leonard Kwiatkiewicz
Dr. Paul D. Kushe
Ms. Patricia Makler
Mr. and Mrs. Richard J. McConnell & Family
Dr. J. Terry McGrath & Family
Dr. Sidney L. Melnick
Dr. and Mrs. Ronald R. Minor
Bette and Peter Mohn
Ms. Joseph Morley
Mr. James Morray
Mr. G. Lee Muller
Mr. Joseph W. Ortleb
Dr. Frank H. Owens

Carol Calista, student at Tufts University Veterinary School, Scott Moore, V’92, Robert C. Hart, College of Veterinary Medicine, Michigan State University, Vivien Surman, College of Veterinary Medicine, Cornell University, Mr. Peter R. van Brunt, trustee, Mrs. Robert V. Lindsay, trustee.
Student Government Teaching Awards

On April 11, 1992, the Student Government held the Annual Teaching Awards Dinner Dance at the Adam's Mark Hotel. The Class of 1995 presented its teaching award to Dr. Trudy Van Houten, visiting lecturer. Dr. Deborah Gillette, assistant professor of pathology, received the award from the Class of 1994. The Class of 1993 presented its award to Dr. Regina Oristaglio, resident in reproduction. The graduating class presented four awards for teaching. The recipient of the faculty member award was Dr. Richard Squires, lecturer in medicine. Dr. Marjan Govers and Dr. Marc Elie received the resident award; Dr. Kirk Hassinger received the intern award, and Jane Cohen received the technician award.

In addition to the Student Government Awards, a number of other awards were presented. Dr. Raymond Sweeney, assistant professor of medicine, received the Norden Distinguished Teacher Award. The Beecham Research Award was presented to Dr. Michael Atchison, assistant professor of biochemistry. Dr. Monika Griot-Wenk, intern, received the Dr. Jules Silver Bedside Manner Award. The Iams Small Animal Clinician Award was presented to Dr. Marjan Govers and Dr. Carlos Mongil, resident in surgery. The William B. Boucher Award for Outstanding Teaching at New Bolton Center by a House Officer was presented to Dr. Elizabeth Laws, resident in surgery. Dr. David Diefenderfer, consultant in surgery, received the Residents' Award for Outstanding Teaching by a Faculty Member.