



## Bellwether Magazine

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Article 1

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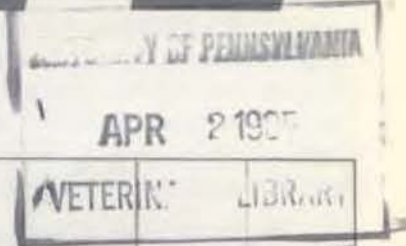
# Bellwether 14, Spring 1985

# Bellwether

University of Pennsylvania

Spring 1985

# 14



## Neonatal Intensive Care Unit for Foals

**A** neonatal unit for horses may sound farfetched, but one exists at New Bolton Center. In the Spring of 1984, the climate controlled, separate unit was opened and its staff has been busy every since.

"Newborn foals are very delicate," said Dr. Wendy Vaala, a lecturer in medicine at the University of Pennsylvania's School of Veterinary Medicine whose primary interest is pediatrics. "They are susceptible to many diseases and if they are ill, they need specialized intensive care and treatment which this unit provides."

The breeding and raising of horses is a multi-million dollar industry. Each foal is carefully planned to enhance a bloodline. "Most of the horses we see are destined to be athletes," Dr. Vaala said. "When a sick foal is brought here, we not only have to think about the treat-

ment, we also have to consider whether the animal can be an athlete two or three years hence or whether the illness will affect it permanently. That often is very difficult. We have a little more leeway with fillies, colts though must be outstanding; for both there can be no lingering effects of neonatal illness."

The greatest number of patients admitted to the unit are foals with septicemia, a bacterial infection which either can be general or localized in an organ or a joint. One of the most dreaded sequela of septicemia is meningitis and for this the prognosis is poor. A newborn foal is exposed to bacteria the minute the birth process begins but nature has devised a system to fortify the newborn animal against these organisms: colostrum.

"A great number of septicemia cases can be prevented," Dr. Vaala said. "It takes careful supervision of the foaling and close monitoring of mare and foal for at least a week after birth."

She explained that a mare should not be shipped during her last four weeks of pregnancy. "This gives her time to develop antibodies to organisms in her environment," she said. "These antibodies are concentrated in the colostrum during the last three weeks of the mare's term. If the environment is changed shortly before birth, the mare won't have time to develop the proper antibodies, leaving the foal vulnerable and unprotected." According to Dr. Vaala, the pressures of the horse industry are such that breeders frequently have to ship mares shortly before giving birth so that the mare can be bred again as quickly as possible.

Dr. Vaala pointed out that generally a healthy, strong foal is not susceptible to septicemia but that weak animals quickly succumb to it. "If a foal has a difficult birth or if it is premature, it may not be able to nurse right away, so it won't get the colostrum," she said. "Premature foals

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## Neonatal Intensive Care

*continued from page 1*

are at great risk as there may be no colostrum or very little of it." She emphasized that newborn foals must receive colostrum shortly after birth in order to be protected. "There is only an 18- to 24-hour period after birth in which the animal is able to absorb the antibodies from the colostrum into its bloodstream. After that the gut changes and the large antibodies can no longer pass directly into the foal's system. This brief period can be shortened further if the birth was a difficult one, then steroids, released by the foal, will hasten the change in the gut."

Dr. Vaala said close supervision and observation during birth can avoid potential septicemia. "If it is known that the foal cannot nurse then other steps can be taken to give it the colostrum," she said. "The veterinarian can tube-feed the colostrum." Sometimes it appears that a foal is nursing, though examination of the mare reveals that the foal was just nuzzling, such foals too need tube-feeding. Dr. Vaala explained that colostrum freezes well and keeps for about a year. "Large breeding farms keep it on hand for foals at risk (i.e. premature, weak or orphan foals) and we have it here at New Bolton Center."

She also recommends that all newborn foals be tested for an antibody titer when they are 24 hours old. "That simple blood test will tell

whether the animal has sufficient protection. If the titer is low then the veterinarian can boost it through a plasma transfusion. It is not an expensive procedure and can save a lot of trouble later."

Sometimes though all these precautions do not help and a foal becomes seriously ill. This occurs frequently with the premature animal. Often such a foal is not able to breathe properly and must be given oxygen or even put on a respirator. Recently a foal at New Bolton was kept on a respirator for ten days and then successfully removed from it.

The young patients in the unit require a lot of specialized care. There are tests to be run, cul-

tures to be taken and above all, the animal has to be fed very frequently to keep it alive. "A foal consumes 10 percent of its body weight in milk daily," Dr. Vaala said. "This requires careful calculation and frequent meals." An added problem is that newborn foals are very prone to stress. "They can develop gastrointestinal ulcers when stressed, this can lead to internal bleeding or intestinal constrictions. Our nurses are trained to handle these young animals in such a manner as to keep stress to a minimum."

Whenever possible the mare is brought along with the foal. She has to be kept near her offspring and has to be able to watch it. "It helps the foal to recover quicker if it is near its dam," Dr. Vaala said. "But we then need extra hands to



*Orphan, 23-day premature filly/48 hours old; She is resting on foam cushions and pillows and is receiving intravenous fluids to maintain her hydration and provide nutrition. Her legs are wrapped to prevent self-trauma.*



*The same premature filly being encouraged to walk, note how weak she appears. She can not hold her head up in a normal position. Her tendons are very weak and she is unable to walk without a great deal of assistance.*

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calm the mare when we treat the foal. We have to make sure that she can see it at all times during treatment, otherwise she may become frantic."



The filly can now rise, stand and walk on her own. She has been moved to the mare/foal stall. A nurse mare has been brought in and is standing in the background behind the movable partition.

If the mare cannot accompany her foal then a foster mare may be brought in to nurse the animal. "These mares are usually very placid and will accept a strange foal," she said. "Though we do have to fool her a bit by putting a scent on the foal and into her nostrils."

The stay at New Bolton Center for a septicemic foal can be a long one. However, Dr. Vaala explained, owners are willing to spend the time and money to save a valuable future race or breeding animal.

The unit does not only see foals with septicemia. Each year a number of very young animals with botulism are seen. This disease, caused by the toxin of the spore forming *Clostridium* bacteria used to be fatal. "We now have an antitoxin which can be given to the animal," Dr. Vaala said. "It will not cure the disease but will stop its progress." Botulism causes an animal to be weak and uncoordinated, it cannot swallow and in advanced cases the breathing is affected. "Such animals need great care and supportive treatment. They have to be sustained until their body has regenerated the nerve endings affected by the toxin. It is a long and labor-intensive process." The staff at New Bolton works with these foals intensively. They are given physical therapy, they are held in a sling to enable them to attempt to stand and they are carried outdoors if the weather is nice. "We use the respirator for these animals and we have been able to pull them through," she said.

Another type of patient seen in the neonatal unit is the "dummy" foal. These foals are normal at birth but within the first twenty four hours they suddenly become disoriented and forgetful. They don't nurse and they wander around the stall. They quickly weaken and require intensive care. "It is believed that this condition, neonatal maladjustment syndrome, is caused by oxygen deprivation during birth," she explained. "Brain cells die and this causes the foal's behavior. If the damage is not too severe, these animals can be saved through intensive supportive therapy."

The neonatal unit at New Bolton Center is small but plans to build a larger unit as part of the new intensive care unit are being completed.

The building is being designed by Bohlin Powell Larkin Cywinski and the neonatal unit will have three foal stalls and two larger stalls. Construction will begin this year. The building is funded by private gifts and it will be the first structure to be funded by the Second Century Fund.

Helma Weeks

## Second Century Fund

Vincent B. Murphy, Jr., Second Century Fund campaign chairman, reported to the Jan. 16 Board of Overseers meeting that campaign gifts, subscriptions and bequests to the end of 1984 totalled \$15,337,482 or 37 percent of the five-year campaign goal of \$41.5 million.

Among the major new gifts reported was a \$325,000 challenge grant from the Mabel Pew Myrin Trust for laboratory renovations for the Department of Pathobiology. Under the terms of the grant, the Veterinary School must raise the same amount from other new sources by Sept. 1 to receive the challenge commitment.

The School also received an unrestricted distribution of \$129,324 from the Estate of Alfred Rosenthal, and we were informed that an initial distribution of \$100,000 from the Estate of Judith A. Sankey would be made to endow a memorial research fellowship "relating to the care of the diseases affecting dogs and other domestic animals."

The Mrs. Cheever Porter Foundation made a \$10,000 grant toward the proposed Contagious Disease Isolation Unit at New Bolton Center, and the Janet A. Hooker Charitable Trust made two gifts totalling \$15,000 for research in kidney disease and neurological disorders in dogs.

Other gifts included \$3,149 from the American Shetland Sheepdog Association for research into Sheltie Skin Disease; \$1,000 from the Norwich & Norfolk Terrier Club for the Canine Genetic Disease Information System; \$2,000 from the Delaware County Kennel Club, PA, for equipment in neurology; \$1,000 from the Chester Valley Kennel Club, PA, for the scholarship fund; \$1,000 from the Bucks County Kennel Club, PA, for the hospital equipment fund; and \$1,500 from the Rockland County Kennel Club, NY, for canine genetic research.



A nurse is bottle-feeding the filly during one of her walks. She can walk and trot on her own and is ready to be sent home with her nurse mare.



# Beautiful But Dangerous

## Plant Poisoning in Pets

**O**leander, with its flowers of white, pink, red and violet, adds beauty to many surroundings, both indoor and outdoor. It may also be lethal. Like a number of other house or ornamental plants, oleander combines outward beauty with the presence of toxic principals. In the case of oleander, the leaves contain a cardioactive glycoside, oleandrin, similar in action to digitalis, but more persistent in its action, and therefore more toxic. A single oleander leaf may be fatal when consumed by children, pets, or farm animals. Fortunately, the green leaves are bitter tasting, and it is unlikely that pets such as puppies and kittens will eat them. However, dried leaves may be eaten in playfulness resulting in poisoning, marked by vomiting, diarrhea, rapid breathing, and various disturbances of cardiac rhythm.

While plant poisoning in pet animals is less common than in livestock, it can pose a perplexing problem for the animal owner and the veterinarian. The increased cultivation of houseplants and outside ornamental plants has heightened the risk of poisoning in children and pets. For many years, aspirin was the leading cause of poisoning in children, but with the advent of safety closure caps the incidence of toxicity to this common drug has decreased, and today, houseplants are the most frequent agent involved in poisoning of children under five years of age. During the period 1979-1981, the Animal Poison Control Center at the University of Illinois reported that 11.6 percent of all phone inquiries were related to plants, and 50 percent of these involved poisoning in dogs, cats, and caged birds.

*While plant poisoning in pet animals is less common than in livestock, it can pose a perplexing problem for the animal owner and the veterinarian.*

Older dogs and cats are not likely to eat plants, but puppies, and to a lesser extent kittens, may as a consequence of playfulness or boredom mouth anything within reach, including plants. Occasionally, a well meaning owner will feed caged birds seeds from wild plants, leading to poisoning. There have also been cases reported in which pet animals have been deliberately fed hallucinogenic plants.

Various toxic principals contained in plants are responsible for poisoning. These include alkaloids, polypeptides and amines, phenanthrene compounds, glycosides, oxalates, resins and resinols, and phytotoxins. Livestock, which have long been exposed to these agents have developed elaborate detoxifying systems which offer some protection against poisoning, but pet animals have no such protective mechanisms, and are therefore more vulnerable.

In addition to oleander, some common house or ornamental plants involved in poisoning of pets are: *Precatory Beans*. These colorful beans are illegally imported to make necklaces and rosaries, and the ingestion of beans on which the seed coat has been cracked can cause severe gastroenteritis. *Castor Beans*, which are



used for the commercial production of castor oil. Castor bean plants are sometimes grown as ornamentals, and the ingestion of seeds on which the coating is broken, as happens at maturity, can cause poisoning in pet animals.

*Older Dogs and cats are not likely to eat plants, but puppies, and to a lesser extent kittens, may as a consequence of playfulness or boredom mouth anything within reach, including plants.*

The toxic principal is ricin which produces profuse hemorrhagic diarrhea, possibly convulsions, marked thirst, and abdominal pain. When the plant is used as an ornamental, it is advisable to snip off the flowering head to guard against ingestion by pets. *Prunus Species*, which includes several varieties of cherry, apple, apricot, and almond trees. The seeds, twigs and bark of these trees contain a cyanogenic glycoside, which when hydrolyzed, produces cyanide. Livestock may be poisoned by eating wilted leaves, and dogs feeding on garbage or on the residue from cider production may suffer acute poisoning. Cases of toxicity have been reported in dogs eating the bark of cherry trees, and pet birds have been poisoned through eating apple seeds. Poisoning runs a rapid course, with death occurring in one or two hours, or sooner. Clinical signs include excitement, followed by depression, incoordination, and convulsions. Blood of poisoned animals is an unnatural bright red. *Nettles*, which include the stinging nettle, and bull nettle. These have hairs which when rubbed off the plant release acetylcholine, a compound which stimulates the parasympathetic nervous system. The most common type of poisoning is observed in hunting dogs which encounter the nettles in marshy areas. Clinical signs include excessive salivation, irritation of the mouth, leading to frequent pawing, muscular weakness, and tremors. In 1963, a fatal case of poisoning due to the bull nettle was reported in a six-year-old child in the Philadelphia suburbs. *Poison Ivy*, whose toxic principal, an oil resin, may be carried on the coat of animals and result in poisoning in humans. Apparently animals do not

exhibit the severe allergic response seen in man.

These are a few plants which have been involved in reported poisonings. There are a number of others which are potentially toxic including caladium, foxglove, lily of the valley, snowdrop and iris. For those interested in further information, Dr. Murray E. Fowler, School of Veterinary Medicine, University of California at Davis, has prepared a detailed brochure titled "Plant Poisoning in Small Companion Animals." This is published by the Ralston Purina Co., Checkboard Square, St. Louis, Missouri, 63188.

Many of the plants involved in poisoning of pet animals induce vomiting after ingestion, and this reduces absorption of toxic principals. However, in all cases of suspected poisoning the pet owner should call his/her veterinarian and attempt to specifically identify the suspected plant.

Students in the School of Veterinary Medicine receive a thorough indoctrination in the toxicology of plants. The course is under the direction of Drs. David Kowalczyk and Ara Der Marderosian, and instruction includes a visit to the Jenkins Arboretum, examination of 600 slides showing poisonous plants, viewing videotapes of actual cases of plant poisoning, and lectures. The slide set used for instruction is considered to be one of the best in the country. Students are required to identify fifty-five poisonous plants and have knowledge of their poisonous principals, clinical signs of toxicity, and treatment of poisoning.

The Jenkins Arboretum, located in Tredyfrin Township, not far from the Devon Horse Show Fairgrounds, is a unique facility of forty-six acres. It is divided into sections, each of which have been numbered on a map and identified with the types of plant located in each plot.

*Cases of toxicity have been reported in dogs eating the bark of cherry trees, and pet birds have been poisoned through eating apple seeds.*

Over seventy toxic plants are found at the Arboretum which is open to the public Wednesday through Sunday. For information, call Mr. Leonard Sweetman, (215) 647-8870. The slide set used by students in studying plant toxicology is also available for public use. Call Dr. David Kowalczyk, (215) 898-6503.

As is the case with all potential poisonous materials, keep house plants and seeds out of the reach of small children, puppies and kittens. When poisoning is suspected, call your veterinarian!



Dr. John E. Martin

### Poison Information Hotline

An Animal Poison Control Information Center has been established at the University of Illinois. It provides antidotal and other information on a 24-hour basis. It is staffed by veterinary toxicologists and can be reached by calling 217-333-3611.

# Swine Tuberculosis

**M**illions of dollars are lost annually by American farmers and the meat packing industry because meat from a large number of slaughtered pigs cannot be sold as roasts, chops or hams. Instead many carcasses must be cooked prior to processing or they may even be condemned. The culprit: swine tuberculosis.

Researchers at the University of Pennsylvania, New Bolton Center, found that the disease, called swine tuberculosis, is minimally contagious in swine herds. "Swine tuberculosis has great economic impact," said Dr. Robert H. Whitlock, professor of medicine at the School of Veterinary Medicine, University of Pennsylvania. "Actually what is called swine tuberculosis is not a tuberculosis in the traditional sense. Instead, these animals have lesions caused by *Mycobacterium avium*, an organism which causes tuberculosis in poultry and wild birds. The swine are healthy and show no clinical signs of disease. When the animals are slaughtered the meat inspector finds the lesions."

*M. avium* infection is swine causes lesions indistinguishable from those caused by *M. tuberculosis* (TB in humans) or *M. bovis* (TB in cattle). Swine are susceptible to all three infections and, if they contract the latter two, will often show clinical signs of disease.

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**"Actually what is called swine tuberculosis is not tuberculosis in the traditional sense."**

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Dr. Whitlock explained that tuberculosis lesions caused by *M. avium* in swine are not infectious to humans in general, though there may be some danger to individuals with a compromised immune system. AIDS patients often have mycobacterial infections as complications of the primary disease. "On gross examination the lesions of swine TB cannot be distinguished from those caused by, for example, *M. tuberculosis*. Therefore caution is necessary. The meat is cooked if lesions are found in two body cavities. This, unfortunately, reduces the value of the carcass by 50 percent. If lesions are found in three body cavities, the meat is condemned, causing a total loss."

Pennsylvania is among the top three states with losses due to swine TB. It was found by a Bureau of Animal Industry (Pennsylvania Department of Agriculture) investigation that the most frequent agent causing the infection in this state was *M. avium* serotype 4. Mycobacterial agents in many forms are present in the environment and there are many serotypes of *M. avium*. The organisms are very resistant to temperature changes and can survive a long time in soil, water and bedding.

Researchers at the School received support from the Pennsylvania Fair Fund (Grant #M-44) and the University made additional funds available to initiate a study to determine the age susceptibility of swine, the pathogenesis of infection in piglets, and whether the disease is spread by contact and whether it can be spread to offspring of infected sows.

Piglets in age groups four, eight, 12, 16 and 20 weeks were inoculated with *M. avium* sero-



*An experimental swine TB lesion*

type 4. A control group of pigs of the same age was also kept. These were not infected. The two groups were kept apart for four weeks and then allowed to mingle. Blood samples were taken from both groups at regular intervals and the animals received the intradermal skin test for TB. The pigs were slaughtered at market weight (about 230 pounds). At time of slaughter blood was drawn for an ELISA test.

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***M. avium* infection in swine causes lesions indistinguishable from those caused by *M. tuberculosis* (TB in humans) or *M. bovis* (TB in cattle).**

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Researchers found that the pigs inoculated with *M. avium* showed a positive reading to the skin test six weeks after the infections. The control group did not show any positive results to the skin test. Positive readings for *M. avium* infection in the inoculated animals occurred in the ELISA test at about eight weeks after infection. The control group, which had mingled with the infected animals, did not show positive results of the skin test nor could the ELISA test detect any antibodies to *M. avium*.

After slaughter, the pigs were inspected for lesions. The most severe were found in pigs who had been infected at age eight weeks. The lesions were less serious in the animals infected at a later age. No lesions were found in the control group. The results of this portion of the research will be published in the *Journal of Comparative*



*The swelling behind the ear denotes a positive skin test*

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*Pathology.* The serological results were published in the *U.S. Animal Health Proceedings*.

The researchers concluded that the spread of *M. avium* by contact is minimal. They then investigated whether the disease could be transmitted from dam to offspring. Sows of different ages were inoculated with *M. avium* and then

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**He also advises that farmers not use sawdust or woodshavings as bedding material in the farrow houses or where young pigs are being raised.**

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bred. The animals and their offspring were examined after slaughter and it was found that the sows had very minimal lesions and that the piglets had none. "Farmers can buy older sows as breeders, even though the animal may test slightly positive on the skin test," said Dr. Whitlock. "The danger of transmitting the disease to the offspring is minimal."

Researchers then examined some herds with a high incidence of swine TB. It was found that these animals were kept on sawdust or bark shavings. Other researchers had discovered that this material frequently contains a high concentration of *M. avium*. "When the bedding material was removed for a new group of pigs the incidence of swine TB in that herd dropped to zero," Dr. Whitlock said.

He advocates the use of the ELISA test to determine whether swine are infected with *M. avium*. "This test is more accurate than the skin test. Unlike the skin test, it could provide indication that one is dealing with *M. avium* and not one of the more dangerous forms of mycobacterial infections. He also advises that farmers not use sawdust or woodshavings as bedding material in the farrow house or where young pigs are being raised. Further he recommends that facilities in which pigs are housed are regularly disinfected and that contact between pigs and poultry or wild birds be minimized.

Drs. Helen V. Acland, Robert Eckroade, Jeffrey I. Everitt, John Dick, Wes Wilcox and Robert H. Whitlock cooperated on this project.

*Helma Weeks*

# Animal Crackers



## American Kennel Club Centennial Show

The largest Dog Show in the Western Hemisphere was held in November in Philadelphia as part of the A.K.C.'s Centennial celebration. There were 8,075 dogs, representing 141 different breeds or varieties, entered. The largest entry was 214 Doberman Pinschers, followed by 207 Siberian Huskies, 199 Irish Setters, 181 Dalmatians and 177 Borzois. Best in Show was a German Shepherd Dog, Ch. Covy Tucker Hills Manhattan.

This was the second show held by A.K.C. The first was the Susquicentennial Show in 1926. At that show, only 83 breeds and varieties were represented. Almost 50 "new" breeds have been accepted for competition since that show, and some breeds shown in 1926 are no longer recognized (Maremma Sheepdogs, Chinese-Crested, Owtchar, Eskimo, Mexican Hairless)

The most recent additions to the list of breeds eligible for competition at A.K.C. shows are the Pharoah Hound, Portuguese Water Dog and Tibetan Spaniel added in 1983.

There have been some name changes since 1926. Russian Wolfhounds, first registered in 1891, became Borzoi in 1936. Registered originally in 1934 as Brittany Spaniels, this breed clarified its status by dropping the word "Spaniel" in 1982. The Staffordshire Terrier became the American Staffordshire Terrier in 1972 and Japanese Spaniels had their name changed to Japanese Chin in 1977.

The American Kennel Club has grown tremendously in its first 100 years. In 1886, the first full year of its existence, 1,896 dogs of 26 breeds were registered. In 1885, there were 11 all-breed dog shows held. In 1983, over 10,000 events were held by nearly 3,000 clubs across the country.

Pure-Bred Dogs/American Kennel Gazette, popularly called the Gazette, has been published without interruption since January 1889. It publishes actions taken by A.K.C., lists dates for shows, obedience trials and field trials as well as the judges, and contains many interesting and informative articles.

We all wish the American Kennel Club another century of progress.

## Training Your Dog.

There have been many theories advanced and many books written about training dogs. The "average" dog owner will enjoy *Dog Training Made Easy* by Michael Tucker (Howell Book House, New York, \$17.95). It covers selecting a companion dog and teaching it to be obedient, happy and trustworthy. The author has a dog-training school in Australia and specializes in dealing with problem dogs as well as training procedures.

The author says that except for a small minority which have reached the point of no

return, most dogs can be trained to have their faults corrected. The owner needs to be trained with the dog. The breed should be considered carefully and look at adult dogs as well as puppies. If a large breed is selected, the owner's ability to control the dog should be considered. A puppy should go to his new home between the ages of eight and 12 weeks (never before six weeks of age). This is the most receptive time for it to learn simple commands such as "Come", "Sit", and "Heel." Between 12 and 16 weeks, puppies often try to get their own way and this is the time it must learn that the master is the boss and pack leader. From the fourth to seventh month, the puppy must get out and meet people, other dogs and things that happen in the street, or you might have a puppy fearful of things in the outside world.



The chapter on *Puppy Conditioning* emphasizes the importance of getting the puppy accustomed to things that might happen in the home (strangers, vacuum cleaners, etc.) and in the outside world, including how to meet dogs on and off leash.

*Common Problems* are jumping up, barking, etc. It is likely that the owner is the problem rather than the dog. Whatever the problem, it is unacceptable for the owner but great fun for the dog. A principle of dog training is that you should always be in a position to prevent or correct any wrong move the dog may make. Aggression might be prevented from developing if the male is castrated before 12 months of age, but is less likely to help in older days.

*Temperament* should be suited to the dog's work (security, herding, guiding the blind, dog shows, field trials, obedience trials, etc.) or its place as a family pet. Traits such as jealousy, wilfulness, stubbornness and excitability can be overcome with training.

The chapter on *The Dog's Senses* states that a dog's sense of hearing comes second to his

sense of smell, his sense of vision takes third place and then comes his senses of touch and taste. A dog also has a sense of balance, a sense of heat, a sense of direction and an incredible sense of time. In addition, there is evidence to suggest that he can sense the supernatural.

Chapters cover training equipment and well-illustrated training procedures, basic and advanced. There are a number of true stories about problem dogs.

This is one of the better books on training available. While all experts might not agree on the methods used, the reader will learn the basics involved in educating a dog.

## Gestation Period

In the dog, the average length of pregnancy is 65 days, but is extremely variable because dog sperm can survive in the uterus for many days before ovulation occurs. Conceptions from a single breeding may result in apparent pregnancies of 58 to 71 days.

Average duration of pregnancy in other animals:

Cat	63-65 days
Cow	280 days
Mare	330-340 days
Elephant	20-22 months
Sheep	145-150 days
Mouse	18-20 days
Squirrel	44 days
Sperm Whale	16 months
Deer	200-220 days
Goat	150 days
Raccoon	63 days
Rhinoceros	530-550 days
Camel	410 days

All of the above are not exact. There are variations among breeds of cattle, mutton and wool breeds of sheep, etc.

## Epidemiology of Cancer

Numerous studies have found that cancers occur frequently in dogs and cats. One report covering a six-year period, shows that in a population of 100,000 (humans), the incidence was 272 cases in man, 381 in dogs and 155 in cats. In man, the most frequent site was the digestive system, while in dogs cancer occurred most frequently in the breast and skin. The lymphocytic system accounted for most cases of cancer in cats.

In animals, few attempts have been made to identify the cause in cancer. In humans, it has been estimated that 90% of cancers are the result of environmental factors and 10% can be attributed to genetic or viral factors. Recently, researchers in the Section of Epidemiology at the Veterinary Hospital of the University of Pennsylvania (VHUP) demonstrated that exposure of dogs to asbestos in the home or at the owner's workplace increases their likelihood of developing mesothelioma, a fatal cancer of the

lung or abdominal cavity.

These same epidemiologists are conducting a study of 150 dogs with breast cancer in order to identify dietary factors, drugs, or other exposures that increase their risk of this disease. The ultimate goal is to find a diet that will decrease the chances of developing breast cancer, especially in older, unspayed females.

Canine bladder cancer is another disease receiving the attention of the epidemiologists at VHUP. More than 100 cases have been diagnosed by the biopsy service. Preliminary findings suggest that the terrier breeds, particularly the Scottish Terrier, are more prone to bladder cancer. The Keeshond also appears to be at increased risk.

If funds can be collected, a bladder cancer study could be started. The objective would be to determine why certain breeds are at increased risk and if there is any association with a previous history of urinary tract infection. The research also would focus on exposure to specific chemicals in the home and neighborhood that could be related to development of bladder cancer in a susceptible breed.

This is one of many projects for which support is needed. Interested persons may contact Dr. Josephine Deubler at 215-898-8862.

carries through husbandry practices, such as appropriate diets, cages, environments, and acceptable disinfectants.

The section on anatomy and physiology gives a brief description of each organ system, then explains how owners can evaluate the particular organ system at home— invaluable advice to the owner as well as the veterinarian. Owners will be more attuned to the variations in their birds, more observant of signs of disease, and more prompt and knowledgeable should a trip to the veterinarian become necessary. Specific disease entities are covered, and a special index is provided to direct the reader to locations in the text discussing particular clinical signs or problems.

Information is provided regarding a visit to the veterinarian: facilities, diagnostics, and treatment procedures. In addition, there are instructions on home supportive care for sick pet and wild birds, especially helpful should a veterinarian not be available immediately.

Avicultural procedures are briefly touched upon, and a list of national and foreign bird organizations is provided in the appendix. The appendix also contains concise data with general husbandry and breeding requirements for the more common caged birds.

To complete the wide spectrum of information provided, Dr. Gallerstein has included a very well written chapter, by Steve Martin, on "Taming and Training Birds". It includes practical suggestions for taming, as well as steps to follow to teach birds specific behaviors and tricks. There is also a section on commonly asked questions regarding behavior in birds.

This book probably represents the best organized and most generally informative book of its kind on the market today. The information provided is sufficient to provide novice and experienced bird owners with the background necessary to maintain their birds in optimum conditions for good health.

It does not provide details on the specific treatment of disease entities which are best left to the veterinarian. However, the home care measures described should maximize the chances for recovery should a bird become clinically ill as prompt treatment is more critical in birds than most other types of animals.

## Disinfecting with Clorox

Sodium hypochlorite solution is the disinfectant of choice to inactivate canine parvovirus and canine coronavirus. The recommended strength is one part of Clorox to 30 parts water. Use a measuring cup and add a half cup Clorox for each gallon of water. Do not make a stronger solution. Use plastic containers. The solution "eats" metal and cannot be used for soaking instruments or metal utensils. Clorox in water is used for disinfecting. For cleaning, a soap solution may be used instead of water to make the 1:30 dilution.

Parvoviruses are highly resistant to inactivation. Most disinfectants are not effective. Virus is found in fecal material for as long as three weeks after the dog has recovered from clinical illness. Coronaviruses may be shed intermittently for much long periods.

Prevention depends on a vaccination program. However, when a disease is present, special effort is necessary to eliminate the virus from kennels and prevent unnecessary exposure.



## Book Review:

*Bird Owner's Home Health and Care Handbook*  
Gary A. Gallerstein, D.V.M.

Howell Book House, Inc.  
230 Park Avenue  
New York, NY 10169

Hard cover, 292 pages, including index with generous black and white photographs and line drawings, plus four pages of color plates illustrating normal and abnormal droppings.

Price: \$17.95.

The text is well organized, beginning with the selection and purchase of a new bird, and

# Animal Health Technician Program

**T**en years ago, the School of Veterinary Medicine and Harcum Junior College, Bryn Mawr, initiated a joint training program for Animal Health Technicians. Over the decade, the program has developed into one of the most successful ones offered by Harcum, and it is the only AVMA accredited program for animal health technicians in Pennsylvania.

Each year between 60 and 75 students enroll in the six-semester program which leads to an associate degree in science. Four semesters are spent in classroom instruction at Harcum in such subjects as mathematics, basic sciences, anatomy, veterinary parasitology, pharmacology, hematology and other subjects necessary for working with animals.

Once the classroom instructions end, students are ready for practical experience. This is garnered during a 26-week practicum at the School of Veterinary Medicine. The Harcum

students spend 13 weeks each at VHUP and at New Bolton Center. At both facilities they work in the wards, the emergency clinic, the operating room, intensive care unit, radiology and anesthesiology. They receive hands-on experience in the small animal hospital and in the large animal hospital. By the time the practicum is over they have cared for such diverse patients as a parrot or a mare with colic. Throughout the practicum the Harcum students are trained and taught by the staff nurses at the School, the clinicians, and the fourth-year students.

"The animal health technician program has not only benefitted the Harcum students but also our students," said Dr. Sheldon Steinberg, director of the program at the School. "The veterinary students, while working with the animal health technicians, get an understanding of the routine tasks technicians can perform, from drawing blood to running sophisticated tests. Our students learn to depend on the technicians and they realize that such personnel can greatly enhance the running of a veterinary practice."

The Harcum students are trained to use the advanced technology available here at the School. Though they are also trained to work with equipment commonly found at a veterinary practice. Most practitioners do not have automated development equipment for radiographs; in practice such films have to be developed by hand. This the technicians are taught. The training also includes the latest anesthesia methods and techniques. When the practicum is completed, Harcum students have a very good understanding of the demands of a veterinary office.

The graduates do not have trouble finding jobs. Many practitioners regularly contact the Harcum Career Center when looking for technicians. Many opportunities exist in private industry and in government for the animal health technicians.

The program, according to Dr. Steinberg, is a successful one, one which provides superb practical training and classroom training, equipping the graduates to work in a profession which is becoming quite sophisticated as new technology develops.



# ROSMITIS

and

# RIBBONS

**Dr. E. Neil Moore**, professor of physiology, recently published his fifth book in as many years. The book, co-edited by Dr. Joel Morganroth, is titled *Interventions in the Acute Phase of Myocardial Infarction*. Dr. Morganroth is professor of medicine and pharmacology, Likoff Cardiovascular Institute, Hahnemann Hospital, Philadelphia. Dr. Moore also was re-elected to the editorial board of the *American Journal of Physiology* and was asked to be a guest editor for *Circulation*, a journal in cardiovascular medicine. Dr. Moore was one of the invitees to an International Symposium on Cardiac Arrhythmias honoring Gordon K. Moe, held in Amelia Island. In the fall of 1984 Dr. Moore participated in a symposium on the "Role of Programmed Electrical Stimulation in Evaluation of Investigational Antiarrhythmic Drugs," sponsored by the NIH and the FDA. He participated in the "Symposium on Mechanisms and Therapy of Cardiac Arrhythmias," by the American College of Cardiology, held at Philadelphia. Dr. Moore was co-director of a two-day event, "Symposium on New Antiarrhythmic Drugs and Devices."



*Dr. David K. Detweiler (V'42) presents the Centennial Medal to Dr. Martin M. Kaplan (V'40). Dr. Kaplan who lives and works in Geneva, Switzerland, was unable to attend the medal ceremonies during the centennial celebration.*

**Dr. William D. Hardy, Jr. (V'66)**, president of the Veterinary Medical Alumni Society, was featured on the cover of the June 1984 issue of *Cancer Research* along with two other veterinarians, Dr. William F. H. Jarrett, University of Glasgow, and Dr. Myron Essex, professor of virology, Harvard School of Public Health. The three men have done outstanding research in the field of feline leukemia virology. Dr. Hardy is the head of the Laboratory for Veterinary Oncology, Memorial Sloane Kettering Cancer Institute, New York.

**Dr. John T. McGrath (V'43)**, professor of pathology, known internationally for his work in neurology, presented a paper, "Morphology and Classification of Brain Tumors in Domestic Animals" at a Conference on Brain Tumors in Man and Animals at the National Institute of Environmental Health Sciences, Research Triangle Park, N.C. in September. The conference, sponsored by the National Toxicology Program/National Institute of Environmental Health Services and Duke University Medical Center, was attended by experts in the field of brain tumors from across the country.

**Dr. Bernard Shapiro**, associate professor of biochemistry, was recently awarded a \$1,500 grant by the Pennsylvania Pork Producers Council. The grant is to help support his research on "Hormonal Competence of the Naturally Occuring and Experimentally Induced Porcine Cystic Ovary."

Congratulations to the following on their recent promotions: **Dr. Carl E. Kirkpatrick (V'81)** to assistant professor of parasitology; **Dr. Jay Farrell** to associate professor of parasitology; **Dr. Michael H. Goldschmidt** to associate professor of pathology; **Dr. Mark Haskins (V'69)** to associate professor of pathology.

**Dr. Susan Donoghue (V'76)**, assistant professor of nutrition, is president-elect of the American Academy of Veterinary Nutrition. She was recently awarded a \$100,000 grant by the U.S. Department of Agriculture to study "Vitamin A Deficiency in Pregnancy and Fetal Life."

Many Kennel Clubs and other animal associations support the financial aid program for students by awarding scholarships. We sincerely appreciate the continued support of the **Burlington County Kennel Club, N.J.**, which in 1984 provided two scholarships of \$500 each. One scholarship was awarded to **Stephen Wilson**, Marlton, N.J., a freshman student; and another to a sophomore student, **Wayne Johnson**, Lindenwold, N.J. Half of the money provided in each scholarship honors **Dr. Linda J. Squires (V'81)** who has provided outstanding service to the club as show veterinarian.

**Dr. David T. Galligan (V'81)**, resident in clinical nutrition at New Bolton Center, spoke before the New York Farmers Association meeting in December on "Economic Effects of Ration Formulation on Dairy Herds in Pennsylvania."

**Dr. Roselyn Eisenberg**, associate professor of microbiology, along with Dr. Gary F. Cohen, School of Dental Medicine of the University of Pennsylvania, will organize the 12th International Herpes Virus Workshop in Philadelphia in 1987.

**Dr. Leon Weiss**, Grace Lansing Lambert Professor of Cell Biology, and chairman, Department of Animal Biology, delivered the Fifth Annual Raymond C. Truex Distinguished Lectureship at Hahnemann University on Oct. 26. Dr. Weiss' topic was "The Spleen." Dr. Weiss was also honored by the American Medical Writers Association. He was selected by the AMWA as the recipient for excellence in medical publications for his editorship of *Histology: Cell and Tissue Biology*.



**Dr. Henry Schneider (V'34)** was named emeritus professor of anatomy at the 1984 commencement ceremonies of Hahnemann University, Philadelphia.



*Dr. Henry Schneider (V'34) and Dr. John R. Beljan, provost and vice president for Academic Affairs, and dean, Hahnemann University School of Medicine.*

**Dr. Lawrence Glickman (V'72)**, associate professor of epidemiology, was one of the participants in the Dog Breeders Seminar at the University of Ottawa in January.

**Dr. James W. Buchanan**, professor of medicine, was featured in the article "Used Pacemakers to Aid Foreign Patients with Heart Pacing Needs," which appeared in the August issue of *Pathologist*, the journal of the College of American Pathologists. The article describes the first implantation of a pacemaker in a dog, performed by Dr. Buchanan in 1967 on a 10-year-old basenji. The pacemaker used was one implanted in a human patient who had died.

**Dr. Alan M. Klide (V'65)**, associate professor of anesthesia, taught a refresher course at the annual meeting of the American Society of Anesthesiologists in October. Dr. Klide was the first veterinarian/veterinary anesthesiologist to be asked to teach such a course before the society.

**Dr. Betsy L. Dayrell-Hart (V'83)** won the "President's Award as Intern of the Year" at the Animal Medical Center, New York.

**Dr. Kathleen E. Noone (V'79)** was named "Veterinarian of the Year" at the Animal Medical Center, New York.

**Dr. Stephen J. Peoples (V'84)** received the AVMA Auxiliary Student Senior Award.

**Dr. Stephen Schiffer**, director of laboratory animal medicine, has been named a diplomate of the American College of Veterinary Internal Medicine.

**Dr. Kenneth C. Bovee**, Corinne R. and Henry Bower Professor of Medicine, presented a seminar on nephrology at the University of Zulia, Maracaibo, Venezuela, in December.

**Dr. Charles E. Ziegler (V'34)** was honored by the Maryland Veterinary Education Foundation. A scholarship fund was created in his name. Dr. Ziegler established a mixed veterinary practice in Catonsville, Md. in 1935 and operated it for 45 years. Last fall, he was named "Citizen of the Year" by the Catonsville Business Association for his achievements, community service and good citizenship. Dr. Ziegler is a lifetime member of the MVMA and past president of the organization. He also served as delegate to the AVMA in 1979; Dr. Ziegler was the first MVMA member to be named "Distinguished Veterinarian."

**Dr. Colin E. Harvey**, professor of surgery, has written a book, *Veterinary Dentistry*. The volume has just been published by W. B. Saunders Company, Philadelphia.

**Dr. Jay P. Farrell**, associate professor of parasitology, participated in the Sixth Peruvian Congress of Microbiology and Parasitology in Cusco, Peru. The opening lecture was delivered by **Dr. Jorge Guerrero**, adjunct professor of parasitology. Dr. Guerrero also participated in the Ninth Conference on Veterinary Research held at the College of Veterinary Medicine of the state of Sao Paulo, Brazil.

As an expert sponsored by WHO, Dr. Farrell participated in a symposium on Leishmaniasis in Cordoba, Argentina.

**Dr. James B. Lok**, assistant professor of parasitology, was a member of a WHO scientific working group on "The In Vitro Culture of Filarial Parasites, especially Onchocerca, and of Allied Parasites." The study group was sponsored by the chemotherapy project of the World Health Organization.

**Dr. Gerhard A. Schad**, professor of parasitology, wrote a field manual for WHO for field workers and administrators concerned with the control of hookworm in humans. He chaired the section of Epidemiology and Control at the Sixth International Conference on Trichinellosis at Quebec. Dr. Schad organized and chaired a symposium, "Ecological Perspectives in Helminth Epidemiology," at the annual meeting of the American Society of Parasitologists at Snowbird, Utah. He was also an invited speaker on epidemiology and control of human hookworms at the International Congress of Tropical Medicine at Calgary, Alberta. Dr. Schad and Dr. Farrell participated in the meeting of the American Society of Tropical Medicine and Hygiene, held at Baltimore. Here Dr. Schad delivered a paper, "Predisposition of Human Hookworm Infection."

**Dr. Robert J. Rutman**, professor of biochemistry, received the "Front Page Award" from *The Philadelphia Tribune* for his community service, his work on improving the opportunities for minority students, and for his particular activity in establishing the Martin Luther King Jr. Center in Philadelphia. *The Philadelphia Tribune*, the nation's oldest continuously published black newspaper, celebrated its centennial in 1984.

**George R. Mellilo Jr.**, a senior student, is the recipient of the Bide-A-Wee Home Associa-



*George R. Mellilo, Jr.*

tion's Long-Sondheimer Scholarship. The New York based nonprofit animal welfare organization's award provides two full scholarships annually for senior students—one at the University of Pennsylvania and one at Cornell University. The Long-Sondheimer Scholarship is Bide-A-Wee's way of acquainting veterinary students with public service early in their careers; it is hoped that the recipients will practice at a Bide-A-Wee clinic when they graduate.

**Dr. Lionel F. Rubin (V'58)**, professor of ophthalmology, received two grants-in-aid to support his work on ophthalmology in laboratory animals and ophthalmic toxicology. The first grant, \$12,500 was given by Boehringer-Ingelheim Ltd.; the second was provided by the Schering Corporation.

**Drs. John C. Simms (V'74) and Nadine Oakley Simms (V'78)** were featured on ABC-TV's 20/20. Roger Caras, the well known author and television commentator, did a feature on the day in the life of a country veterinarian. It was broadcast nationally. Roger Caras is a member of the School's Board of Overseers.

**Dr. Richard R. Miselis**, associate professor of anatomy and animal biology, has been appointed director of the Veterinary Medical Scientist Training Program.

**Dr. Fred Fernich (V'63)** was honored by the Central Islet Psychiatric Center for his help with the pet therapy program at the center. Dr. Fernich provides free veterinary care for the center's four cats. The presence of the animals at the center has made a great deal of difference in the well-being of the patients there.

The German-speaking group of the World Small Animal Veterinary Association presented the D. K. Detweiler Award to **Dr. Klaus Kölling**. The award honors **Dr. Detweiler's (V'42)** contribution to veterinary cardiology. The award is funded by Boehringer Mannheim GmbH.

**Dr. Isaiah J. Fidler**, who was an intern and a resident at the School between 1966 and 1968, has been elected president of the American Association for Cancer Research, Inc. Dr. Fidler is the chairman of the Department of Cell Biology at the M.D. Anderson Hospital and Tumor Institute, Houston.

# 15th Annual Symposium

**M**ore than 160 dog owners and breeders attended the 15th Annual Symposium "Your Veterinarian and Your Dog" at VHUP Jan. 26. Following is a summary of the presentations made by faculty members.

## Inherited Eye Diseases in the Dog— New Perspectives.

Dr. Gustavo D. Aguirre discussed PRA and the diagnostic methods currently available. He pointed out that the ophthalmoscopic examination will detect the disease only when the dog is older which presents a problem for breeds with late onset PRA. The electroretinogram will detect the presence of PRA at an early age. "The ERG is a powerful tool for diagnosing eye disease," said Dr. Aguirre. "It identifies the affected dogs while they are very young. They can be removed from the breeding pool. It is also helpful in identifying carriers by using the ERG to examine puppies produced in test breedings."

He then discussed some of the current work of the Inherited Eye Disease Studies Unit (IEDSU) where he, Dr. Gregory Acland and Dr. Lawrence Stramm are searching for new methods to study, diagnose and treat inherited eye diseases.

"We are working with tissue cultures from cats with MPS, a group of diseases caused by a metabolic abnormality," Dr. Aguirre said. "We are looking at the disorder biochemically and structurally and hope to develop a tissue culture model for other eye diseases caused by metabolic abnormalities."

It is known that Irish setters with PRA have an enzyme deficiency in their rod cells which causes these visual cells to die. By studying the tissue cultures from the MPS cats the researchers hope to gain information which can be applied to PRA in the setter and other breeds. For example, it was found that the severity of the eye disease in one type of MPS cats varies, depending on the degree of pigmentation of the epithelial cells. If these cells are heavily pigmented, the disease is less severe. Epithelial cells are support cells and they nourish and cleanse the retinal visual cells. The members of the IEDSU hope to determine how the presence of pigment slows eye disease associated with MPS. If the mechanism is found then perhaps PRA in Irish setters can be better understood.

The group is also examining how cells of the eye renew themselves. "Cells of the retina keep renewing themselves every seven days," Dr. Aguirre said. "The renewal protects the photoreceptive cells from permanent damage due to excessive light, heat and oxygen." The specialized ciliated retinal cells in dogs with late onset PRA have a reduced renewal rate, sometimes 50 to 60 percent of normal. This slowdown is observable long before the disease manifests itself. It was found that renewal does not take place if the nucleus or the cell body is damaged. The researchers hope to find out why the rate of renewal is slowed and whether it can be altered or prevented. They are also studying other types of PRA to determine whether or not the renewal

of retinal cells is altered in these diseases.

Tissue cultures of diseased cells also permit researchers to explore different methods of treatment in an attempt to correct a metabolic abnormality. The work goes a step further. The group is not only studying eye cells but is also looking at tissues from other parts of the body. "It is possible that the metabolic disorder, responsible for the eye disease, is also present in cells in other parts of the body," Dr. Aguirre said. "If that is the case, one could identify an animal with such an eye disease by looking at cells from other parts of the body. It would permit early diagnosis and even the identification of carrier animals that are clinically normal." However, it is possible that the metabolic abnormality can only be found in the eye and that this avenue of research would not be fruitful.

The group is also studying the development of the eye. Dogs and cats are unique; when they are born the eyes are not fully developed. This allows researchers to observe the final stages of eye development after birth. They can determine

whether changes take place which later in life are manifested as eye disease. By looking at the developing eye it is also hoped to better understand diseases of the cornea and the lens. Perhaps one day ophthalmologists can state at which point in gestation certain defects first become evident. Such information is known for congenital heart defects.

One startling finding by the Penn researchers of the Section of Medical Genetics working with members of the Department of Human Genetics at the University of Maryland is that in test matings, the number of affected offspring with late onset PRA depends on the sex of the test bred animal. It was found that, as expected from classical genetics, if the dam was an affected animal and she was bred to a carrier, approximately half the litter was affected and half was phenotypically (clinically) normal, although still carriers of the disease. When the dam was a carrier and the sire an affected dog, surprisingly only one-third of the litter was affected, two-thirds were phenotypically normal. It is not fully understood why the percentage of affected offspring is smaller when the dam is the carrier but it is the first time that an extraocular "marker" or trait has been associated with the PRA gene. These findings in miniature poodles

## New Diagnostic Methods: "CAT Scan and Magnetic Resonance Imaging."

Dr. Jeffrey A. Wortman discussed the new diagnostic tools available to radiologists at the School. While radiography still plays an important role, new technology such as nuclear medicine (scintigraphy), ultrasonography, x-ray computed tomography (CAT Scan, X-CT), and magnetic resonance imaging (MRI) permit diagnosis of disorders that may not be detectable through radiography.

Each of these diagnostic methods has a specific use. Nuclear medicine permits the study of an organ and its function e.g. bone scan or thyroid scan to look at metabolic activity of the skeleton and thyroid gland respectively. While these are commonly outpatient procedures for human

patients, regulations require that an animal be hospitalized for 24 to 48 hours after scintigraphy. During this time the veterinary patient is housed in relative isolation so that the body burden of radioactivity is reduced to a negligible level.

Ultrasound is used with increasing frequency to detect soft tissue disorders in both large and small animals. The procedure is non-invasive. High frequency sound waves are the source of imaging. The image displayed on a TV monitor allows the clinician to observe an area of the body in motion. This is particularly valuable for the cardiologist. Ultrasound is also useful for evaluating abdominal organs and in



Anesthesia technicians, Sharon Swift and Cheryl Kenney, position a patient in preparation for X-ray computed tomography. The XCT machine is the General Electric 8800 and is located in the Pendergrass Radiology Laboratory of the Medical School.

mean that a greater number of puppies are required in test mating to determine whether or not a female poodle is a carrier of PRA. In all likelihood this also applies to the American cocker spaniel, the English cocker spaniel and other breeds having the late onset form of PRA.

## Canine Joint Disease

Dr. Charles D. Newton, associate professor of orthopaedic surgery, discussed the management and treatment of degenerative arthritis.

He pointed out that in dogs, unlike in people, degenerative arthritis is a secondary disease due to trauma or malformation of the joint. The disease involves the entire joint, the synovial fluid, cartilage and bony tissue. If a joint is injured or is developed improperly, the body reacts to the unusual wear and tear. The area becomes inflamed, bony projections develop and the joint becomes stiff.

Arthritis can be treated either medically or surgically. Medical treatment consists of administering drugs. Dr. Newton explained that aspirin is still the drug of choice and can be used for most dogs. He cautioned owners to not use some of the non-steroid anti-inflammatory drugs, approved for humans, for their arthritic



pet. "Some of these drugs are lethal to dogs," he said. "The veterinarian should be consulted before administering any drug to a dog."

Surgical treatment is used to correct the abnormality that causes arthritis to develop. It will not stop the process completely but will slow progression of the disease. Dr. Newton then discussed some of the disorders causing arthritis in greater detail.

Osteochondritis Dissecans is a disease of the articular cartilage covering the humeral head. Isolated cases have been reported involving the distal humeral condyles and the femoral condyles. In the course of the disease, a cartilage flap is formed, which causes pain when the dog

walks. The flap may fragment, forming joint mice. The disease is seen with greater frequency in young males of large breeds.

The underlying cause of OCD is osteochondrosis, a metabolic cartilage problem seen in many animals. It causes severe problems in swine and poultry.

The animal is treated surgically if the cartilage flap is torn. The piece is removed and the animal will rehabilitate with little trouble later in life. Dr. Newton pointed out the OCD is not only seen in the shoulder joint but that it also occurs in the elbow, stifle, and hock joints.

Another disorder discussed was Ununited Anconeal Process. Here a small bony process in the elbow joint becomes detached, causing instability of the joint which starts the degenerative arthritis process. The problem is seen in large breeds and is believed to be inherited.

Surgical treatment consists of attaching the anconeal process to the ulna to stabilize the joint. Another procedure is to remove the anconeal process. This reduces pain but does not result in joint stability.

Hip Dysplasia is a disease of man and animals wherein the hip develops improperly. This abnormal development usually results in unstable joints which undergo changes typical of osteoarthritis.

The disorder is treated primarily non-surgically with analgesics. Many young dogs at six to eight months are extremely painful during their last growth spurt. If the pain can be controlled for this period, many never require further treatment. Quite a few animals though, appear not to have pain, even though the disease is quite advanced.

Hip Dysplasia can also be treated surgically. There are several procedures, all aimed at making the joint more stable to minimize the wear and tear and the development of arthritis.

Legg-Calve-Perthes disease affects primarily small breeds though it occurs occasionally in larger breeds. In affected animals the head of the femur dies, the cartilage is crushed and the joint becomes rough. The animals are usually treated surgically, the head of the femur is removed and the dog does very well.

Another disorder causing degenerative arthritis is Cranial Cruciate Ligament Rupture. Dogs commonly rupture the cranial cruciate ligament, due to many reasons. The resulting instability promotes osteoarthritis and severe pain and lameness are the end result if untreated.

The ligament tear can be repaired surgically and the joint stabilized. Without direct surgical intervention, nearly all knees will become osteoarthritic.

## Bad Breath, Tartar and Plaque—Gingival (Gum) Disease in the Dog.

Dr. Colin E. Harvey, professor of surgery, discussed gum disease in dogs, the most common health problem of animals five years or older.

Gum disease is caused by plaque, a soft material that forms on the surface of the tooth. Plaque consists almost entirely of bacteria and as these proliferate, the groove between the tooth and gum is invaded, causing gingivitis. Bacteria are always present on the surface of normal healthy teeth. As the disease progresses, the type of bacteria present changes from aero-

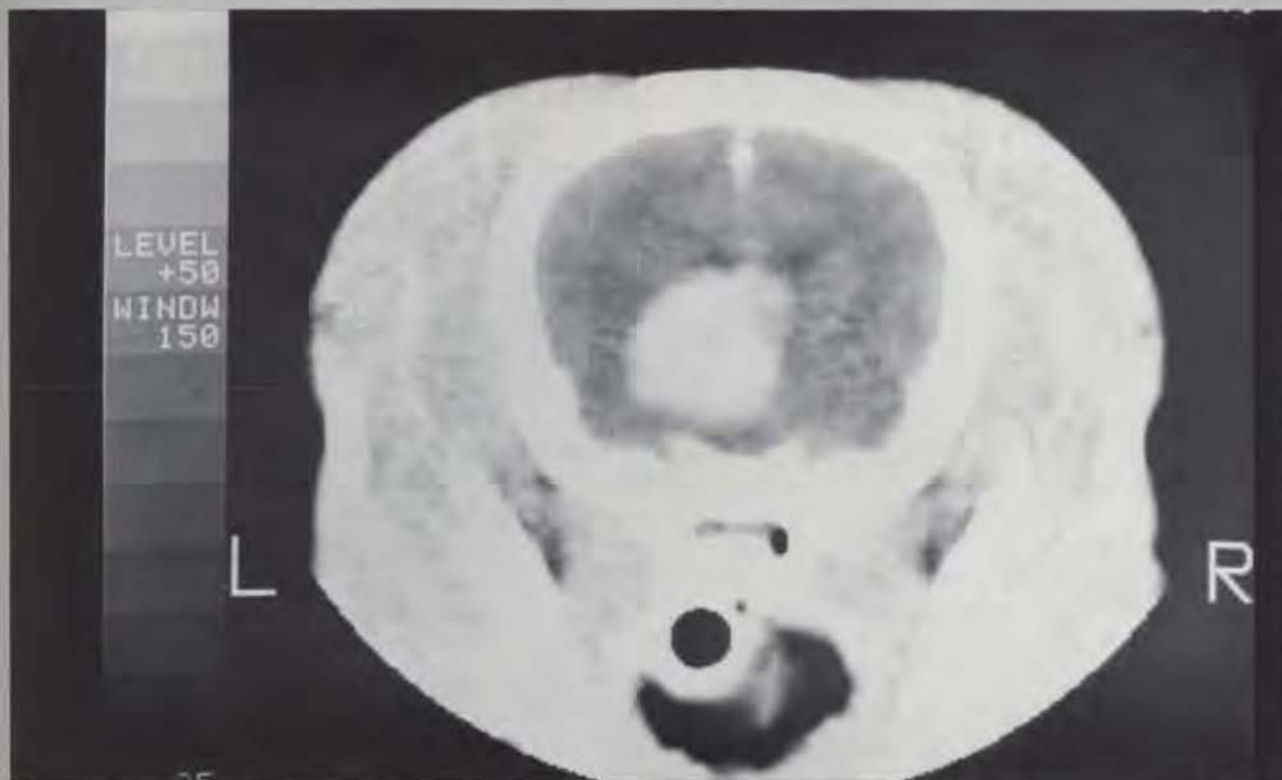
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detecting pregnancy and fetal viability.

X-ray computed tomography (CAT-Scan) is a sophisticated diagnostic tool the School has access to at the Medical School radiology research facilities. A cross-sectional image is reconstructed from computer analysis of the transmitted x-ray data recorded by sensitive detectors. The result is a detailed study of anatomic pathology. Software programs allow the view of a body area in an operator-selected plane of interest; magnification; and measurements such as length, area, and volume. X-CT is a powerful but expensive diagnostic tool. Here at the School it has been used primarily to detect brain lesions. It has been invaluable in detecting the precise location of these lesions. This is particularly important in cases involving brain tumors so that biopsy and/or surgical removal may now be feasible. Animals have to be anesthetized for the CAT scan procedure.

The newest modality in human imaging is Magnetic Resonance Imaging (MRI). This equipment is also available at the Medical School. The size of the unit there limits its use to small dogs and cats. MRI is also a computer-based imaging system. Here, instead of x-rays, a strong magnetic field and radio waves are used to obtain an image. It has much greater soft tissue contrast than an image generated through X-CT. Animals also have to be anesthetized for MRI.

Dr. Wortman pointed out that the value of these non-invasive diagnostic tools is to allow the clinician to make a more accurate diagnosis and prognosis and to develop more effective treatment planning. As the X-CT and MRI equipment is rather expensive, the cost for these procedures are higher. However, in human medicine the equipment has proven to be cost-effective.



*A transverse section of the cerebrum of an eight year old female miniature poodle shows contrast enhancement of a left thalamic mass. This was a tumor (hemangiosarcoma) originating in the nasal cavity.*

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## Gingival (Gum) Disease

*continued from page 11*

bic bacteria to more harmful anaerobic ones.

Gingivitis is seen as reddening or swelling of the gums. In some animals, the gingiva respond to the insult over a long period by becoming thickened; the gum tissue grows up around the teeth, creating pockets where food particles remain. In other animals, the gums recede exposing bone. As the bone is resorbed, a pocket develops between tooth and gum where bacteria flourish.

Almost all dogs five years or older have measurable gum disease, sometimes without the owner being aware of any abnormality. The most common sign is bad breath. Dogs rarely lose their appetite as a result of gum disease, even when they have a mouthful of loose teeth. Cats are much more likely to be painful.

Diagnosis of gum disease is made by inspection of the mouth. The extent of the disease is assessed by a blunt tipped probe; this is used to

measure the depth of pockets and to scrape the side of the tooth to test for adherence of plaque or calculus. A normal tooth has a pocket depth of no more than 2 to 3 mm.

Gum disease can be exacerbated by many conditions, including malnutrition or other general debility (including pregnancy or lactation), endocrine abnormalities, immunosuppression, etc.

Treatment is aimed at eliminating plaque, restoring the gum-tooth junction to as normal a condition as possible, and following up with a preventive program. Most animals presented with bad breath due to gum disease will require teeth cleaning under anesthesia as the first step.

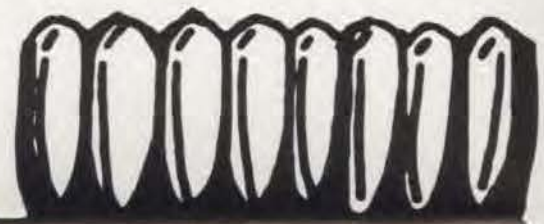
Teeth scaling is designed to clean the surface of the tooth, not only the crown but also the area between tooth and gum. This is the most important area as here the bacteria flourish. Cleaning is performed with ultrasonic and hand instruments. After cleaning the teeth are polished to create a smooth surface to which bacteria cannot adhere.

When the pocket depth is greater than 5 mm, surgery is necessary to eliminate the pocket. Sometimes the disease is so advanced that the tooth has to be extracted. This is particularly useful in cats, where severe gum disease can cause complete inability to eat or drink, and where results of conservative treatment are often poor.

Dog owners can prevent gum disease in their dogs. The clean and smooth teeth are kept in good condition by regular daily cleaning. This can be done to some extent by feeding dry food, or by encouraging chewing on toys or rawhide strips. A daily brushing with a soft child's toothbrush is much more efficient. Avoid human toothpastes because of the detergent they contain—dogs do not like the frothing.

Dr. Harvey's advice to the audience was to get a toothbrush for every dog and start brushing once a day. However, the teeth should also be thoroughly cleaned to control any gum disease already present.

*Helma Weeks*



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## Practicing Abroad

### A Letter From Lima, Peru

Lima, Peru, with a population of 6 million, is the largest city in which I have ever lived. When we moved there 18 months ago, I was optimistic about work possibilities. There is a veterinary school here, and several veterinarians trained in the United States.

Peruvians, on the whole, are a very formal but warm people. As we are still with the diplomatic service, I spend a fair amount of time at social functions—discussing the weather, the maids, schools and shopping with Peruvian women. It is almost impossible for me to break beyond these topics with even the women, let alone the men. The men are reluctant to have a serious conversation should I even be within earshot. Therefore, you might be able to imagine how difficult it has been for me to establish myself professionally.

The University of San Marcos has the best veterinary school in the country but it has no money and therefore no equipment or supplies. Its facilities are about the poorest I have seen anywhere.

After spending a great deal of time "observing" at San Marcos and in several private practices, I agreed to work with Dr. Jose Brener, who did his post-doctoral training in Scotland. We run a small animal clinic out of one room and

make frequent house calls. When I started there was no microscope, no ophthalmoscope, no gas anesthesia, no X-ray machine. Now we have a microscope—mine. We also have a desk, a table, a large lamp, a basic set of surgery instruments and ketamine. We work together and the key to the relationship is that he holds animals for me. And I hold animals for him. He has devoured my library; his most current books are from the Sixties. Mail service to Peru is not the best either.

Mostly I see English-speaking clients from the United States and Canada. My office visit fees run high by Peruvian standards: I charge the equivalent of \$6. My housecalls are outrageous at \$10, but North Americans are usually willing to pay. As the annual rate of inflation is well over 100 percent, many suppliers have started to charge in dollar equivalents for imported products and medications. As the exchange rate changes daily, so do the costs of my vaccinations and medications. In my first year of practice, I lost enough money that I was beginning to feel like veterinary medicine had become an expensive hobby.

I have raised my surgery prices and I'm finally in the black. But I wonder about the average Peruvian veterinarian who is trying to

survive. He (there just aren't any "she's" in private practice) can't be making more than a few hundred dollars a month. Recently, someone came to me for a second opinion concerning the treatment of a hip dislocation. The first veterinarian had given them an all inclusive estimate of \$60 to do a femoral head and neck resection. I have to wonder about the quality of the work at that price.

I suppose my problem is that I'm still looking for the life I left in the United States in a third world country. The basic conditions for life here are unacceptable to me. I know things can be better. Why aren't they? But how can I expect a people who let hundreds of children starve or die because of no medical treatment to care properly for their animals? Even the wealthy don't.

So I create my own "little America" and practice as best I can. I have realized that I'll make no changes here, other than to improve Dr. Brener's library and equipment supply, but at least I have done something.

*Susan D. Morgan (V78)*

*(Editor's note: In September, Dr. Morgan left Peru to return to Portland, OR, and a small animal practice.)*

## A Popular Exhibit

**MAN AND ANIMALS: LIVING, WORKING AND CHANGING TOGETHER**, the exhibit at the University Museum of the University of Pennsylvania, is popular with the public and the media. Recently cast members of the musical *CATS*, the magical "Mr. Mistoffelees" and "Cassandra" (the Egyptian Cat) visited contemporary friends and ancient feline relatives during a trip to The University Museum of the University of Pennsylvania on which they shot a public service announcement for the Museum's current exhibition **MAN AND ANIMALS: LIVING, WORKING AND CHANGING TOGETHER**. Pictured, from left: Dr. Donald Patterson, Charlotte Newton Sheppard Professor of Medicine and Chief, Section of Medical Genetics, School of Veterinary Medicine, University of Pennsylvania; Susan Catherwood (Mrs. Cummins Catherwood, Jr.), Chairman of the Board of Overseers, The University Museum; Lex Carlin, Manager, the Forrest Theatre; Barry K. Bernal ("Mr. Mistoffelees"), *CATS*; Steve Smith, owner, Videosmith; Jessica Northrup ("Cassandra"), *CATS*; Dr. David O'Connor, Associate Curator of the Egyptian Section, The University Museum; and Phoebe Resnick, Public Information Officer, The University Museum.



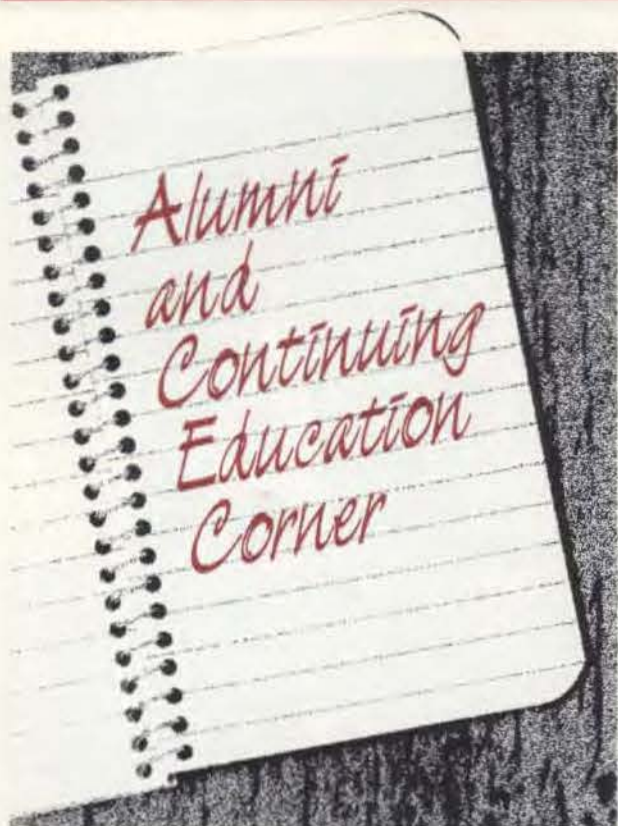
The Museum also hosted the Second Annual Ice Sculpture Competition on Jan. 26. Among judges were Charles A. T. O'Neill, executive vicepresident of the American Kennel Club and Joseph F. Skelley (V'47), associate dean.

The exhibit will close June 30. It was organized jointly by the Museum and the School of Veterinary Medicine.

Mr. Charles A. T. O'Neill (left), judges and participants are pictured here with the first place award winner in the "Large Sculpture" category (four figures and over) in the 2nd Annual Ice Sculpture Competition at The University Museum of the University of Pennsylvania. The sculpture was designed by the Wyndham Franklin Plaza Hotel, Philadelphia.



Mrs. Virgil H. Frazier (left), president of the Animal Rescue League of Philadelphia arranged for the treatment of a battered dog at VHUP. Mrs. Hebe Baldwin (right) took the dog after it had recovered from its injuries.



Our "thanks" to the 500 practitioners and 45 exhibitors who attended the 1985 Penn Annual Conference on Jan. 30 and 31 at the Adam's Mark Hotel in Philadelphia. Forty speakers presented lectures over the two-day conference, including Dr. Franklin Loew, who discussed the "History, Science and Politics of the Use of Animals in Research." Dean Robert R. Marshak hosted a reception for all participants Jan. 30 that continued well into the evening. Mark the 1986 dates for the 1986 Penn Annual Conference on your calendar: Wednesday, Jan. 29, and Thursday, Jan. 30, at the Adam's Mark.

Next year will be even better!!

Watch your mail for the Spring 1985 Continuing Education Program. Large and small animal courses are planned for April and May.



Dr. Norbert McManus (V'47) (left), Mrs. McCullough, Dr. John D. McCullough (V'43)



Dr. A. Cleveland Brown (V'59) (right) and friends

## Centennial Award of Merit



Dean Robert R. Marshak presented 36 Centennial Awards of Merit at a special ceremony on Dec. 8 in Philadelphia. Among the honorees were nine Pennsylvania legislators and state officials who were cited for their outstanding support of veterinary medicine.

Honored were Walter Baran, Frackville, the secretary of general services and executive director of the General State Authority; Penrose Hallowell, Ottsville, secretary of agriculture; Representative Samuel W. Morris (D-155), Pottstown; Representative Carmel A. Sirianni (R-111), Montrose; Senator Patrick Stapleton (D-41), Indiana; Senator John Stauffer (R-19), Phoenixville; Senator Noah W. Wenger (R-36), Ephrata; Senator Roy W. Wilt (R-50) Meadville; Robert C. Wilburn, former Pennsylvania secretary of education; George B. Wolff, Harrisburg, and Alvin M. Myers, Jr., Camp Hill, the director of governmental relations for the Pennsylvania Farmers Association.

Awards also were presented to a group of researchers and scientists from this country and from abroad for their outstanding contributions to veterinary medicine.

Those recipients were Dr. Jonathan Adler, Jerusalem, Israel; Dr. Duane T. Albrecht, Denver; Dr. Robert B. Altman, Franklin Square, NY; Dr. Uri Bargai, Shimstron, Israel; Prof. Ian Beveridge, Cambridge, England; Dr. Frank Bloom, Miami, FL; Dr. Daniel Cohen, Tel Aviv, Israel; Prof. O.O. Dipeolu, Ibadan, Nigeria; Dr. Stephen Ettinger, Los Angeles.

Also, Dr. Lawrence J. Hutchinson, University Park, PA; Dr. William F. H. Jarrett, Glasgow, Scotland; Dr. William J. Kay, New York; Dr. Edwin J. Kersting, Manchester, Ct.; Dr. Robert W. Kirk, Ithaca, NY; Dr. Harry Magrane, Mishawaka, IN; Dr. Roy Mack, Surrey, England; Dr. John R. McCoy, Piscataway, NJ; Dr. Benjamin S. Pomeroy, St. Paul, MN; Dr. Wayne H. Riser, Gainesville, FL; Dr. Harry Rubin, Berkeley, CA; Prof. Dr. Heinrich Spörri, Zürich, Switzerland; Dr. James H. Steele, Houston; Dr. Joseph M. Stoyak (V'52), Springfield MA; Dr. Gus W. Thornton, Boston, and Prof. Eberhard Trautvetter, Berlin, W-Germany.



State Senator Patrick J. Stapleton is presented the Centennial Award of Merit



Professor O. O. Dipeolu receives the Centennial Award of Merit



Dr. Wayne H. Riser accepts the Centennial Award of Merit



Dr. Max Herman (V'59) (left) and Dr. Lawrence Hutchinson

## Centennial Distinguished Service Award

At a special luncheon Dec. 18, Dean Robert R. Marshak presented the Centennial Distinguished Service Award to School employees with 18 or more years of service.

The recipients were: Richard S. Barker, Thomas Barker, James Leroy Bruce, Clarence Chapman, Vera Duncan, Betty T. England, Cathryn E. Fluellen, William Garman, Rosetta Goss, Mary R. Hammond, Harry E. Hance, Suzanne Hindman, Alice Holton, Evelyn V. Huntington, Ralph Iannuzzi, Harriet L. Izenberg, Raye Johnson, Lynne Klunder, Helen J. Linwood, Larue A. Manning, Joseph J. McGrane, Derek W. Muncey, Grace V. Pinhak, George Pournaras, William R. Schnarr, Jane F. Shirer, Sarah B. Smith, Wilbert Underwood, Dr. Marvin J. Silverman and Renata Worth.

## Alumni Day, 1985 will be held at New Bolton Center on Saturday, May 18, 1985.

Meet the Dean and Faculty over coffee, attend the Annual Meeting and partake in a buffet luncheon. The afternoon schedule includes tours of New Bolton Center and the Brandywine River Museum. Dean Marshak will host a reception at 6:30 P.M. at the Wilmington Hilton, followed by a dinner for all veterinary alumni. Those classes celebrating their reunion years (any class graduating in a year ending with a 5 or 0—e.g. 1945, 1960) will be seated at the same table.

So if you can't get away on Saturday, May 18 during the day, we hope you will be able to join us Saturday at 6:30 P.M. for dinner with

your classmates, and an evening of dancing to the music of Steve Michaels and his Orchestra. Reunion year—OR NOT—plan to eat, drink and be merry at the VETERINARY ALUMNI DINNER DANCE!!

## Calendar

April 27	Spring SCAVMA and PVMA Picnic, New Bolton Center
May 18	Alumni Day, New Bolton Center
May 20	Commencement
July 23 to 26	AVMA Annual Meeting, Las Vegas

ALUMNI—Bellwether would like to hear from you for a new series on the diversity of our alumni.

Do you make house calls?

Do you specialize in unusual exotics?

Are your patients rare animals?

Is your practice in a foreign country?

Share your experiences and drop Bellwether a note. The Newsmagazine can be reached by writing to: Bellwether, School of Veterinary Medicine, 3800 Spruce Street, Philadelphia, PA 19104.



## Resources

### New Bolton Center

#### GENERAL SERVICES

The area code for New Bolton Center is 215. Arrangements for hospitalization or emergency services can be made by calling 444-5800. Inpatient and outpatient referrals should be directed to specific sections. For Bovine Surgery, call 444-3595. For Equine Surgery call 444-3201.

#### Equine Outpatient Clinic

Open Monday through Friday, 9 a.m. to 5 p.m., and accepts patients without prior referral. Call Dr. William Moyer, 444-5800, ext. 405 or 406.

#### Field Service

Provides routine health care and emergency service for farm animals and horses in the surrounding community. Call 444-0900.

#### SPECIALTY SERVICES

##### Cardiology

Clinic day: Tuesday and Wednesday, 9 a.m. to 5 p.m. Services include cardiac consultation, electrocardiograms, phonocardiograms, echocardiograms, and cardiac catheterization. Complete work-ups for poor racing performance can also be executed, including respiratory evaluation, submaximal exercise testing, endocrine evaluations, endoscopy, cardiology, and lameness evaluations. Work-ups can be scheduled for other days. Call (215) 444-5800, ext. 359.

##### Nutrition

Nutritional services, for the livestock industry, are offered in cooperation with referring practitioners or the New Bolton Center Field Service. Call (215) 444-5800, ext. 316.

##### Radiology

Radiology, Monday through Friday, 9 a.m. to 5 p.m. Only referral cases accepted. Call 444-5800, ext. 198.

##### Reproduction

Fertility Clinic: The Georgia and Philip Hofmann Research Center for Animal Reproduction provides fertility examinations for stallions, mares and other large animals. Call 444-5570.

#### DIAGNOSTIC SERVICES

##### Clinical Microbiology Laboratory

This laboratory is located in the Myrin building, Room 103, and provides a number of diagnostic services for the practitioner; isolation and identification of aerobes, fungi, salmonella, CEM (not for export purposes) organisms; microbiological evaluation of environmental, surgical, and postmortem specimens; mastitis specimens;



antimicrobial susceptibility testing, direct gram stains, acid-fast and KOH (fungal) stains; preparation of bacterins, and certified EIA (Coggins) testing. Specimens should be sent directly to Microbiology, New Bolton Center. For general information and specimen and special handling procedures, call 444-5800, ext. 156, 157, or 159.

##### Clinical Laboratory Medicine

This laboratory provides routine hematologic, urine and fecal analysis. Profile studies (12 separate assays) are available at reduced charges. A limited number of tests are available during evening and weekend hours. For a detailed listing of tests, fee schedule, and preferred collection system, call (215) 444-5800, ext. 250.

##### Large Animal Pathology Laboratory

This laboratory offers necropsy and biopsy services. Biopsies should be mailed to the laboratory. Animals for necropsy must be accepted by the duty pathologist. Call 444-5800, ext. 211.

##### Cooperative Poultry Diagnostic Laboratory

Monday to Friday 8:30 a.m. to 4:30 p.m. This is a University-state cooperative laboratory providing diagnostic and consultation services for poultry, game birds and pet birds in the following areas: serology, bacteriology, virology, and pathology. Farm visits may be arranged. Call 444-4282.

##### Diagnostic Assistance for Herd Problems

Clinicians are available to assist and/or consult with veterinarians in the evaluation of difficult or unusual problems. For information call Dr. Robert Whitlock, 444-5800, ext. 321.

##### Endocrine Laboratory

Assays and consultation on reproductive, thyroid, and adrenal hormones. Call Dr. Marolo Garcia, 444-5800, ext. 202.

##### Cytogenetics Laboratory

Chromosome analysis. Call Ms. Lynne Klunder, 444-5800, ext. 204 or 110.

#### AUXILIARY SERVICES

The Large Animal Hospital has, on call, certain specialty services at the Philadelphia campus, such as dermatology, neurology, and ophthalmology. Investigators in research units at New Bolton Center, such as the Comparative Leukemia Studies Unit, also are available for consultation. For information call 444-5800.

#### VHUP

APPOINTMENTS: 215-898-4680

(Behavior appointments scheduled by department only—898-4525)

EMERGENCY ROOM: 215-898-4685 (24 hours a day—7 days a week)

#### CLINIC DAYS

Cardiology: Wednesday, Thursday, Friday

Dental: Monday

Dermatology: Tuesday thru Friday

Exotics: Evenings (days vary)

Medicine: Monday thru Friday

Neurology: Wednesday

(Other days be special arrangement with referring veterinarian)

Oncology: Monday

Ophthalmology: Monday

Orthopedics: Monday, Wednesday and Friday (This section accepts appointments after the referring veterinarian has called to explain the case).

Medical Genetics/Pediatrics and Reproduction: Monday and Tuesday

Soft Tissue Surgery: Monday thru Thursday



WILDLIFE SERVICE offers veterinary care for unowned wild animals such as pigeons, hawks, owls, squirrels, rabbits and groundhogs found abandoned and injured.

Call 215-898-4680 during regular hours (Monday thru Friday, 9:00 a.m. to 4:30 p.m.) At other times, call 215-898-4685





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## **Bellwether**

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