

# Bellwether

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29

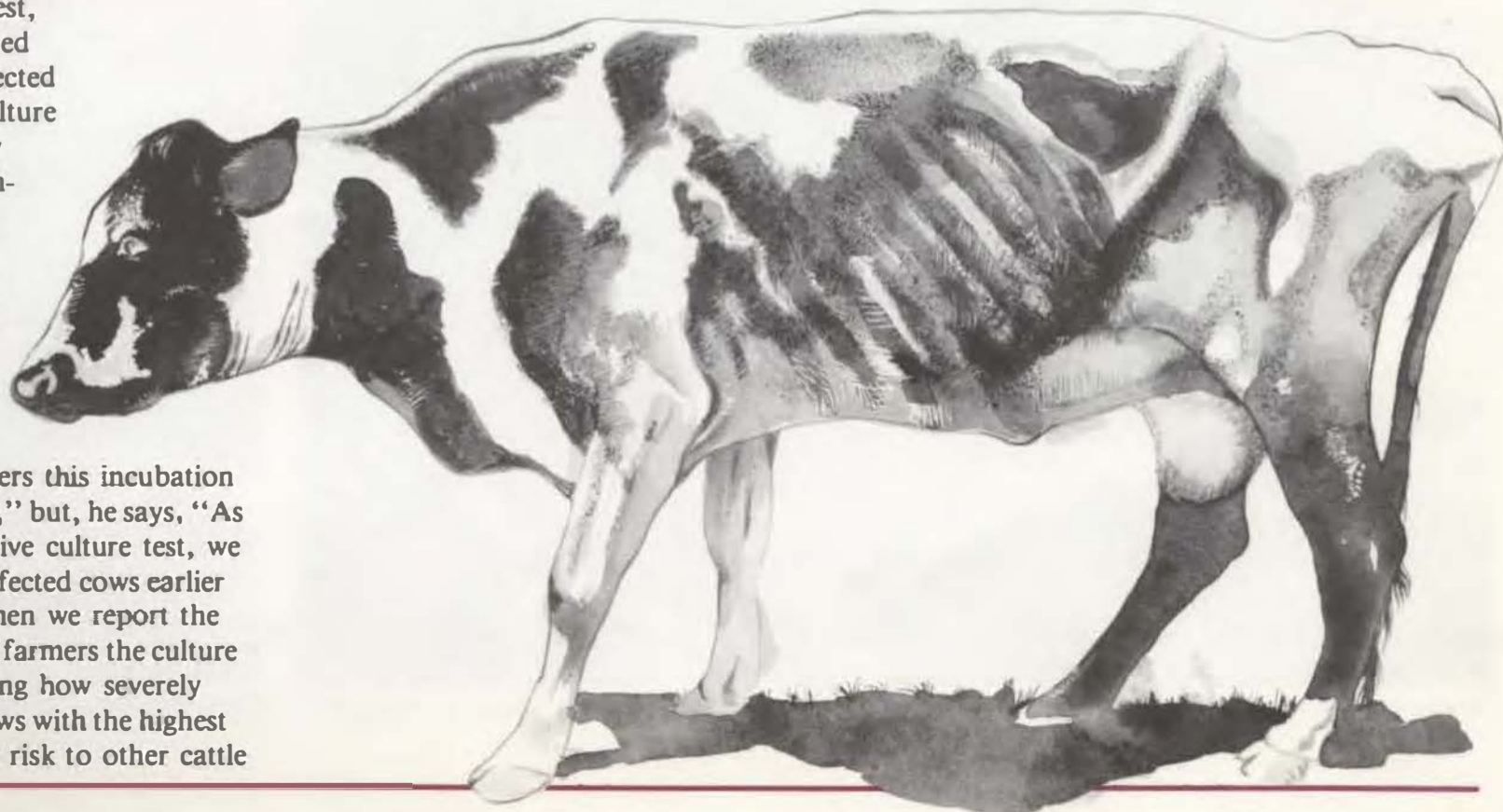
## Johne's Disease Update

Managing dairy cattle is a cinch. Just give the herd acres of vegetation and a clean place to sleep, and use creme-de-la-creme milking equipment, and no problem.

There is a problem, though, by the name of Johne's (pronounced Yo-neeze) disease, caused by *Mycobacterium paratuberculosis*, a wasting illness that infects numerous cattle herds in Pennsylvania and throughout the USA and the world.

The good news is that promising strides are being taken by Dr. Robert H. Whitlock, Marilyn M. Simpson Professor of Equine Medicine, and Dr. Raymond W. Sweeney, Assistant Professor of Medicine, at New Bolton Center. They have utilized a powerful culture test that is three times more sensitive than that being used by most state agricultural specialists. Even with the more sensitive test, only 25-35% of all infected cattle in a herd will be detected on the first herd fecal culture test. This test is currently considered the "gold standard" test and is clearly superior to all currently available blood or serum tests. The bad news is that fecal culture testing requires a 12- to 16-week incubation period.

Dr. Whitlock considers this incubation time a "major frustration," but, he says, "As we develop a more sensitive culture test, we should be able to detect infected cows earlier than with other tests. When we report the results of our test, we give farmers the culture results as a score indicating how severely infected the cattle are. Cows with the highest score present the greatest risk to other cattle



especially calves and should be eliminated from the herd quickly. Cows with lower scores do present a risk to others but can be held in the herd until the farmer is able to sell the animal and obtain a replacement heifer. So farmers have weeks, or several months because the risk of transmission from adult cow-to-adult cow is slow." He also hastens to say that the disease poses virtually no risk to humans because it is not thought to be a human pathogen, and because pasteurization kills the organism.

Since Johne's disease is responsible for annual losses of more than \$1.5 billion for dairy farmers and several million for beef farmers, an entire industry is intently following the work at New Bolton Center. The economic losses may come from decreased milk production, premature culling genetic losses and increased susceptibility to other diseases.

Dr. Sweeney recently completed a study that indicates the Johne's organism can be passed from cow to fetus. Probably 10 percent of lightly infected cows, and perhaps 25 percent of heavily infected ones, pass on the disease through the placenta to the unborn calf. He also looked at samples of milk and found that eight to 10 percent of Johne's-positive cows shed the organism into the milk. Calves, which take in one gallon of milk each day, or several gallons each week, are thus exposed to the disease through both the placenta and the milk.

Relying on these observations, Dr. Sweeney now recommends that farmers cull, or separate, calves from the adult herd and provide them with an uncontaminated source of milk, of which milk replacer is one good source. Colostrum should be obtained from culture negative cows or calves can be fed a commercially available artificial colostrum.

At a recent seminar for producers, veterinarians and agribusiness representatives, Dr. Whitlock explained that, by repeated culture and culling infected cows, farmers can work toward obtaining a Johne's-free herd. He describes the many unusual features of the disease:

- long incubation: two to eight years from infection to onset of clinical signs
- lack of a good diagnostic test to detect early infections
- tendency for infected animals to shed mycobacteria years before they show external signs of disease
- lack of treatment for infected animals
- availability of a vaccine of marginal value
- the organism's ability to persist in the environment for months
- lack of complete understanding of transmission of the disease among cattle
- prolonged culture time: 12 to 16 weeks
- tendency for fecal cultures to be contaminated with bacteria and fungi
- unknown role of deer in the transmission of the disease

**Diagnosis.** Fecal culture is the most widely accepted diagnostic test, having no false-positive results when conducted properly. The problems are the difficulty of handling specimens, the 12- to 16-week incubation period, the contamination of samples, and the lack of sensitivity: less than half of infected animals may be detected on a single test. By concentrating the sample, the Penn team has tripled the sensitivity rate compared to the earlier suspension techniques.

Despite the improvements in culture sensitivity, though, the major disadvantage remains the prolonged incubation period; in some laboratories, storage capacity is limited for handling large numbers of long-term samples.

So the researchers at New Bolton Center have investigated more rapid tests, especially blood tests. However no blood or serum tests offer the nearly 100% specificity of the fecal culture test which also has reasonable sensitivity. Another promising new test is the DNA probe. Mycobacterial organisms in the test specimen are lysed to release DNA, and the

double-stranded DNA is cleaved. Enzyme- or radio-labeled DNA segments known to hybridize with *M. paratuberculosis* DNA are added, and the labeled, hybridized segments are detected. Using Polymerase Chain Reaction technology, a small number of DNA segments in the test specimen can be reproduced many-fold, increasing the sensitivity of the test.

The major advantage of this test is its speed: 36 to 48 hours, compared to 12 to 16 weeks. It also eliminates the need for viable organisms that will grow in culture and for sample decontamination procedures. This test may be commercially available in 3-6 months.

**Transmission.** Most often, Johne's disease is transmitted when newborn calves consume milk, colostrum or feed that has been contaminated with manure containing the Johne's organism. Sometimes calves suckle teats that are contaminated. (Even if the farmer washes the outside of the udder, the bacteria may be lurking inside the udder.) All young calves are susceptible to manure from any infected adult, too.

Although Johne's can be transmitted to animals six to 24 months old or older, this occurs uncommonly on most farms, Drs. Whitlock and Sweeney believe.

Once a calf is infected, it takes several years before clinical signs, primarily weight loss and diarrhea, develop. The time lapse between infection and the appearance of clinical signs depends primarily on two factors:

1. The age at which the calf was first infected (newborns are most susceptible) and
2. The dose of organism ingested (a larger dose initiates a faster onset of signs).

It is commonly believed that after the first two years of life, infected animals shed Johne's organisms in their manure, and may shed for years before exhibiting any clinical symptoms.

This disappointing situation carries its own unhappy consequence: If a "carrier" is sold, the unsuspecting purchaser may be blindly importing the pernicious disease into a previously healthy, clean herd. Dr. Whitlock, a recognized expert on Johne's, frequently is asked what farmers should do when buying cattle. His answer is straightforward.

"Check for possible Johne's," he says. "Be especially careful when buying pregnant heifers. Remember: At least half of herd owners with Johne's do not realize they have it. Therefore, "Let the buyer beware."

"Inquire about animals with weight loss or diarrhea," he advises. "Ask the seller's veterinarian to provide a certificate that, to the best of his or her knowledge, Johne's is not present on the farm of origin."

**Eradication:** A case experience. In 1983 the owners of a Guernsey herd noticed weight loss and chronic diarrhea in one animal. When their veterinarian's testing revealed the cow was infected with Johne's, the owners submitted fecal samples so cultures could be obtained on the entire population.

The initial herd testing reported 16 of 42 adult milking cows had Johne's. In subsequent tests of the 26 initially-negative cattle, 13 more were found to be infected. Dr. Whitlock worked with the owners, who made a long-term commitment to eradicate Johne's from the herd. The owners began a semi-annual fecal culture on all animals over six months of age. They also implemented strict procedures to limit the spread of the organism. Specifically they:

- disinfected the maternity stalls before each calving
- immediately separated the calves from the dams
- constructed calf hutches and a heifer barn well separated from the adults
- promptly sold animals identified as positive for Johne's

These procedures enabled the dairy farmers to nearly eliminate the infection from the herd, although nearly 70 percent of the adult cows were infected. Dr. Sweeney also recommends that farmers with a Johne's situation should dispose of manure on cropland, not pastureland and feed artificial or pasteurized colostrum to calves particularly in heavily infected herds.



Looking down on cow with Johne's Disease

Susan Perloff



# From the Dean

*The calendar year 1990 has been exciting for the University of Pennsylvania, which is celebrating its founding by Benjamin Franklin some 250 years ago. The academic year that just ended has been equally exciting for the School of Veterinary Medicine.*

*We have been fortunate in turning the corner on our fiscal constraints by ending the year on budget. What made this especially exciting was our ability to accomplish a balanced budget a full year ahead of schedule.*

*Now our efforts can be turned to the creative process, as the recommendations from our various strategic plan task forces come forward. We are now in a position to devote full attention to the necessary changes and growth that will ensure our foundation of excellence beyond the 1990's.*

*Already we have launched efforts to improve student affairs, enhance faculty development, and focus on our unique strengths in*

*equine sports medicine, aquatic animal medicine, basic research, and zoo and wildlife medicine to name a few. Truly exciting opportunities exist in these and many other areas.*

*Our curriculum task force is ready to present to the faculty its recommendations for an "academic major" curriculum. The ability to allow students to maximally tailor their areas of interest will parallel the School's own focus on its strengths.*

*By this time next year, I will be able to detail for you our specific development plans to accomplish our programmatic and capital needs.*

*We continue to appreciate and value the support of our many friends and alumni, and look forward to working with you in this new academic year.*

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

## Board of Overseers

In June, the Board of Overseers voted to restructure its organization and establish terms for all board members. Further, an ex-officio category was added, and three long-standing board members were accorded emeritus status. In addition, The Board adopted by-laws to govern its activities.

The members of the current Board of Overseers are:

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## Creme Fraiche Nursing Station



Mrs. J. Maxwell Moran and Dean Andrews unveil the plaque for the Creme Fraiche Nursing Station as Creme Fraiche looks on.

Creme Fraiche, the winner of the 1985 Belmont Stakes, visited the University of Pennsylvania School of Veterinary Medicine's New Bolton Center campus on June 4 to unveil a plaque citing the stakes winner's

contribution of the Creme Fraiche Nursing Station to the Connelly Intensive Care Unit/Graham French Neonatal Section.

The Nursing Station allows observation of all seriously ill patients on a 24-hour basis. It is central to the new intensive care facility, the first building of its kind designed specifically to meet the special demands of delivery of critical care to seriously ill large animal patients. The neonatal side, accommodating up to seven foals and three mares in its dividable five stalls, opened earlier this spring. The six-stall adult intensive care unit opened in June; four of its stalls are connected by monorail to the C. Mahlon Kline Orthopedic and Rehabilitation Center, allowing for easy transport of critically ill adult patients.

Creme Fraiche retired from racing in 1989 after a five season career with 17 wins, 12 seconds, 13 thirds, and winnings of \$4,024,727 in 64 starts. He is the sixth highest Thoroughbred money winner of all time, behind Alysheba, John Henry, Spend A Buck, Sunday Silence, and Easy Goer. The bay gelding is a



Creme Fraiche accepts a celebratory glass of champagne, one of his favorite beverages.

two time winner of the Jockey Club Gold Cup and of five other Grade I events.

Creme Fraiche is owned by Brushwood Stable, Paoli, PA. He is enjoying his retirement from racing and romping in the pastures at the Chester County farm. Periodically some of his fans from far and near stop to visit and to deliver a treat, red and white striped peppermints, to show that they have not forgotten him.

# 13th Annual Feline Fanciers Symposium

*The Thirteenth Annual Feline Fanciers Symposium was held on March 31 at VHUP. Following are summaries of the four presentations.*

## The Clinical Importance of Feline Blood Groups

Dr. Urs Giger, associate professor of medicine and medical genetics, discussed feline blood groups and their clinical importance when treating ill cats. Blood group incompatibility can lead to neonatal isoerythrolysis and transfusion reactions, two life-threatening conditions. But, he pointed out, blood groups are not a disease, rather they are genetically determined differences in antigens on red blood cells.

Until recently it was believed that the great majority of cats had type A blood. Now studies at the University of Pennsylvania have shown that this is not so. Dr. Giger said that 99.7% of the DSH/DLH cats typed across the United States had type A blood. Siamese and related breeds (Oriental shorthairs, Burmese) tested also have predominantly type A blood. However, Dr. Giger and his colleagues discovered that other cat breeds have a significantly higher percentage of animals with type B blood. Breeds with about 10 - 25% type B cats are Abyssinian, Birman, Himalayan, Persian, Scottish fold, and Somali. In the British shorthair and the Devon Rex breeds approximately 50% of the cats have type B blood. Thus, there is a great variation in the frequency of blood type A and B between breeds.

Dr. Giger said that his studies of numerous purebred cat families have shown that type A and B are simply inherited with type A being dominant over type B. This means that a cat with blood type B is homozygous for B, and type A cats can either be homozygous for A or heterozygous, thereby hiding the B gene. Offspring of two type B parents have type B blood, whereas matings of type A and B cats may produce both type A and B kittens. Also, two type A cats that carry the B gene (heterozygotes) can have type A and rarely type B kittens. There are no type O cats. Recently the researchers identified a cat with type AB blood, but it appears that this is an extremely rare and separately inherited blood type.

Knowing the blood type of a feline patient can be of great clinical importance, particularly if the animal requires a transfusion. Similar to humans, cats have naturally-occurring antibodies against the other blood type; particularly type B cats have strong antibodies against type A blood cells. These antibodies cause two major incompatibility reactions:



neonatal isoerythrolysis (NI) and blood transfusion reaction.

Kittens with type A blood born to type B queen may develop a fatal NI reaction which is caused by maternal antibodies that destroy the kitten's red blood cells. Maternal antibodies do not pass through the placenta in cats, but are transferred via colostrum to the kitten during the first few days of life. These kittens are born healthy but show clinical signs within hours to days after colostrum intake. They cease to nurse, fade and most often die within the first few days of life. Specific signs may not be seen, but include dark red-brown urine and jaundice. NI has been recognized as a major cause of fading kitten syndrome in all breeds having more than 10% type B cats, and likely occurs in other breeds too.

Dr. Giger recommends that purebred cats be blood typed prior to breeding to assure compatible blood types in the breeding pair. If this is not possible, measures can be taken to save kittens from litters of incompatible parents. Using a foster mother and removing the kittens from the queen for the first couple of days while she is producing colostrum can prevent NI.

Knowing the blood type is also important in case of serious illness which may require a blood transfusion. There are many diseases which cause anemia and may require treatment with a blood transfusion, such as internal hemorrhage, trauma, FeLV infection, and others. If an anemic cat receives a

mismatched transfusion it will not benefit from it and may experience a life-threatening transfusion reaction. Since the common blood donors have blood type A, it is desirable to know the blood type of any purebred cat in case it needs a blood transfusion. In an emergency, when blood typing is not available, a crossmatch test can be performed. A crossmatch test will detect incompatibilities between donor and recipient blood, but does not specify the blood type. The common feline donor at the Veterinary Hospital has type A blood. If type B blood is needed, donors are available at VHUP.

Blood typing is a simple laboratory procedure that involve staking a small blood sample and incubating it with a reagent that reacts with either the type A or type B antigen. The transfusion procedure itself involves taking some blood from a peripheral blood vessel of the donor cat. The usual amount is roughly 1 1/2 ounces of blood from a 10-pound cat. This blood is anticoagulated, placed into a bag, and infused into the recipient cat.

Studies have shown that the transfused red blood cells have a half-life of about 35 days in the recipient cat. This is approximately the same as the half-life of the cat's own red blood cells. Transfusion of mismatched blood, however, leads to lysis (red blood cell destruction), followed by heart beat irregularities, transient cessation of breathing, and possibly death. Mismatched transfusions are particularly dangerous in type B cats.



As part of a Transfusion Medicine Academic Award, the University of Pennsylvania, School of Veterinary Medicine, offers a feline blood typing service to all veterinarians and cat breeders. Approximately 1 ml of blood in a labelled EDTA tube along with breed, age, pertinent history, (NI or transfusion reaction, blood donor) and address of correspondent should be shipped by overnight mail to: Dr. Urs Giger - Blood typing, Department of Clinical Studies - VHUP, 3850 Spruce Street, Philadelphia, PA 19104-6010. Results will usually be reported within two weeks of sending blood sample(s), but can be phoned immediately, if medically required.

## Congenital Neurologic Diseases in Cats

Observation and indirect examination, along with clinical judgment, play an important role in the diagnosis of congenital neurologic disease in cats. The veterinarian—as Dr. Betsy Dayrell-Hart, lecturer in neurology, explained—must observe the animal's behavior and response to stimuli and then decide if these are appropriate or an indication of some deficit or (in rare cases) excess of nerve stimulation.

Veterinarians have developed lists which help them determine the probable cause of a given symptom, after due consideration of the animal's age, medical history, onset of condition, and response to various treatments. Quite often, an apparently neurological symptom may have other causes. In addition, neurological conditions can lead to symptoms that may be mistakenly attributed to some other disease. Illnesses can also give rise to neurological symptoms, as in the case of a diabetic cat that suffers from a neurologic disease secondarily.

A number of laboratory tests can be useful in helping to confirm a diagnosis (and in eliminating some conditions from the suspect list). These include blood tests; serum antigen and antibody tests; cultures for bacteria, fungi, and parasites; urinalysis; radiography; electrocardiography; and ultrasonography. After these, the veterinarian may decide to confirm (or eliminate) a suspected cause by further tests. These include cerebrospinal fluid analysis; brain or nerve biopsy; myelography (a technique for taking x-ray photographs of the spinal cord by injecting a contrast medium); nerve conduction velocity measurements; and serum tests for various neurotoxins, heavy metals, and specific pathogens. Many of these specific tests require general anesthesia, not only because they are painful, but because it is important to keep the animal absolutely still.

Few of the congenital neurological diseases are curable, but their diagnosis is still important because some apparently neurological defects are in fact due to viral disease, tumors, or dietary deficiencies that can be treated. In other cases, the owner may want to use the cat for breeding and genetic defects have to be ruled out.

Some neurological diseases are due to defects in the closure of the neural tube during fetal neurological development. One of these conditions is spina bifida in domestic shorthairs; another is sacrocoecal dysgenesis in the Manx cat. These conditions, which are difficult if not impossible to treat, are present at birth and may progress in the first weeks of life. Both are marked by signs of weakness in the hind legs, and sometimes incontinence or loss of sensation. Some of these kittens may also have meningocele, a condition in which part of the nervous system protrudes through the skull or spinal column, resulting in constant drainage of cere-

brospinal fluid. The outward signs of this condition are a "soft mushy backbone" or a wet spot at the base of the spinal column, just above the tail.

Spongiform degeneration of spinal cord cells, which has been reported in the Egyptian Mau, is manifested by weakness of the hind legs. The symptoms appear around the age of seven weeks and sometimes improve.

Both mixed breed and purebred kittens are sometimes born with hydrocephalus, lissencephaly (undeveloped cerebral cortex), or anencephaly (lack of cerebral cortex). Hydrocephalus, which can be either congenital or acquired, literally "fluid on the brain," has as one of the outward signs a domed skull. Hydrocephalus can lead to very abnormal behavior in kittens, some of whom may gradually improve or respond to drug therapy. The condition can sometimes be treated by a fairly complicated surgical procedure.

Himalayans are known to suffer from megaesophagus, a condition marked by a dilated, weak esophageal muscle sheath. The condition becomes manifest at the age of a few months and can have a variety of causes, including faulty innervation and myasthenia gravis (which can be treated). These animals have trouble swallowing their food and keeping it down. They sometimes recover spontaneously.

A number of storage diseases have neurological symptoms. These diseases are ultimately due to deficiency of some enzyme, one of the chemicals that facilitates chemical reactions in the body's cells. Enzymatic deficiencies can lead to the accumulation of wastes and other metabolic byproducts in cells. Some storage diseases can be diagnosed from their symptoms, while others require analysis of blood, urine, or cerebrospinal fluid, or other tissues. Some breeds are particularly susceptible to certain storage diseases. Siameses can have cerebral sphingolipidosis, beta galactose deficiency, and mucopolysaccharidosis. Gangliosidosis affects Korats, while Persians suffer from mannosidosis. Among the conditions that can afflict domestic shorthairs are ceroid lipofuscinosis, hyperchylomicronemia, globoid cell leukodystrophy, and GM-1 and GM-2 gangliosidosis.

Even though each of these diseases has a different origin, they have many common features. Kittens usually look normal at birth, but grow slower than their litter-mates. Signs of disease begin to appear after a few weeks or months, and may include peripheral or central nervous system symptoms—such as tremors, spasms, and difficulty in moving. These signs tend to be progressive.

Panleukopenia virus infection can lead to the birth of kittens without a part of the brain (the cerebellum). This condition is not always fatal, and may even be asymptomatic. The kittens usually have normal strength, but they are very clumsy, likely to reach toward their food and miss it. Even so, many of these cats will adjust and live, making good pets. Since this condition is not inherited, they can be bred—although they will make clumsy mothers.



## Feline Clinical Nutrition as Related to Cardiomyopathy, Feline Urological Syndrome, and Obesity

Obesity in humans and felines is defined the same way: cats whose weight is more than 15% above the ideal are classified as "overweight," while those whose weight is more than 25% above the ideal are classified as "obese." "Nutrition and obesity play an important role in such clinical conditions as feline central retinal degeneration, feline dilated cardiomyopathy, and feline urinary syndrome," explained Dr. John Burr, Animal Care Center Veterinarian, Technical Services, The IAMS Company.

Feline urinary syndrome (FUS) is the term for a rather vaguely defined group of clinical signs and symptoms associated with obstructions of the lower urinary tract, more specifically the bladder and urethra. FUS can occur at any age and male cats are particularly susceptible because of the anatomy of their urinary system. The clinical signs include polyuria (unusually frequent urination), obviously painful urination, straining, and blood in the urine (hematuria). When these signs are not due to injury, infection, or outside pressure on the urethra (for example from a tumor), they are often a result of ureterolithiasis: the presence of calculi (or stones) in the urethra.

Most of these stones consist of struvite, a mineral that is also known as ammoniomagnesium phosphate. A study at the University of Minnesota showed that 82% of urethral stones in cats consist of struvite.

The main predisposing factor for struvite crystal formation is a high degree of urinary alkalinity, meaning a pH well above 7.0. Other predisposing factors are the presence of microbes that produce an enzyme called urease, and an area in the urethra that is suitable for the accretion of crystals. Suggestions that viral infections, particularly herpesvirus infection, may play a role in crystal formation have not been proven.

What does seem to have been proven is that the stones are not caused primarily by diet, or more specifically the magnesium content of diet. Some earlier investigators suggested the stones were due to high dietary levels of magnesium oxide and magnesium chloride. More recent studies have shown that the amount of magnesium oxide is less important than urinary pH because crystal formation does not begin unless the urine is very alkaline. The metabolism of magnesium chloride, meanwhile, causes urine to become more acidic.

The simplest way to measure the alkalinity of urine is by means of the litmus paper test. It is important to keep a cat's urinary pH under 7.0. A pH of 6.7 or less is even better.

Trying to reduce urinary alkalinity by giving the cat vitamin C (ascorbic acid) is not advisable, because the metabolism of this compound actually causes urine to become more alkaline. Some temporary increase in urinary alkalinity is a natural result of the digestive process. One way to reduce this is by allowing cats to eat ad lib instead of providing them with a few substantial meals a day.

Protein from animal sources causes urine to become acidic and FUS is rarely a problem in cats who get most of their protein from meat and animal

by-products. Animal proteins are rich in sulfur-containing amino acids, which are lacking in plant-derived proteins. Animal protein also contains taurine, an aminosulfonic acid necessary for the digestion of fats and fat-soluble vitamins. Humans and some animals, including dogs, can manufacture all or most of the taurine they need but this is not true of cats. Cats are true carnivores which must depend on their diet for the taurine they require. In cats taurine deficiency causes feline dilated cardiomyopathy (FDC) and feline central retinal degeneration. Since the relationship between taurine deficiency and FDC was established about three years ago, taurine supplementation has become the rule in the cat food industry; all commercial cat foods now contain adequate amounts of this compound.

FDC is a condition marked by enlargement of the heart and consequent decrease in blood pressure. Its incidence is not yet known; its symptoms include overall weakness and obstruction of blood flow to the back legs. Fortunately this condition in cats can be treated successfully with taurine dietary supplements, as has been demonstrated by dramatic series of chest radiographs showing how a previously enlarged heart returns to normal size. A laboratory test for blood levels of taurine is available. Taurine deficiency has also been implicated in feline central retinal degeneration, which leads to irreversible blindness. This condition develops gradually, owing to the variable taurine content of different foods and the long serum half-life of taurine (from 30 to 88 days). Retinal degeneration is seldom diagnosed until the cat has lost its eyesight. Fortunately its progression can be halted—although not reversed—by a change in diet.

The National Research Council has recommended a daily allowance of at least 400 units of taurine a day to prevent feline retinal degeneration, with a minimum of 500 units for pregnant queens. The amount needed for prevention of FDC is substantially larger, in the neighborhood of 2,500 units a day.

## Medical Approaches to Feline Respiratory and Hepatic Problems

Medical approaches to hepatic and respiratory problems in cats formed the subject discussed by Dr. Joan C. Hendricks, assistant professor of medicine. She noted that taking a good medical history from the owners is a key element in the accurate diagnosis of both conditions.

Cats can suffer from a number of liver conditions. At present, there is no cure for liver cancer. The situation is more hopeful in regard to the metabolic liver diseases whose symptoms include jaundice (also known as icterus). This is usually manifested by "yellowness," or discoloration of the cat's gums, eyes, and mucous membranes.

The liver can be characterized as a metabolic factory that processes many different substances, making some of them and breaking down others. It is the major organ for degrading poisons and drugs, as well as many of the waste products resulting from normal metabolism.

Jaundice is a major sign of liver disease. It is caused by the tissue build-up of bile, one of the liver products that plays an important role in digestion.

The build-up of waste products that are normally processed by the liver can lead to other symptoms, such as dementia and seizures. The neurological changes associated with liver disease are usually

global in nature. The cat may stand and stare into a corner—or refuse to play or respond. Lack of appetite, nausea, and vomiting are other possible symptoms of liver disease. Finally, liver disease can lead to abnormal bleeding because the liver is not producing sufficient amounts of a variety of clotting factors. Another consequence may be leakage of serum through the walls of blood vessels, causing edema because the liver is not making albumin, a protein that makes blood thicker. Edema and abnormal bleeding are usually signs of advanced disease.

There are a number of laboratory tests that can establish the presence of metabolic liver disease before it has reached this stage. Many of these are similar to the tests used in human patients. Nonetheless, liver biopsy—removal of a bit of tissue—is the most definitive means to establish the diagnosis of many conditions. This is usually done by means of a needle, under general anesthesia, and often under ultrasonographic guidance.

In some cases it may be necessary to give the cat a blood transfusion, as well as nutritional support, before subjecting it to such a procedure. Nutritional support is most effectively provided by means of a nasogastric tube. This method has many advantages: it does not require an incision and can be used at home if the cat learns to tolerate it (as many cats do).

The respiratory system can be characterized as a mechanism that provides the body cells with oxygen and removes carbon dioxide, the major waste product of normal metabolism. The same system is also used for other purposes, such as vocalization and regulation of body temperature.

The system begins with the windpipe, which is really a conducting tube. The windpipe leads to the lungs, where the main tubes branch off into bronchi, small-diameter tubes that lead to lung cells where gas exchange takes place. The entire system is controlled by a muscular pump, the diaphragm, which is under very close neurological control and cannot function automatically like the heart.

When the lungs or the pumping mechanism begins to fail, the consequences are likely to be sudden, acute, and life-threatening. In many cases, it may be possible to provide mechanical compensation, but usually there is little that can be done about the underlying condition. Many of these animals die before anyone can help them.

Veterinarians are more likely to be able to help in the case of diseases that affect the airway. These conditions are rather common and tend to be marked by all sorts of "funny noises" that are really coughs and sneezes. Cats make coughing sounds that are

distinguishable from gagging, retching, and vomiting.

Coughing is usually due to local irritation or inflammation of the airway—in a way, not unlike the bronchitis seen in chronic smokers. The onset is often gradual and the condition may be longterm, ranging in severity from a minor irritation to an affliction that is virtually disabling, although generally not life-threatening. (Incidentally, it remains unclear if animals suffer as a result of their owners' smoking.)

Diagnosis of a respiratory condition starts with a very thorough physical examination and history. The important questions are: Is he fibbing or turning blue? Is he making whistling noises, or coughing, or gagging? Measuring the levels of oxygen and carbon dioxide in the animal's blood can provide useful information. There are methods of doing this without drawing any blood, by means of a clip attached to the cat's ear that analyzes blood gas concentrations from the color of the blood.

After that, radiography can be very useful, because it actually provides a look at the cat's airways and lungs; it may also be useful to take a sample of fluid from the airway to culture and examine the cells.

Endoscopy is another useful diagnostic method. This involves passing a thin tube, with a camera and light source on its tip, down the airway for an actual look.

Jan Kangilaski

### Feline Symposium

The Fourteenth Annual Feline Fanciers Symposium will be held April 13, 1991 at the Veterinary Hospital of the University of Pennsylvania in Philadelphia.

The day-long program begins 9:30 a.m. Ms. Kathleen Dunn, the social worker at VHUP, will discuss "Attachment and Bonding — Breaking the Attachment - Pet Loss." Dr. Karen Kuhl, a dermatologist, will speak on "Feline Reaction Patterns."

The final presentation of the morning will be a "Parade of Breeds" and Mr. Richard Gebhardt will illustrate breed characteristics with the help of cats from different breeds.

In the afternoon Dr. Mark Saunders will speak on "Ultrasound Imaging of Abdominal Disorders." This will be followed by a tour of VHUP and a wine and cheese reception hosted by Mrs. R.V. Clark, Jr., and Mrs. Edith Young.

The cost of the program is \$45. This includes lunch and parking. Reservations are required and can be made by contacting Dr. M. Josephine Deubler, VHUP, 3850 Spruce Street, Phila., PA 19104, Tel.: (215) 898-8202.



# Furosemide Improves Racing Performance of Horses

The diuretic furosemide, commonly administered to race horses who suffer from "bleeding," a disorder known as exercise-induced pulmonary hemorrhage (EIPH), improves the racing performance of horses who do not suffer from the disorder, a new study has shown.

The study, the first to test the effect of furosemide on the performance of non-bleeders, was published in the May 1990 issue of the *American Journal of Veterinary Research*. It was conducted by University of Pennsylvania veterinarians Corinne Raphael Sweeney, Lawrence R. Soma and Abby D. Maxson. Other members of the Penn research team were Joseph E. Thompson, Susan J. Holcombe and Pamela A. Spencer. The project, which was conducted at the Philadelphia Park Racetrack during the 1988-89 racing season, was funded by The Jockey Club.

The researchers administered furosemide, widely-known by the trade name Lasix, to 79 Thoroughbred race horses for a single race after first determining that they did not suffer from EIPH. Performance in that race was compared to the horses' performance in two other races run without the drug.

The study found that the horses without EIPH raced an average of 0.48 seconds, or 2.4 lengths faster for a one-mile race when given furosemide. Geldings showed the greatest improvement in racing time while on the drug, averaging 1.08 seconds, or 5.4 lengths faster.

The average improvement in racing times while on furosemide for female Thoroughbreds was .42

seconds, or 2.1 lengths for a one mile race; the group of colts studied showed minimal improvement in performance — less than one-half length — while on the medication. The researchers felt that the difference in improvement among the sex groups was related not to gender but more likely to age because the geldings were, on the average, older.

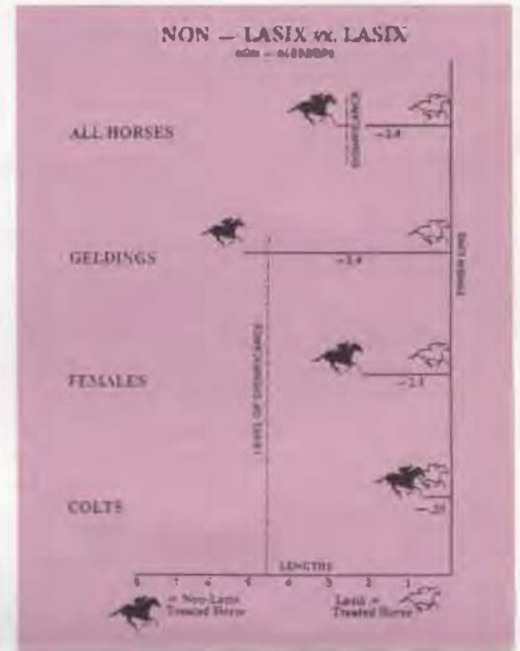
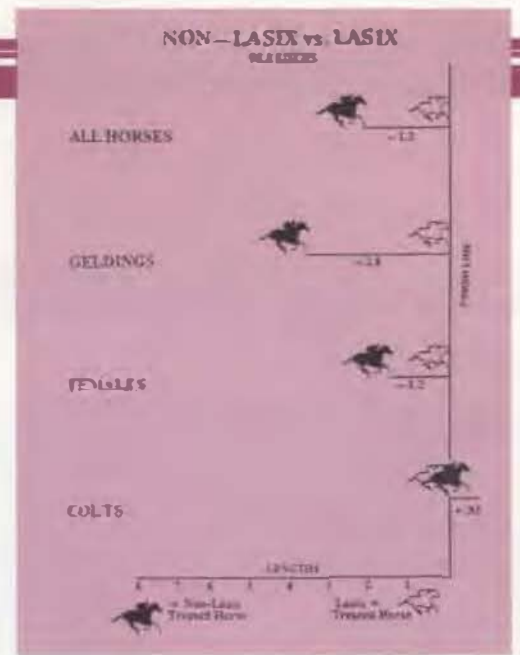
The group also examined the effects of the drug on the racing performance of 52 bleeders. The study found that the drug improved the racing time of the horses with EIPH, although the improvement was .26 seconds, or 1.3 lengths. Geldings improved by .56 seconds, or 2.8 lengths; females by 0.23 seconds, or 1.2 lengths; and colts showed no improvement in race time.

In the course of the study, the Penn researchers found that the drug failed to stop bleeding in 32 (62 percent) of 52 bleeders treated with the drug. Furosemide also failed to prevent the development of bleeding after racing.

Racing times for the population of horses at Philadelphia Park indicated one-fifth of a second equalled 1.4 lengths at one mile. The equation of one-fifth of a second equals one length, while not accurate for all populations, is used traditionally. For that reason all the aforementioned lengths are reported using this traditional equation.

Because of the prevalence of EIPH in Thoroughbreds, nearly 700 horses had to be screened for the study to identify 79 horses that were free of the disorder after three races.

Phyllis Holzman



# The Pet Memorial Program

The Pet Memorial Program at the Veterinary Hospital of the University of Pennsylvania is supported by veterinarians who thoughtfully donate monetary gifts to the Veterinary School "in memory of" pets which had to be euthanized. Although euthanasia is a sad and difficult situation, the pain may be lessened by the knowledge that the veterinarian understands and shares some of the owner's grief and that pet memorial donations are used by VHUP to further teaching and service programs.

The Pet Memorial Program has been gaining momentum since its inception in 1982. Compared to last year, for example, the number of veterinarians participating in the Program has increased from 90 to 106 and gifts have been received from veterinarians practicing in 18 different states (up three from last year). The dollar total donated in fiscal year 1989-1990 was \$12,876, an 18% increase over the previous year!

We would like take this opportunity to welcome any new participants to the program and to extend our gratitude to the following veterinarians for their support of the Pet Memorial Program:



- Fred R. Adams, D.V.M.
- Janice M. Andrews, D.V.M.
- Loy C. Awkerman, V.M.D.
- Fredric K. Baff, V.M.D.
- Curt Barnett, D.V.M.
- Richard J. Baron, V.M.D.
- Frank A. Bartus, V.M.D.
- Michelle C. Bartus, V.M.D.
- Michele B. Belisle, V.M.D.
- Robert L. Bergman, V.M.D.
- William E. Best, V.M.D.
- Claire E. Blanchard, V.M.D.
- Frank A. Borzio, V.M.D.
- Harvey A. Braaf, V.M.D.
- C. Coppock Brockett, V.M.D.
- Charles E. Brown, V.M.D.
- John S. Bush, V.M.D.
- Caroline Cantona, D.V.M.
- Thomas Carreras, D.V.M.
- Andrew W. Cleland, V.M.D.
- Kevin P. Coogan, V.M.D.
- Michelle R. Cordes, D.V.M.
- Evelyn M. Crish, V.M.D.
- Clifford G. Cummings, D.V.M.
- Robert P. Cusanno, V.M.D.
- Alan H. Douglas, V.M.D.
- Diane Ruth Eigner, V.M.D.
- Sue Elkins, V.M.D.
- Doris Sell Emerson, V.M.D.
- S. R. Epstein, V.M.D.
- Lisa S. Evans, V.M.D.
- Paul Fenster, V.M.D.
- Fred Fernich, V.M.D.
- Juan L. Ferrer Perez, V.M.D.
- Herbert S. Freiman, V.M.D.
- George Glanzberg, V.M.D.

- Gregory W. Godon, V.M.D.
- Carol A. Gray, V.M.D.
- Mark B. Guise, V.M.D.
- Donald W. Gulick, V.M.D.
- M. B. Gulick, V.M.D.
- E. Jefferies Hathaway, V.M.D.
- Peter H. Herman, V.M.D.
- James F. Higgins, V.M.D.
- Richard A. Jaffe, V.M.D.
- Stephen R. Jarman, D.V.M.
- J. Jeffrey Johnson, V.M.D.
- Michael H. Kenfield, V.M.D.
- Betsy K. Kennon, V.M.D.
- Mark C. Klingensmith, V.M.D.
- Lloyd B. Kornblatt, V.M.D.
- Theodore J. Leif, V.M.D.
- Andrea Leof, V.M.D.
- Andrea H. Lerner, V.M.D.
- Bernard G. Levine, V.M.D.
- Richard M. Levine, V.M.D.
- Steven A. Levy, V.M.D.
- Lawrence Jay Linnetz, V.M.D.
- Howard M. Littman, V.M.D.
- Ann W. Lucas, V.M.D.
- James S. Lunig, V.M.D.
- Francine M. Mallon, V.M.D.
- Carolyn M. McDaniel, V.M.D.
- Susan McDonough, V.M.D.
- Elizabeth McKinstry, V.M.D.
- Jacqueline A. Metzler, V.M.D.
- Patricia Morgan, V.M.D.
- Michael K. Moss, V.M.D.
- Andrew P. Nebzydowski, V.M.D.
- Joseph A. Nebzydowski, V.M.D.
- N. J. Nelson, V.M.D.
- Peter D. Nelson, V.M.D.

- Bernard J. Nilles, D.V.M.
- Richard G. Orozco, D.V.M.
- Scott E. Palmer, V.M.D.
- K. S. Phillips, V.M.D.
- Jeanne Pittari, D.V.M.
- Mary C. Pittari, D.V.M.
- Bruce S. Putschat, V.M.D.
- Gary J. Quinn, V.M.D.
- Gary A. Raiczuk, V.M.D.
- Neal C. Ralston, V.M.D.
- Michael P. Ratner, V.M.D.
- Arthur Richards, Jr., V.M.D.
- Richard P. Rogoff, V.M.D.
- Ellis F. Rubin, V.M.D.
- James R. Rummel, V.M.D.
- Danielle Sand, D.V.M.
- Alan G. Schonfeld, V.M.D.
- Ira H. Silver, V.M.D.
- Daniel R. Silverberg, V.M.D.
- John C. Simms, V.M.D.
- Lee Simpson, D.V.M.
- H. M. S. Smith, V.M.D.
- Raymond W. Stock, V.M.D.
- Cynthia J. Swingle, V.M.D.
- Brett A. Sylvester, V.M.D.
- Gregory M. Thibodeau, V.M.D.
- Mark D. Tyson, V.M.D.
- John R. Walter, Jr., V.M.D.
- Eric Wayne, D.V.M.
- Alexandra Wetherill, V.M.D.
- Louis M. Wiest, Jr., V.M.D.
- Jeanne F. Wordley, V.M.D.
- Anna E. Worth, V.M.D.
- Stephen F. Wurst, V.M.D.

## School & Teaching Awards

A crowd of 437 came to Longwood Gardens for the Annual Student Government Dinner Dance on May 5. Centerpiece of the evening was the presentation of the 1990 Student Government Awards for Teaching Excellence to members of the faculty and staff.

Designed to enable each of the four classes of the School to honor an individual who exemplifies the highest degree of proficiency in teaching, the award is given to "anyone involved in the educational process who has made a major contribution to our veterinary education through dedicated, creative, and informative teaching." Dr. Bernard H. Shapiro, professor of biochemistry, was the recipient of the Class of 1993 Teaching Award. Dr. James B. Lok, associate professor of parasitology, won the Class of 1992 Teaching Award. Dr. Raymond Sweeney, assistant professor of medicine, received the Class of 1991 Teaching Award. Dr. Lesley King, lecturer in medicine, was presented with the Class of 1990 Teaching Award.

Sue Barbour, an anesthesia technician at VHUP; Dr. David Sweet, an intern at VHUP; and Dr. Michael Rosenzweig, a resident at VHUP also received Student Government Teaching Awards. Dr. Rosenzweig was also the recipient of the IAMS Small Animal Clinician Award. Dr. Sweet also won the Dr. Jules Silver Bedside Manner Award. Dr. Robert Washabau, assistant professor of medicine, was the recipient of the Norden Faculty Teaching Award. This is the 27th year that this award has been given to recognize outstanding teaching.

Dr. Joan Hendricks, assistant professor of medicine, received the Beecham Research Award. Dr. Elizabeth Laws, received The William B. Boucher Award for Outstanding Teaching at New Bolton Center by a House Officer.

The evening was supported by the following benefactors: Hills Pet Products, The Upjohn Company, Veterinary Medical Student Government, SCAVMA-Faculty Fund, and by the following sponsors: Pennsylvania Veterinary Medical Association, Peterson Imaging, Inc., Schering Animal Health, and Dr. and Mrs. Jay Simmons.



Strolling in the Conservatory at Longwood Gardens prior to the festivities.



Dr. Bernard Shapiro



Dr. Joan Hendricks



Dr. James Lok



Dr. Elizabeth Laws



Dr. Raymond Sweeney



Dr. David Sweet



Dr. Michael Rosenzweig



Sue Barbour



Dr. Leslie King



Dr. Robert Washabau



A Certificate of Appreciation from AAHA is presented to Dr. Darryl N. Biery.



Susan Westmoreland, president, Veterinary Medical Student Government.

## Ground Breaking for the Mark W. Allam Center for Dairy Cattle Research and Teaching

Ground breaking for the Mark W. Allam Center for Dairy Cattle Research and Teaching took place on May 24 at the New Bolton Center campus of the University of Pennsylvania School of Veterinary Medicine.

The Allam Center will serve as a modern and sophisticated environment for veterinary and graduate students interested in the medical and managerial aspects of dairying; a regional resource for the dairy industry; and a laboratory for veterinary medical researchers in fields such as epidemiology and preventive medicine, nutrition, reproduction, infectious and chronic diseases, and dairy cattle economics.

The building will house a 130-head herd; 50 dairy cattle will be accommodated in a tie stall barn and 80 will be housed in a free-stall barn. The facility will be equipped with a double six herringbone milking parlor and a feed storage and mixing center. There will be an exercise lot, connected to the free-stall barn, and a manure storage system.

Funds for the building were provided through appropriations from the Commonwealth of Pennsylvania, and gifts from individuals and corporations. The designers of the facility are Argue and Associates, Dairy Consultants, and Francis, Cauffman, Foley, Hoffmann, Architects LTD. Occupancy is expected by the summer of 1991.



Dean Andrews breaks the ground for the Mark W. Allam Center for Dairy Cattle Research and Teaching at New Bolton Center while former dean Mark W. Allam and State Representative Joseph P. Pitts look on.



State Representative Matthew J. Ryan, State Representative Joseph R. Pitts, State Senator Noah N. Wenger and Dr. Mark W. Allam watch the ground breaking ceremonies for the Mark W. Allam Center for Dairy Cattle Research and Teaching.





# Commencement

The Commencement Exercises for the 105th graduating class took place on May 14, 1990 at the Zellerbach Theatre. The commencement address was given by Dr. Jane Goodall, the world-renowned naturalist and author. Earlier in the day the University had awarded Dr. Goodall the degree of Doctor of Humane Letters, *honoris causa*.

Dean Edwin J. Andrews (V'67), assisted by Assistant Dean Jeffrey A. Wortman (V'69), Associate Dean Charles D. Newton, and Mr. Charles S. Wolf, chairman, Veterinary School Board of Overseers, presented the diplomas to the members of the Class of 1990.

Instead of the customary remarks, Class President James J. Camilliere gave an unusual address, a reading of Dr. Seuss' new book *All The Places You'll Go*. The president of the Veterinary Medical Alumni Society, Dr. Michael P. Ratner (V'59), then presented the Class Flag to Dr. Camilliere.

Dean Andrews, assisted by Dr. Robert J. Wasbabau (V'82), presented awards and prizes to a number of graduates and recognized those graduating with honor.

The administration of the Veterinarian's Oath by Dr. Charles Koenig (V'57), president of the Pennsylvania Veterinary Medical Association, concluded the ceremony. Everyone then gathered for a reception for the graduates and their families.

## Award Recipients

### *Leonard Pearson Prize*

Susan J. Holcombe

### *J.B. Lippincott Prize*

Maria H. Werkiser

### *1930 Class Prize in Surgery*

Julia M. Heitzenrater

### *Auxiliary to the American Veterinary Medical Association Prize*

Nicole Pirkey

### *Auxiliary to the Pennsylvania Veterinary Medical Association Prize*

Maria H. Werkiser

### *1956 Class Medal for Achievement in Pathology*

Angela E. Frimberger

### *James Hazlitt Jones Prize in Biochemistry*

Amy J. Wenger

### *Milmark Prize*

Craig H. Marezki

### *American Animal Hospital Association Award*

Leanne M. Ksiazek

### *Merck Awards*

Kerry E. Danielsen

Alison Baldock Rockar

### *George M. Palmer Prize*

Bruce N. Barnes

### *Everingham Prize for Cardiology*

Douglas A. Hambright

### *E. L. Stubbs Award in Avian Medicine*

Mark S. Bridge

### *Large Animal Surgery Prize*

Susan J. Holcombe

### *Large Animal Medicine Prize*

Stacey Romano

### *Morris L. Ziskind Prize in Swine Medicine*

Joseph E. Thompson

### *Morris L. Ziskind Prize in Public Health*

Karen F. Martin

### *Hill Award for Nutrition*

Donna M. Dambach

Craig H. Marezki

### *Purina Mills Award in Swine Medicine*

Douglas J. Ayers

### *Upjohn Awards*

Susan J. Holcombe

Lauren E. Strine

### *Auxiliary to the Student Chapter of the American Veterinary Medical Association Prize*

Anne L. Crump



## Class of 1990

Douglas John Ayers  
Eric Timothy Banks  
Nancy Ann Barin  
Bruce Norman Barnes  
Anita Susan Benschoter-Holt  
Allen Wilson Bower  
Elana Braz  
Mark Stephen Bridge  
Laureo Redding Brinster  
Tracy Ann Buckwalter  
Martha Emma Bugbee \*  
Kayann Elizabeth Busshaus  
James Joseph Camilliere  
Lauren Jane Cardullo  
Carol Ann Connor  
Anne Louise Crump  
Joyce Ann Daily  
Magda Lynn D'Alessandro  
Donna Marina Dambach  
Kerry Elizabeth Danielsen \*\*\*  
Kathleen De Graw \*\*  
Lillian Elizabeth Duda \*  
Mary Jane Fassinger  
Christopher John Fazio  
Robert Donald Fetterman  
Pamela Joan Sorton Flesher  
Amy Lynne Foehner  
Darryl Vincent Francomacaro \*  
Angela Erica Frimberger \*\*\*  
Margaret Mary Garvey  
Susan Lee Gaut  
Rita Maria Geigel  
Judith Ann Glogau  
John Trich Gooss  
Amy Lynn Grice  
Gwyn Michele Groman  
Douglas Andrew Hambright

Tal Harpaz  
Kirk Andrew Hassinger  
Julia Marie Heitzenrater \*\*\*  
Karen Barbara Hoffman  
Susan Jane Holcombe \*\*  
Frieda Madora Hottenstine  
India Helen Imperatore  
Timothy James Ireland  
Katrina Sheryce Jackson  
Michele Annette Kallish  
George Bruce Keech, Jr.  
Deborah Anne Kelly  
Lester Hoe-Aun Khoo  
Kenneth Robert Kimmel  
Carol Beth Kleinman  
Leanne Marie Ksiazek \*\*  
Celeste Clare Kunz  
John Earl Ledoux  
Chelsie Wallace Levitan \*\*\*  
Kimberly Ann LoGiudice \*\*  
Craig Henry Marezki  
Karen Faye Martin  
Margaret Jane McVeigh  
Amy Lynne Mendelson  
Jacqueline Harrison Menninger  
Steven Daniel Mildan  
Janet Bottomley Mitchell  
Karen Marie Mockler  
Michael Robert Moyer  
Maribeth Schanely Murphy  
Petra Gwen Nutz  
Cecille Anne O'Brien  
Judith Edna Palm  
Charles Reed Perkins  
Thomas Michael Pickard  
Carole Lynn Pieretti-Castro  
Nicole Pirkey \*

Kathryn Lynn Potet  
Alice Lanier Rand  
Lawrence Anthony Rebbecchi, Jr.  
Alison Baldock Rockar  
Stacey Romano  
Kristin Rothermel  
James Patrick Rowan III  
Michelle Kathryn Sabol  
Thomas Schermerhorn  
Michelle Gail Schessler  
Caroline Ruth Scibetta  
Marian Siegel  
Nicholas Emmanuel Sitinas  
Alan Currie Stader  
Mark Andrew Steckroat  
Lauren Elizabeth Strine \*\*  
Eileen Veronica Taylor  
Joseph Earle Thompson  
Rose Marie Threatte  
Jeffrey Toll  
Josephine Anne Vecchione  
Peter Lewis Vogel  
Patricia Carol Walters  
Beth Udal Weiner  
Nancy Dale Weintrob  
Cheryl Ann Welch  
Amy Jane Wenger \*  
Maria Hassink Werkiser \*\*\*  
Joseph Gerard Williamson  
Nancy Ann Winning  
Janet Ziebur  
Kim Marie Zorbaugh

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

# Alumni Day 1990

Alumni Day on May 12 drew almost 200 people to the Philadelphia campus. In the morning the official business of the Veterinary Medical Alumni Society was conducted and the Alumni Awards of Merit were presented. Dr. Max J. Herman, V'59, passed the gavel of the office of president to Dr. Michael P. Ratner, V'59, and introduced the officers and members of the board. They are:

## Officers

Dr. Michael P. Ratner, V'59, President  
 Dr. Jack Bregman, V'66, President-Elect & Vice Chair, Liaison Committee  
 Dr. Max J. Herman, V'59, Past President; Chair, Awards & Nominating Committees

## Members-at-Large

Dr. Daniel D. Bleicher, V'53, Benjamin Franklin Society Chair & Phonathon Co-Chair  
 Dr. Malcolm Borthwick, Jr., V'69  
 Dr. Pierre A. Conti, V'60  
 Dr. Richard D. Derstine, V'57  
 Dr. Harriet A. Doolittle, V'61, Farm Show Chair  
 Dr. George L. Hartenstein IV, V'68, Liaison - NBC  
 Dr. Sidney L. Mellman, V'49  
 Dr. Donald R. Shields, V'63, Annual Giving Co-Chair & Phonathon Co-Chair  
 Dr. Joseph D. Slick, V'53, Long Range Planning Chair  
 Dr. Robert J. Tashjian, V'56, Annual Giving Co-Chair & Phonathon Co-Chair  
 Dr. Alexandra Wetherill, V'80, Class Agent Chair

## Other Board Members

Dr. M. Josephine Deubler, V'38, Historian  
 Dr. Darryl N. Biery, Faculty Representative  
 Dr. Charles Benson, Faculty Representative  
 Dr. Robert F. Moffatt, V'87, Pacesetters Representative

## Student Representatives

Howard Krum, V'92, Student Government President  
 Janice DeRiso, V'91, Class of 1991 President  
 Roy Yanong, V'92, Class of 1992 President  
 Nancy Katz, V'93, Class of 1993 President

## Ex-Officio Members

Dr. Edwin J. Andrews, V'67, Dean  
 Nancy Martino, Director of Alumni Affairs  
 Dr. Charles W. Koenig, V'57, P.V.M.A. President 1990  
 Dr. Earl H. Rippie, Jr., New Jersey V.M.A. President 1990  
 Dr. Caroline C. Hughes, V'80, Delaware V.M.A. President 1990

After the meeting, everyone adjourned to lunch under the huge tent in the courtyard and some "catching up" with classmates and faculty members. Later in the afternoon many alumni and their families took advantage of the tours to the Zoo, Philadelphia harbour and VHUP.

In the evening the festivities continued with a reception and a dinner dance at the Sheraton Society Hill Hotel in the heart of old Philadelphia. Mark your calendars now for Alumni Day 1991. It will be on Saturday, May 18 at New Bolton Center.



The Class of 1980



The Class of 1940



The Class of 1950



The Class of 1955



The Class of 1960



The Class of 1965



The Class of 1970



The Class of 1975

Alumni Awards of Merit were presented by Michael P. Ratner, V'59 to six alumni.



Donald C. Kamsler, V'50



Bernard G. Levine, V'55



William J. White, V'70



Kirk N. Gelatt, V'65



Frank S. Edrwise, V'45



Charles J. Driben, V'65



Past President of VMAS, Max J. Herman, V'59, passed the gavel to President Michael P. Ratner, V'59.



Jack Bregman, V'66, vice president, VMAS, Max J. Herman, V'59, past president, VMAS, and Michael P. Ratner, president, VMAS.



# Animal Crackers

## Pot-Bellied Pigs

Miniature potbellied pigs have become a popular (and expensive) household pet, seen frequently on television and in the news media. There are three registries, a newsletter and even a book, "The Pampered Pig."

These miniature pigs are about 15" to 19" tall and generally weigh from 40 to 70 pounds. They require the same veterinary care as all swine and the same diseases affect all pigs, small and large.

If you are considering a pig as a pet, it's important that you "piggyproof" his living area. It is said that they can destroy lawns and open doors and closets. Anything edible, particularly common household products and chemicals, must be stored out of reach. Miniature pig chow is available and overfeeding should be avoided. Pigs can be trained to use a litter box or to ask when they want to go out. They do best if the temperature is above 60 F. Heat lamps or pads may be needed if the temperature is any lower. In hot weather, shade and plenty of water are needed. A small wading pool is a suggestion - pigs can swim.

Contact a veterinarian near you before you bring a pig home as a pet. Find and meet your veterinarian before you need help. Also, check local regulations about keeping livestock.

For many years, pigs have been household pets. A miniature pig with its harness and leash is sure to attract attention. They can be kept in a city apartment. With proper care, their life expectancy is about fifteen years. Be sure you understand all that is necessary to keep the pig well and happy. Give careful consideration as to whether or not it will fit into your lifestyle.

## Registration Statistics

In 1989, there were 1,257,700 dogs registered with the American Kennel Club. There were over a million dogs registered every year in the 1980's. The top five breeds were the same in 1988 and 1989 - cocker spaniels first, followed by Labrador retrievers, poodles, golden retrievers and German shepherd dogs. Rottweilers and Chow Chows continue at the top of the chart, ranking 6th and 7th in 1989. Dachshunds, beagles and miniature schnauzers are the others in the "Top Ten."

There are 130 breeds registered by the AKC. The list ends with Ibizan hounds, Pharaoh hounds, wirehaired pointing griffons, clumber spaniels, field spaniels, Sussex spaniels, English foxhounds, otterhounds, American foxhounds and harriers.

More sporting breeds are registered than other groups. They are followed by non-sporting, toy, working, herding, bound and terrier groups.

It has been estimated that there are 52.4 million dogs in the United States and 54.5 million cats. However, more households own dogs. Regardless, it's quite evident that dogs and cats are firmly established as part of our life styles. In the face of increasing anti-dog legislation, responsible dog ownership is essential. Don't select a breed just because it is popular. Look at adults as well as puppies. Consider how much grooming and training will be required. Try to pick a breed that will be a member of your family for its lifetime. Give it enough training to make it a canine good citizen. Unfortunately, animal shelters receive about as many purebreds as mixed breeds which have been "rejected." Don't contribute to the canine overpopulation problem.

## AKC Limited Registration

Limited Registration may be requested by the owner of the litter at birth. The registration certificate for such a dog carries notice of this limitation and any offspring cannot be registered with AKC. Also, the dog may not be entered in breed competition at a championship dog show. It may, however, be entered in Obedience Trials and Tracking Tests, as well as in licensed Field Trial and Hunting Tests.

Serious breeders are concerned about indiscriminate breeding and work toward improving breed characteristics and eliminating inherited defects. Litters are graded and some individuals are selected for showing and breeding while others are considered more suitable as companions. Puppy purchasers who have decided on a particular breed usually want "papers" as proof of the puppy's background. Limited registration would be used for these companion dogs. If, as the puppy matures, it can be considered a show prospect, the owner of the litter at birth may apply to AKC for removal of the limitation.

Most breeders cull litters. This may mean euthanizing puppies with deformities or to reduce the size of the litter. There will be puppies that are considered not quite good enough to be show and breeding quality. These are the companions that are candidates for limited registration. This gives the new owners assurance that they are getting purebred animals that are not the product of haphazard commercial operation. Except to an expert, these dogs are good examples of their breed.

## The Flea Tapeworm

Fleas serve as intermediate host of the common parasite of dogs and cats, *Dipylidium caninum*. This tapeworm also is found in many other carnivores (foxes, beavers, jungle cats, etc.) and its distribution is worldwide. The parasite can be transmitted to humans - most reported cases are in young children.

The infection is diagnosed by finding proglottids (tapeworm segments) in the stool. Motile segments may be seen on the hair coat or bedding or dried segments which resemble rice grains may be noticed. A fresh stool sample may be covered with motile proglottids which crawl away - they may not be seen in the sample presented to the veterinarian.

In dogs, the most commonly noted sign is irritation caused by passage of the segments, including constant rubbing of the perianal area and scooting. Usually the adult tapeworms in the intestinal tract produce no signs unless they are present in large numbers.

An adult tapeworm may be up to 70 cm. in length. The colex or holdfast is attached to the mucosa of the small intestine with 100 or more segments. The segments may be passed while the head remains attached. Gravid segments containing egg packets pass out with the feces. Eggs are eaten by flea larvae and complete their development in the adult flea. When the flea is eaten by the dog or other host, the adult tapeworm develops.

One drug of choice for treatment is praziquantel which causes the tapeworm to detach and disintegrate in the intestine. This drug requires a prescription. However, the control of fleas is important to prevent reinfection which results in what the owner may consider treatment failure.

Flea control requires treating both the animal and its environment. Consult your veterinarian about

this. Thorough cleaning of living quarters is essential. Vacuum cleaning helps disrupt the life cycle of the flea, but change the bag frequently - an adult flea may live more than a year. Complete eradication may be impossible but regular treatment of the animal, house and yard will help.

## Hypothyroidism

Hypothyroidism (reduced activity of the thyroid gland) is difficult to diagnose accurately. The use and interpretation of thyroid function tests is somewhat controversial. Clinical signs include abnormalities of the skin and haircoat. Hair loss without itching usually occurs. Desiccated thyroid and synthetic preparations are used for treatment. Most affected dogs show improvement after about a month or six weeks. It is reported that the use of thyroid hormone results in hair regrowth in some nontyroidal diseases.

The disease is reported more frequently in certain breeds of dogs and most cases occur in adults. Reproductive problems are another sign of hypothyroidism. These include absent or abnormal heat periods along with reduced conception rates. Weight gain and changes in behavior may be noticed.

The canine press recently has had numerous articles about the possibility of inherited thyroid deficiency and its relationship to a depressed immune system. This raises the question of whether or not an animal with a confirmed diagnosis of hypothyroidism should be used for breeding.

Many of the signs associated with thyroid deficiency may occur in other diseases. If the condition has been diagnosed correctly, treatment may be required for a lifetime.

## Book Review

*In the Spotlight, A Guide to Showing Pedigreed and Household Pet Cats*, by Carolyn M. Vella and John J. McGonagle, Jr. Howell Book House, 866 Third Avenue, New York, NY 10022. \$19.95.

This book covers all you need to know if you are interested in showing your cat. There is information about the major cat federations which register cats and sanction cat shows. These are the American Cat Fanciers' Association (ACFA), Cat Fanciers' Association (CFA), Cat Fanciers' Federation (CFF) and The International Cat Association (TICA). Each federation has a Standard of Perfection for the breeds it recognizes and makes its own rules governing activities. Cats may have titles from each federation. Complete information is given about registering cats and entering shows.

Preparation and grooming for a show is clearly explained. Bathing and drying the cat, cleaning the ears, removing tear stains from the eyes, tooth cleaning, clipping, combing and brushing are discussed. Important reminders include never using any product that has not been made specifically for cats and never using bleach or hair dye; this is not condoned by any cat federation.

Show awards are explained and there is an excellent glossary. A Kitten is under eight months old and at least four months old the day of the show. A Household Pet is a non-pedigreed cat usually required to be altered by a certain age. Premier refers to altered cats.

At a show, cats in competition are caged in the judging ring. The owner stays at ringside and the judge handles and places the cats, rating them against the Standard of Perfection for the breed.

This is a good reference book for any cat fancier, spectator or exhibitor.

# Rosettes & Ribbons

**Dr. Darryl N. Biery**, professor of radiology and Chief, Department of Clinical Studies (Philadelphia), was awarded the Distinguished Alumnus Award by The Animal Medical Center, New York.

The first Dr. Morris L. Ziskind Prize was awarded to **Cynthia DiBuono (V'92)**. The prize is given to the student with the highest combined grade in Poultry Medicine, Epidemiology, and Veterinary Public Health.

**Denise M. Atkinson (V'93)** was one of 27 veterinary students from the U.S. and Canada to receive a 1990 IAMS Veterinary Scholarship. The scholarships are awarded to promote excellence in the veterinary field. Participants were required to write an essay on "Canine Colitis: Etiology, Diagnosis and Clinical Management."

**Dr. Nancy O. Brown (V'73)** was presented the Practitioner Research Award by the AVMA at the Association's annual meeting in San Antonio, TX. The award is given annually to a practicing veterinarian in recognition of outstanding accomplishments in veterinary medical research.

**Dr. James G. Fox**, adjunct professor of comparative medicine, received the 13th Charles River Prize which is presented by the Charles River Foundation to a veterinarian selected by the AVMA in recognition of distinguished contributions to the field of laboratory animal science.

**Dr. Richard A. McFeely (V'61)**, professor of animal reproduction, has been appointed general campaign manager and vice president of the campaign for the 1990-91 Kennett Area United Fund Drive.

**Dr. Suzanne R. Jenkins (V'66)** was elected to the AVMA Council of Public Health and Regulatory Affairs.

**Dean Edwin J. Andrews (V'67)** has been elected to the AVMA Council on Research. He was also elected president-elect of the Association of American Veterinary Colleges. Dean Andrews participated in the Eleventh Symposium on Veterinary Medical Education at Auburn University in June. He was convener for the workshop "Faculty Research." The College of Physicians of Philadelphia elected Dr. Andrews a Fellow of the College.

**Dr. Sherbyn Ostrich (V'63)** has been appointed president of the AVMA Foundation.

**Dr. Gerhard Schad**, professor of parasitology, has been invited to participate in a SEAMEO-TROPED Seminar, held in November in Chiang Mai, Thailand. The topic of the three-day seminar will be "Emerging Problems in Food-Borne Parasite Zoonosis: Impact on Agriculture and Public Health."

**Dr. Janet Remetta (V'85)** has been elected to serve a second term as chairperson-elect of the New Jersey Health Products Council. The Council is a statewide nonprofit information and public affairs agency composed of New Jersey's major research-oriented health products companies.

**Dr. Robert A. Cook (V'80)** was appointed chief veterinarian of the New York Zoological Society.

**Roger Caras**, a member of the School's Board of Overseers, won an Emmy award for his 20/20 segment on wild horses.

**Dr. Urs Giger** was promoted to associate professor of medicine and medical genetics in Clinical Studies (Philadelphia). The Devon Rex Congress recently honored Dr. Giger for his research work on neonatal isoerythrolysis and spasticity. The organization presented him the "1990 Randy Award," which is given annually to an individual or organization contributing to the betterment of the Devon Rex breed.

**Dr. Edwin A. Churchill (V'41)** received a Distinguished Life Member award from the American Association of Equine Practitioners, the highest honor bestowed by the Association. Dr. Churchill served as president of the AAEP in 1958 and was a member of the organization's executive board. He has been an active member of the AAEP for 34 years and was recognized for his outstanding service to the Association and dedication to the veterinary profession.

At the recent ACVIM meeting in Washington, DC, **Dr. Jorg Bucheler** received the Smith-Kline-Beacham resident award for this presentation entitled "Transfusion of A and B blood in cats." Dr. Bucheler has been the Transfusion Medicine Fellow for the past year.

**Dr. Leslie Dierauf (V'74)** has been awarded the third AVMA Congressional Fellowship. Dr. Dierauf will begin her fellowship with an orientation at the American Association for the Advancement of Science in September. Then, she will interview for positions in Congressional offices.

**Dr. Edward Baker (V'48)** is the author of *Small Animal Allergy: A Practical Guide*. The book was published by Lea and Febiger.

**Dr. Robert R. Marshak**, professor of medicine, was inducted into the National Academy of Sciences' Institute of Medicine.

**Dr. Joan Hendricks (V'79)** has been promoted to associate professor of medicine. **Dr. Michael Goldschmidt** has been promoted to professor of pathology in pathobiology. **Dr. William A. Moyer** has been promoted to professor of sports medicine in Clinical Studies (NBC).

**Dr. Charles Curtis** has been appointed assistant professor of epidemiology in Clinical Studies (NBC), and **Dr. Phillip Scott** has been appointed assistant professor of parasitology in the department of pathobiology.

The following faculty members were reappointed: **Dr. David T. Galligan (V'81)** as assistant professor of animal health economics in Clinical Studies (NBC); **Dr. Raymond W. Sweeney (V'82)** as assistant professor of medicine in Clinical Studies (NBC); and **Dr. Elaine Watson** as assistant professor of reproduction in Clinical Studies (NBC).

**Dr. Michael S. Miller (V'79)** has co-authored the *Cardiology Pocket Reference* published by the American Animal Hospital Association. He gave a series of cardiology lectures at the 1990 AAHA annual meeting and Academy of Veterinary Cardiology meeting in San Francisco. Dr. Miller is co-authoring the chapter on Cardiac Electrophysiology in the upcoming edition of *Duke's Physiology* with **Dr. David Detweiler (V'42)** and **Dr. Larry Tilley**. Dr. Miller is vice president and board member of Cardiopet, Inc.

## Welcome

The new interns and residents at VHUP and New Bolton Center hail not only from the U.S. and Canada but also from overseas.

The interns at VHUP are: **Dr. Beth Ann Brockman**, University of Illinois, '90; **Dr. Ann Crump (V'90)**, **Dr. Karen Marie Fidell**, Michigan State University, '90; **Dr. Julie M. Heitzenrater (V'90)**; **Dr. Derek Hughes**, University of Liverpool, '90; **Dr. Jonathan Peres**, Koret School of Veterinary Medicine, '89; **Dr. Jill L. Robson**, University of Liverpool, '89; **Dr. Carl D. Sammarco**, University of Liverpool, '89; **Dr. Lauren E. Strine (V'90)**; **Dr. Patricia C. Walters (V'90)**; and **Dr. Caroline J. Zeiss**, University of Pretoria, '90.

The new residents at VHUP are: in laboratory animal medicine, **Dr. Joan Cole**, Purdue University, '77; **Dr. Larry Handt**, Michigan State University, '87; **Dr. Norman C. Peterson**, University of Illinois, '89; in surgery, **Dr. Daniel M. Brehm (V'89)**; **Dr. Catherine A. Popovitch**, University of Guelph, '89; in veterinary dentistry, **Dr. Paul G. Orsini**, N.Y. State Veterinary School/Cornell, '82; in emergency medicine, **Dr. Nishi Dhupa**, University of Nairobi, '86; **Dr. Robert Moreau**, University of California-Davis, '85; in radiology, **Dr. Pamela A. Green**, Ohio State University, '88; **Dr. Rosa Mendez-Angular**, University of Mexico, '81; in small animal medicine, **Dr. Christiaan Johannes Gelens**, University of Utrecht, '85; **Dr. Alan R. Klag**, University of Montreal, '87; in cardiology, **Dr. Maribeth Bossbaly (V'88)**.

At New Bolton **Dr. Alison Baldock (V'90)** is an intern in field service. **Dr. Abby Maxson (V'87)** and **Dr. Laura Reilly (V'89)** are residents in medicine. **Dr. Elizabeth Laws**, Tufts University, '89 and **Dr. Eric Parente**, New York State University/Cornell, '89 are residents in surgery. **Dr. Paul Kerns (V'79)** is the new resident in avian medicine and pathology. **Dr. Celeste Boatwright** and **Dr. Forrest Ross Rich** are junior surgery clinicians.

**Dr. Wolfgang Kaehn** is a visiting professor in large animal reproduction from the University of Munich. His primary interest is neonatal medicine and he is here to work in the new neonatal unit at NBC.

**Dr. Monika Griot-Went** from the University of Berne is the new fellow in Dr. Giger's NIH-funded Transfusion Medicine Academic Award Program.

## Scholarships

**Mrs. Jack L. Billhardt** has established two term dean's scholarships which will be funded for five years. The Mrs. Jack L. Billhardt Term Dean's Scholars increase the number of Dean's Scholars at the School to twelve.

**Margaret Lackey** is the recipient of a scholarship from the Ty Cobb Educational Foundation. The Dog Writers' Educational Trust awarded a scholarship to **Susan M. Spilker**. The New Jersey Veterinary Education Foundation awarded five individual scholarship grants to students here. The recipients are: **Mary Lou Ciccone**, **Robin Pullen**, **Kenneth Turner**, **Pamela Bendorck**, and **Tiffany Bogart**. **Christopher Smith** is the recipient of a scholarship awarded by the South Windsor College Scholarship Organization, a chapter of The Citizens Scholarship Foundation, South Windsor, CT. The Clark Foundation awarded a scholarship to **Nancy Lee Pugh**. **Natalie N. Daniels** is the recipient of a scholarship awarded by the Pocono Mountain Kennel Club. Somerset Newspapers, Inc. has awarded a scholarship to **Lori Bason**.

# How to Build an 800 Year-Old Egg; With Apologies to the Chinese

The events in the Persian Gulf in August were a dramatic reminder that we inhabit an unpredictable and, sometimes politically unstable, world. These events, coming on the heels of the changes in Eastern Europe and the Soviet Union, the savings and loan debacle, and the environmental crisis, force us to pause, reflect, and wonder whether anything will remain constant.

In this time of change, we remind ourselves that although our world is often a difficult, tumultuous place, many strong anchors exist that provide sustenance, solace, and hope. For example, in the Western world, forty-four institutions exist that are more than 800 years old. Three of them — the British Parliament, the Catholic Church, and the monarchy of Denmark — are obviously significant entities both historically and in the contemporary world.

The other forty-one institutions are colleges and universities! Places of scholarship, learning, exploration, debate, and sharing of ideas; places of permanence.

The University of Pennsylvania School of Veterinary Medicine is the second oldest existing veterinary institution in the United States. During its 106-year history, it has been a distinguished center of teaching, research, and service. Although the School does not yet approach an 800-year history, it strives to be a long-term actor and participant on the constantly changing stage of veterinary medicine.

To achieve a reputation for permanence, substantial professional accomplishment, and recognition as the best requires investment in people. The School is committed to attracting and retaining the best people to work, teach, investigate, learn, and serve. To constantly fulfill this goal requires partnerships between people. Whether these partnerships are with corporations, foundations, or private persons, they ultimately depend on individuals who identify with the vision for the School and give of themselves for its future.

This relationship takes many forms: those who provide their time and energy as volunteer ambassadors, advisors, and spokesmen; those who introduce and educate their friends and clients to the School's mission; and those who contribute financial resources to fuel new achievements.

A number of individuals have helped advance the School through financial investments in permanent, living arrangements that support people. These legacies provide scholarships, fellowships, program funds, and professorships; they are created through such vehicles as direct cash or stock donations, bequests, charitable trusts, gifts of real estate or life insurance, and other assets. The key element that distinguishes these gifts is the donor's commitment to a permanent endowment and desire to be associated forever with the School.

The desires to build, to make a difference, to leave an indelible mark of distinction, to give life to a vision are the motives for these extraordinary commitments.

And these opportunities are available to everyone, individuals of any means, not just those fortunate to possess great wealth. The School welcomes your interest to help build an 800 year-old nest egg, an institution of permanence and achievement within veterinary medicine.

For more information about how you can help, please call the Development Office at (215) 898-1480.



The Doppler Echocardiography Unit at VHUP was upgraded to include Color Doppler Echocardiography. Shown here are Mr. Bruno Ferrari whose gift to the School made possible this enhancement of the machine, Dr. James W. Buchanan, professor and chief of cardiology, Dean Edwin J. Andrews, and Dr. David Knight, professor of cardiology. Mr. Ferrari made the gift in memory of his dog "Pepe" and the heart-shaped plaque on the unit reads: "Echocardiography Unit dedicated in memory of 'Pepe' by his best friend Bruno Ferrari."

## Canine Symposium

The 21st Annual Symposium, Your Veterinarian and Your Dogs, will be held January 26, 1991 at the Veterinary Hospital of the University of Pennsylvania in Philadelphia.

The day-long event begins at 9:30 a.m. and features four speakers. Dr. Donald F. Patterson will discuss "Control of Genetic Diseases in the Dog." "Common Eye Problems Important to Dog Owners and Breeders" will be the topic of Dr. Steven Gross. Dr. David Holt will speak on "Gastric Dilatation Volvulus" and Ms. Donna Oakley will discuss the "The Blood Bank and the Blood Donor Program" at Penn's Veterinary School.

The \$45 fee includes lunch and parking. Reservations are required and can be made by contacting Dr. M. Josephine Deubler, VHUP, 3850 Spruce Street, Philadelphia, PA 19104 Tel.: (215) 898-8862.



## Continuing Education for Practitioners

DATE	COURSE	LOCATION
Oct. 30 & Oct. 31	Records - The Pulse of Production Medicine	New Bolton Center
Nov. 7 & 8	Equine Emergency Medicine	New Bolton Center
Nov. 29	Endodontic Disease and Techniques	VHUP
Jan. 9	Small Animal Spinal Neurosurgery	VHUP
Jan. 23 & 24	Penn Annual Conference	Adams Mark Hotel, Philadelphia
Feb. 13	Surgical Approaches to the Bones and Joints of Dogs	VHUP
Feb. 20	Small Animal non-plating Orthopaedics Laboratory	VHUP
Mar. 6	Small Animal Dermatology	VHUP
Mar. 20	A Special Presentation for Western Pennsylvania Practitioners: Small Animal Oral and Dental Disease; Large Animal Oral and Dental Disease; Endodontic and Restorative Procedures; Surgery of the Upper Airway in the Horse.	Meadville, PA

For additional information and registration applications please contact the Office of Continuing Education, School of Veterinary Medicine, 3800 Spruce Street, Philadelphia, PA 19104, Tel.: (215) 898-1882.

# Bellwether 29

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