"If we cut our expenses by one penny per cow per day, we can save $1,500 a year," said Sam Shotzberger, manager of Landhope Farm in Kennett Square, PA. Actually, Shotzberger has been able to save a lot more, thanks to the Production Medicine Services offered by the University of Pennsylvania's Center for Animal Health and Productivity at the Veterinary School's New Bolton Center campus.

"Fifty to 60 percent of the value of milk is in feed costs," said Drs. David Galligan and James Ferguson of the Section of Animal Health Economics and Nutrition. "And as the price of milk drops, keeping the feed costs in line becomes more critical." Dr. Galligan, Dr. Ferguson and other colleagues of the Center have developed a number of computer programs that help producers make better decisions. One program, DAIRVLP, written in Lotus 1-2-3, allows precise calculations of nutritional value of rations, calculations of the cost if ingredients are changed or substituted, and formulation of the most economical feeding program to meet the nutritional requirements of a herd. The program takes into consideration the lactation stage of the various production groups within the herd, allowing to feed for optimal economic production. The spreadsheet is interactive, thus the veterinarian can assess different feeding programs and calculate costs rapidly.

Since utilizing the Production Medicine Services, supervised by Dr. Ferguson, Shotzberger has reduced the feed costs on his 400 cow herd by about $1,600 a month, about 15 percent. Milk production has gone up and the cows are healthier. The Landhope herd is kept in large open barns in separate groups, divided according to production. Cows receive a total mixed ration formulated according to each group's needs. A large shed holds mounds of cottonseed, soy meal, distiller's grains. Silage is stored near-by in trenches and the barn is used to store the minerals and other ingredients. Seven different components make up the ration and the farm personal mixes 10 different rations daily for the various members of the herd. The farm uses approximately 20 tons of feed a month. Training the personnel to mix these rations properly is an important part of the successful implementation of the program. To that end, Dr. Ferguson has worked with Shotzberger and given brief presentations to the farm personnel on a routine basis.

Various herd and management problems along with their potential solutions are discussed at these meetings.

At the farm of Steven L. Stoltzfus 40 cows are kept in an enclosed barn and a stanchion feeding system is used. The 14 draft horses are in stalls near-by. Stoltzfus, an Amish farmer, has been working with
Dear Friends:

The dust has finally settled on the State budget. The School of Veterinary Medicine was most fortunate in having the Governor’s recommended cut of some $6.9 million restored, but we did not obtain an increase over our fiscal year 1990-91 appropriation. While the restoration is good news, the lack of an adequate increase has forced us to further staff reductions by some 20 positions. Unfortunately, a continued lack of funding increases will shortly place the School in an untenable position.

I thank all of our readers who contacted the legislature and Governor’s office on our behalf. Your help plus that of our agricultural constituencies, alumni, students and their parents certainly provided an awareness of the School’s importance.

Included in this issue of the Bellwether are the summarized results of an important economic impact study. As you will see, the School of Veterinary Medicine represents far more to the Commonwealth of Pennsylvania than an intellectual resource. Our value to this great State and its citizens can be quantitated and defined in terms that everyone understands — dollars.

We are proud of our intellectual strength in research, teaching, and service, but we are equally proud of being a strong economic force throughout the State of Pennsylvania.

Sincerely,

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

Dedication of Bruce J. Heim Antique Furniture Collection

The Bruce J. Heim Antique Furniture Collection was dedicated on June 21, 1991 at New Bolton Center. The tenant house there is home to the collection, donated to the School in memory of Bruce J. Heim and his beloved golden retriever, Pete, by the Bruce J. Heim Foundation. Two rooms from Mr. Heim’s home in Basking Ridge, New Jersey, were designed and recreated for the New Bolton Center location by his long-time friend, Mr. Daniel Mullay, to provide a permanent setting for the classic examples of English furniture.

New Bolton Center, synonymous with superb veterinary care for large animals, provides a fitting backdrop for this fine collection assembled by Bruce J. Heim, a man devoted to animals and deeply committed to furthering the education of young people. Mr. Heim endowed the first two Dean’s Scholarships at the Veterinary School.

The dedication was attended by Mrs. Barbara Pailet, executive director of the Bruce J. Heim Foundation, and board members Daniel Mullay, Jim Cunningham and Tom Hutton. Also present were two Bruce J. Heim Dean’s Scholars, Dr. Barbara Vail, V’91 and Dr. Kirk Smith, V’91.

Dean Andrews and Mrs. Barbara Pailet unveiling the plaque identifying the collection.

Charles S. Wolf Honored

Charles S. Wolf, the chairman of the School’s Board of Overseers for 25 years and a trustee emeritus of the University, was awarded an honorary degree by the University. Following is the citation:

“A double alumnus of the Wharton School, and a member of Penn’s basketball team in your student days, you went forth to conquer the world as a successful industrialist and community leader, and came home to stay when you were elected a Trustee of the University of Pennsylvania over twenty years ago, and harnessed to serve as Chairman of Overseers of the School of Veterinary Medicine.

Demanding of others no more than the hard work you put in yourself, you are an ideal boss as well as sought-after volunteer. Preferring involvement to standing on the sidelines, you nonetheless think long and hard before taking action, and your wise and inspirational leadership and analytical consideration have benefited three presidents as well as three deans at Penn. Believing that “free enterprise depends on free education,” with a voice that is heeded on the Commonwealth front, you have brought your sage and courtly counsel to bear in the State, as at the University of Pennsylvania. A pragmatic and successful man of business, you have long been an eloquent and heeded advocate for the liberal arts.

President and CEO of York Container Company, president of trustees of York College, past president and director of institutions in that locale from the orchestra to the YMCA, you are a fitting recipient of the Duke of York Award of the York Chamber of Commerce. Grateful to you for your spurring them to ever greater heights from the top of your particular hill - Mount Wolf - your colleagues and fellow Trustees at the University of Pennsylvania celebrate you, Charles Samuel Wolf, a friend trusted and true, and red and blue. Adding their acclaim for your magnanimous generosity with your time and treasure, they take pride and pleasure in presenting you, along with warmest wishes on a significant birthday, with their medal and their preference, the honorary degree, Doctor of Laws.”

From left to right: Mrs. Barbara Pailet, Mr. Daniel Mullay, Dr. Barbara Vail, Dr. Kirk Smith, Mr. Tom Hutton and Mr. Jim Cunningham.
A study by KPMG Peat Marwick concludes that the University of Pennsylvania's School of Veterinary Medicine contributes more than $1 billion and nearly 2,000 jobs to the Commonwealth's economy.

These are the highlights of the study commissioned by the School as part of its long-range planning program. The study portrays the School as a major contributor to Pennsylvania's and the nation's agricultural and biomedical industries in three major areas:

- Manpower: through the training of highly qualified practitioners, specialists and biomedical scientists to meet present and future needs of the agriculture and biomedical industries; and through providing quality continuing education programs for practicing veterinarians.
- Economic development: by providing unique programs and outreach from the Center for Animal Health and Productivity; and by delivering highly specialized veterinary medical services.
- Research/technology transfer: by creating new knowledge through basic and applied biomedical research, including behavioral research, comparative medicine and public health.

KPMG Peat Marwick describes the School as a recognized world leader, not only in veterinary medicine and education, but in the furtherance of biomedical research. Its faculty are in demand as speakers at international conferences and their calibre is further recognized in the large number of endowed professorships at the School.

For more than a century, says the study, the School has led the way in improving the health, productivity, and economics of food-producing animals. It was the first to use tuberculin to control bovine disease; today, researchers are studying Johnne's Disease and Salmonella enteritidis while others are developing recombinant vaccines against a multitude of animal diseases.

Ongoing research promises future benefits in the fields of biotechnology and aquaculture and in the prevention and treatment of diseases potentially affecting about 80 million Americans and having an estimated market value of $70 billion annually.

"Such research breakthroughs will contribute to improved human health and prevention of disease," states the study.

The Commonwealth of Pennsylvania has historically recognized the importance of the Veterinary School to the agricultural industry in the State. It currently appropriates $15 million to support the teaching, research, diagnostic, and treatment activities of the School. This amounts to a third of the School's current operating budget, proportionately far less than state support to land-grant veterinary schools across the nation which receive up to 50 percent of their operating budgets from their states.

By almost any measure one chooses, the return on the State's investment is enormous. The following is a detailed breakdown of the economic impact of the Veterinary School on the economy of Pennsylvania.

### The Veterinary School's Economic Impact on the Commonwealth

#### Total Impact

The School's impact of more than $1 billion on the economy of Pennsylvania is both direct and indirect. The direct impact is the total dollar value of school-related expenditures in specific geographic areas; the indirect impact is the additional spending and jobs created by the recycling of those original school-related expenditures in the economy.

#### Source

- School-related expenditures
- Teaching
- Research
- New Bolton Center Services

#### Cumulative Expenditures by Geographic Region

- Philadelphia: $20.6 M
- 5 County Area: $39.5 M
- Pennsylvania: $63.6 M
- Total U.S.: $93.6 M

#### Multiplier Effect: The total economic impact of the School-related expenditures is $93.6 million in Pennsylvania.

<table>
<thead>
<tr>
<th>Geographic Region</th>
<th>Income Multiplier</th>
<th>Employment Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philadelphia</td>
<td>1.716</td>
<td>2.212</td>
</tr>
<tr>
<td>5 County Area</td>
<td>1.2491</td>
<td>1.5291</td>
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<tr>
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<td>1.063</td>
<td>1.253</td>
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<tr>
<td>United States</td>
<td>1.036</td>
<td>1.208</td>
</tr>
</tbody>
</table>

#### Technology Transfer Impact: The School's teaching, research and service activities have a potential economic impact of $914 million in Pennsylvania.

#### Sample Potential Impacts

- Enhanced human income and expenditures ($140 million in US; $42 million in PA)
- Food animal health and productivity ($168 million potential in US; $714 million potential in PA)
- New veterinary products ($14 million potential in US)
- New Bolton Center services ($203 million in US; $153 million in PA)

(continued on page 4)
The Use of Animal Models Assists Researchers in Today's Scientific Discovery

The use of animal models in biomedical research is critical for continued progress to combat disease and to discover new and better treatments for existing illness and conditions. The vast majority of scientists and researchers involved in medical exploration agree that without the use of animal models, major medical advances would not have been achieved nor would current research techniques be available.

To solve health problems, researchers must have scientific data that is relevant to the human condition. Data from human experiments is the most scientifically relative. But such experimentation, in many cases, is ethically unacceptable. Few people would offer themselves or a family member as the first subject of research to understand and cure diseases such as AIDS or Alzheimer’s. The U.S. Government requires that most safety testing be designed and based on results of animal experimentation and a knowledge of the history of the disease or condition under study. After humans, animals offer the most accurate means to assess human biological reactions and responses. Nonanimal research models are used in research labs across the country whenever possible. Biological models such as cell and tissue cultures, and nonbiological techniques such as mathematical and computer modeling, are used where appropriate. However, since these methods cannot mimic all the complicated interactions that occur in humans or animals, animal testing is still necessary. Knowledge gained from animal research has helped scientists develop many adjunct techniques that are reducing the numbers of animals required.

Impact Study continued from page 3

Activity Impact: Food production research reduces farmers’ losses and increases their output.

Activity: Food Supply Productivity Research

Research Products: Prevention and treatment of diseases and disorders impairing the productivity of the food industry

Economic Impact: $17.7 billion in losses can be avoided or productivity gained in the United States agriculture industry ($174.5 million in Pennsylvania).

Activity Impact: As a result of the School’s teaching activities, its alumni increase their earning power.

Activity: Teaching Product

Research Products: Additional $104 million expended in the national economy per year. On average ($41.6 million in the Commonwealth of Pennsylvania)

Economic Impact: Food biotechnology industries in the United States and in Pennsylvania.

Activity Impact: The School’s services offered through New Bolton Center treat over 24,700 large animals, reducing economic losses.

Activity: Service Products

Research Products: Nearly 8,700 horses, 14,300 cattle and 1,700 other valuable animals treated

Economic Impact: Approximately $239.2 million in losses avoided annually (approximately $157.6 million in Pennsylvania)

The Role of Animals in Current Research and Testing

Biomedical research with animals has four major goals:

- To provide biological knowledge upon which disease prevention can be based;
- To provide models for the study of naturally occurring diseases of humans and animals;
- To test potential therapies, diagnostic and surgical procedures, and medical devices;
- To study the safety and efficacy of new drugs or to determine the potential toxicity of chemicals to which animals will be exposed.

Researchers must understand the biology and physiology of higher organisms before they can make advances in the treatment and prevention of disease. Animal models provide information on the mechanisms of disease and an organism’s own defensive response. Scientists study animal models for clues as to how the disease is transmitted and how genetic susceptibility and other factors may predispose an individual to disease. In the case of infectious disease, scientists attempt to isolate the disease-causing agent in the affected animals as the first step toward development of a vaccine.

Data from animal studies is essential before new therapeutic techniques and surgical procedures can be tested on patients. Researchers must use animal models to develop and refine techniques to determine if the techniques will achieve their purpose without risking harm to the patient. Animals also allow one to measure a drug’s beneficial or harmful effects on organs and tissue. Moreover, data documenting efficacy and safety is required by the Food and Drug Administration (FDA) before a new drug is approved for testing in clinical trials on humans. Such testing remains the best predictor of adverse risks such as cancer, reproductive disorders and birth defects.

Two of the most controversial tests are the Lethal Dose 50 (LD50) and Draize tests. The LD50 test provides data on how toxic a substance is by determining the dose needed to kill 50 percent of a test group of rodents. The classical LD50 test using large numbers of animals is rarely used today. The maximum tolerable dose is important information for some cancer chemotherapeutic agents where the clinically effective dose is near the lethal dose. The doses that animals tolerate on an acute basis provide information for risk assessment and also determine doses for further studies. Many toxicologists believe that fewer animals can be used to achieve sufficient data, and work is being done to develop nonanimal methods.

There are two Draize tests: one for the eye and one for the skin. The Draize eye irritation test measures how safe a substance is to the eye by putting drops of a substance on rabbits’ eyes. While modifications of this test and alternatives are being explored, many scientists and the FDA believe that this is still one of the best predictors of the effects a chemical would have on the human eye. The skin test is performed in a similar fashion, by exposing a chemical substance to an animal’s skin to measure possible irritancy.

Duplication and Validation of Research

Both government and private research institutions practice stringent review processes when approving research projects because of concern for the number of animals used and because of the cost of research. Experts review research proposals to measure the importance of a project, its scientific merit, the competence and the appropriateness of research models.

NIH, the major single source of funding for U.S. biomedical research, requires each grant application to include a bibliography of all relevant scientific literature to avoid unnecessary duplication of research. The cost of research plays a significant role in deciding appropriate ventures. The NIH, for example, is able to fund only about one-third of all research proposals judged worthy of support, and
therefore selects projects which will have the most impact on human and animal health. Similar research guidelines are used at pharmaceutical companies and universities.

The Salk Institute in LaJolla, CA, one of the world's premier research organizations, is one of many facilities with stringent research guidelines. The facility depends upon animal research for current work on AIDS, cancer, and Alzheimer's disease. According to Dr. Kenneth Kilvington, assistant to the president at the institute, scientists must submit detailed research plans to the institute's animal welfare committee for project approval.

"It is the responsibility of this committee to consider the validity of the argument for the necessity of using animals, the number of animals needed, and whether alternatives exist to be used, as well as treatment before and after the procedures, in accordance with government guidelines and the principles of humane treatment," he said. "Animals are never the first choice as subjects for research. Scientists at the institute use the most modern methods available for biomedical research, and when possible conduct their research with the aid of computer simulations of biological systems and cells grown in vitro.

The most recent amendments to the AWA address animal care and use committee oversight of animal programs. Research facilities have established animal care committees to review laboratory animal care and use issues, including the researchers' consideration of alternatives and the appropriate animal welfare aspects of research procedures. This concept has been a long-standing prerequisite by AAALAC for accreditation.

AAALAC, formed in 1965 and based in Bethesda, MD, is an independent, non-profit organization which offers a peer review accreditation program for facilities accredited by the FDA. The AAALAC's executive director of the organization, said the 540 facilities approved by AAALAC point to the concern the biomedical community has for maintaining quality animal care and use.

The AAALAC peer review program is an effective quality control measure, he said. "Accreditation also conveys a 'Gold Standard,' an important criterion for credibility with the public at large. The highly regarded AAALAC Accreditation Program is voluntary, but has teeth. It is AAALAC's intent to work with institutions to improve and maintain quality animal programs. However, institutions that do not conform with AAALAC criteria are denied accreditation, allowed to withdraw, or revoked from AAALAC accreditation. Less than 1 percent of the programs evaluated by AAALAC fall into this category."

Animals and Research Statistics

- There are approximately 56 million cats and 54 million dogs in the U.S.
- It is estimated that every hour more than 2,000 dogs and 3,500 cats are born.
- Animal shelters take in 16.7 to 27 million dogs and cats annually.
- Between 10.1 and 16.7 million dogs and cats are put to death in pounds and shelters annually because they were not claimed by owners nor adopted.
- Approximately 1.1 percent of the dogs and cats from pounds and shelters, that would otherwise be euthanized, are adopted by new homes.
- Rats, mice, and other rodents comprise 85 to 90 percent of all research animals.
- Only 1.5 percent of all research animals are dogs, and 0.5 percent are nonhuman primates.
- There has been a 40 percent decrease in the number of animals used in biomedical research in the U.S. since 1968.
- Approximately 17 million to 22 million animals are used in research each year.

(Source: The American Humane Association, USDA, Foundation for Biomedical Research, Newsweek)

"The Three R's" and Trends in Alternatives

Most research organizations and scientists are following a practice known as the "Three R's," which stands for replacement, reduction and refinement.

Replacement refers to the use of nonanimal techniques instead of animal models or a lower species of animal when possible. For example, rabbits are no longer used for preclinical safety testing, and some preliminary drug toxicity testing can be done using cell cultures, rather than animal species.

Reduction refers to areas where the number of animals used can be reduced. The number of animals used in acute toxicity testing is being reduced as scientists have discovered ways to obtain accurate toxicity data using fewer animals. In addition,
Feline Reaction Patterns

Dr. Karen Kuhl, a resident in dermatology, discussed feline skin disorders and how these various diseases are manifested by different skin reaction patterns. Dr. Kuhl stated that while many disorders have specific patterns and can be identified fairly easily, it is not enough to make the diagnosis and treat the animal to relieve discomfort; the veterinarian must look further to determine the underlying cause of the skin disease to prevent its recurrence.

The most common skin disorder in cats is eosinophilic granuloma complex which is divided into three groups: indolent ulcer (rodent ulcer, eosinophilic ulcer); eosinophilic plaque; and linear granuloma. The indolent ulcer appears as a red ulcerative lesion on the upper lip. In many cases the area involved may be small and the animal may not be bothered by it. However, the lesion can become very ulcerated and invasive, and then it needs to be biopsied to rule out squamous cell carcinoma. Most indolent ulcers are due to allergies, either to fleas, food, or inhalants. There is evidence that some cats may have an inherited predisposition to the disease.

Eosinophilic plaque manifests itself by red, raised, ulcerated lesions on the abdomen, inner thighs, or under the tail. The cat itches and excuses itself while grooming. In most cases the disease is due to allergies, however, deep fungal infections and neoplasia need also be considered in these cases. Therefore, depending on the history, biopsies for histopathological examination may be warranted.

Linear granulomas cause raised yellowish-red linear, sticky lesions, most commonly on the back of the rear legs. This is a collagenotic granuloma which also is sometimes lower lip swelling and a swollen chin. It is most often caused by allergies.

Some cats can have more than one form of eosinophilic granuloma at the same time. For many years, these lesions were treated with steroids without looking for the cause. Now veterinarians can perform appropriate testing, discern which allergy is the most likely cause, and save the cat from a lifetime of steroid use.

Feline feline dermatitis, another common skin disorder, generally consists of multiple, small (miliary) crusts and papules (red, raised bumps) on the back, but occasionally extending to the neck and head. These lesions usually itch. The complex is easy to diagnose, but the most difficult problem is to determine the underlying cause which can be allergies to fleas, food, or inhalants (most common); bacterial infection, fungal infection, mites, and other ectoparasites, drug reactions, autoimmune disease, and unknown causes. Dr. Kuhl stressed that appropriate diagnostics should be performed to avoid having to treat the cat with steroids for the rest of its life.

There are a number of other skin diseases. Allergies, ringworm, demodecs, and rarely, psychogenic causes, are the culprits in "bald belly syndrome" where the cat excessively grooms its abdomen, destroying the haircoat. If the cat has a bare belly with no hair stubble, it may have feline endocrine-dependent alopecia. Bald belly syndrome is seen more frequently in Abyssinians and Siamese and may be due to psychogenic causes in these breeds as they are quite high strung.

Facial dermatitis can often be quite unsightly as the cat scratches excessively at its head and neck, creating lesions that are ulcerated and encrusted. This disorder is often the result of food allergies, however, ear mites, flea or inhalant allergies, notoedrectes, and pseudodermatitis may also be underlying causes. A history will give the veterinarian a clue; if the animal shows crustng first, then the most likely cause is autoimmune disease; if the animal scratched and then crusts appeared, the cause is most likely allergic. The problem generally begins around the eyes and in front of the ears.

When trying to determine the underlying cause of skin problems, the veterinarian needs the owner's help. Many questions will be asked: has it been a seasonal problem? Is this animal allergic to food? Are any other animals in the household affected? This would indicate ear mites; flea allergy, or notoedrice mange; did the lesions come first or did the itch come first; where on the body did the problem manifest itself first; what medications were used in the cat's treatment and how did it respond? Dr. Kuhl then discussed a number of diagnostic procedures available. Skin scrapings are needed to look for demodeces, notoedrectes or cheyletiellea. Fungal cultures are necessary to diagnose ringworm. Blood tests are needed to determine the animal's general health. Feline leukemia and feline immunodeficiency status should be determined as these two disorders may make the animal more susceptible to skin disorders. If a food allergy is suspected, a food diet may be tried to identify the offending food component. To determine whether the cat is allergic to certain inhalant substances, intradermal allergy testing can be performed. Skin biopsies for histopathological examination are another diagnostic tool.

Once the underlying cause of the skin condition has been found it can be treated. By far the most common cause of allergy is a flea bite allergy. Here it becomes important to not only treat the cat but also its environment. Dr. Kuhl stressed that fleas spend very little time on the cat and most of their time in the room in cracks, under the furniture, in the carpet, etc. Because many granulomas are frequently, evidence of fleas is rarely found on the animal.

Dr. Kuhl discussed a number of chemicals used for flea control and stressed that cats are very sensitive. Thus it is important to read the labels and check for ingredients. Pyrethrons and pyrethroids (e.g., permethrin, tetramethrin, allethrin, resmethrin) are usually quite safe. These chemicals kill fleas and repel them, though they lose effectiveness in about 48 hours. Some sprays contain piperonyl butoxide, a synergist which works with the pyrethroids to kill fleas more effectively. It can be toxic to cats at levels of greater than 1.5%. It also may cause drooling at lower levels. Another synergist, N-octylbicyclohexanol is added to increase the incidence of side effects and is often used with piperonyl butoxide so that a lower concentration of piperonyl butoxide may be used. Organophosphates should be avoided. There has been a report of neurologic problems developing after a cat was dipped with a dip containing d-limonene, therefore citrus extract dips should be avoided.

Flea-fighting products come in many forms. Sprays may be water or alcohol based. Water-based sprays are less expensive and kill the fleas at a slower rate. Alcohol-based sprays dry quickly and kill fleas quickly, but should not be used if the cat has an open wound. Also, animals must be kept away from an open flame. Because cats do not like to be sprayed, Dr. Kuhl recommended that owners purchase a brush with which each cat can be brushed. It is then brushed into the hair coat. She also cautioned that nursing kittens should not be completely sprayed, only small amounts of the chemical should be dabbed on the back. Organophosphates or carbamates should not be used on kittens, only pyrethrins or pyrethroids.

Flea dips tend to be more toxic than sprays, especially for cats. Shampoos kill fleas but have no residual effect. Dr. Kuhl recommends the use of flea control, but are not as easy or cosmetically appealing. Dr. Kuhl strongly recommended against the use of systemic drugs, which are usually organophosphates and which are not licensed for use in cats.

The most important part of combating fleas is treatment of the environment. The room, carpeting, and furniture have to be thoroughly vacuumed. Bedding needs to be washed and dried on a high heat setting. Then the area should be sprayed, even under the furniture. Floors should be allowed to dry before the animal comes back into the room.

Inhalant allergy is treated with a vaccine that hypoallerginizes the animal. These injections can be given at home.

Ringworm is highly contagious and all cats in the household must be treated, even if they do not show signs of the disease. Treatment is with topical dips and/or oral antifungals. All cats should be completely clipped before dipping, including the whiskers. This decreases the risk of contaminating the environment and recontaminating the cat. The dips vary greatly in their protocols and may be used once or twice weekly. The oral antifungals require close monitoring by the veterinarian. One of these cannot be used in pregnant queens as it causes birth defects. The environment must be thoroughly vacuumed and all bedding, brushes, combs and the like must be destroyed. Heating and cooling vents should be cleaned and disinfected. Kittens should not be sold until two negative fungal cultures are obtained.

Pet Loss: Losing a Member of the Family—What it is all About

In 1977 the University of Pennsylvania School of Veterinary Medicine entered into a joint project with the University's Graduate School of Social Work. After a careful evaluation of the needs of the hospital, a full-time social worker was hired to counsel clients whose pets were seriously ill or dying. The idea of having someone work with and be available to upset pet owners originated at the University of Pennsylvania. Since then, the concept of pet bereavement counseling has spread to other veterinary schools and clinics.

Kathleen Dunn, M.S.W., the current full-time social worker at the Veterinary Hospital of the University of Pennsylvania (VHUP), discussed pet loss. "Pets provide unconditional love. They take on many roles in a person's life, they can be a companion, a buddy, a best friend, a child, a sister or brother. A pet is always there to love us and greet us. When a strong attachment forms between the owner and the animal, the pet becomes a person and a part of the family."

People want the longest possible life for their pets; in fact, we would love our pets to live forever. Often, when an animal is brought to VHUP, it is because it has life-threatening disease. Ms. Dunn is
available, with the veterinarian, to help the upset owner at this very stressful time. "It is very difficult for the attached pet owner to make a decision if euthanasia is recommended because the animal's quality of life is poor," she said. "Because of attachment and bonding to the animal most owners feel very guilty. The sentence I hear over and over is: 'I feel as though I am putting a member of my family to sleep. Intellectually I know the animal is suffering, but emotionally this is very difficult to do.' It is here that the role of the veterinarian becomes very important. He or she has to understand the emotional pain the owner is suffering at this time and has to understand the pet owner's concerns. Ms. Dunn explained that owners cope in different ways with euthanasia of the pet. Some take the animal home and have their veterinarian come to the house, feeling it least stressful on the animal. Some have the animal euthanized here at VHUP - wanting the vet who took care of it to do it, and often owners want to be with their pet and hold it while the drug is injected, saying 'my pet has always been there for me. I can't leave it at a time like this.' "We try to accommodate the client and the pet as much as possible," she said, "we respect the relationship the owner has had with the pet." Ms. Dunn explained that in the owner's grieving process the disposition of the pet's body is an important issue. "There are several options: owners can take the body back to bury on their property, or they can have the animal interred in a pet cemetery, or VHUP can arrange for individual cremation where the ashes will be returned to the owner. The cremation process costs $125. We can also arrange for communal cremation, but then no ashes will be returned." Each pet owner feels differently, and individual wishes are an important consideration.

Ms. Dunn said that it is vital to the owner to be able to talk about the pet and the disposition of the body. "People will tell me that they want the ashes because the ashes remain a bond to have to talk to their animal. Others want the ashes buried with them, and this can be arranged with their family. Others will scatter the ashes in a park or at the pet's favorite play area." All this is part of the grieving process. Ms. Dunn explained the phases of grieving, such as anger and guilt. "People are often angry at themselves, they feel that they may have taken the animal to the vet early enough, for example," she said. "They may also be angry at the surviving animals. People can be very irrational for the first 24 hours after a pet's death and it is important that they express their feelings: they will be calmer after the outburst." When a beloved pet dies, people go through a mourning and grieving process and are often surprised at the emotional reaction they are having - e.g. crying, sadness, and depression.

Guil is another emotion that surfaces early in the grieving process. "People will ponder whether they were responsible for the illness or death because they forgot to give medication once or twice, or because they ignored some minor instructions from the vet," she said. "I try to tell the students that owners may call repeatedly after a pet's death asking the veterinarian questions as to whether they were indirectly responsible. This is very important and the veterinarian must be understanding." Most often the calls come from very responsible owners who are feeling guilty and need reassurance they did everything possible for their deceased pet. The stress people are experiencing can be very intense.

Grief affects people differently. Some may not be able to eat, sleep or maintain normal activities, but emotionally this is very difficult to do." It is here that the role of the veterinarian becomes very important. He or she has to understand the emotional pain the owner is suffering at this time and has to understand the pet owner's concerns. Ms. Dunn explained that owners cope in different ways with euthanasia of the pet. Some take the animal home and have their veterinarian come to the house, feeling it least stressful on the animal. Some have the animal euthanized here at VHUP - wanting the vet who took care of it to do it, and often owners want to be with their pet and hold it while the drug is injected, saying 'my pet has always been there for me. I can't leave it at a time like this,' "We try to accommodate the client and the pet as much as possible," she said, "we respect the relationship the owner has had with the pet." Ms. Dunn explained that in the owner's grieving process the disposition of the pet's body is an important issue. "There are several options: owners can take the body back to bury on their property, or they can have the animal interred in a pet cemetery, or VHUP can arrange for individual cremation where the ashes will be returned to the owner. The cremation process costs $125. We can also arrange for communal cremation, but then no ashes will be returned." Each pet owner feels differently, and individual wishes are an important consideration.

Ms. Dunn said that it is vital to the owner to be able to talk about the pet and the disposition of the body. "People will tell me that they want the ashes because the ashes remain a bond to have to talk to their animal. Others want the ashes buried with them, and this can be arranged with their family. Others will scatter the ashes in a park or at the pet's favorite play area." All this is part of the grieving process. Ms. Dunn explained the phases of grieving, such as anger and guilt. "People are often angry at themselves, they feel that they may have taken the animal to the vet early enough, for example," she said. "They may also be angry at the surviving animals. People can be very irrational for the first 24 hours after a pet's death and it is important that they express their feelings: they will be calmer after the outburst." When a beloved pet dies, people go through a mourning and grieving process and are often surprised at the emotional reaction they are having - e.g. crying, sadness, and depression.

Ultrasound Imaging of Abdominal Disorders

Ultrasound, a relatively new technology in veterinary medicine, is a valuable diagnostic tool for the examination of soft tissues and organs in the abdomen. Dr. Mark Saunders, assistant professor of radiology, gave an overview.

"Abdominal ultrasound is an additional diagnostic modality available to the veterinarian, said Dr. Saunders. "It is often used to clarify an abnormality seen on a radiograph. In addition, we can use ultrasound to biopsy or aspirate masses as we can guide the needle to an exact location."

It is a form of non-invasive imaging. Sound waves above the frequency limits of human hearing, ranging from 2 to 10 Megahertz, are emitted from a transducer placed on the skin. These varying amounts and strength of sound waves are reflected back to the transducer from different tissue and an image is generated and displayed on a screen. The ultrasonic waves emitted from the transducer into the tissue gradually lose their strength with depth of penetration. The amount of sound absorption is directly proportional to the frequency of the sound. High frequency sound, because of higher tissue absorption, cannot penetrate as deeply into tissue. For this reason, high frequency ultrasound is used to examine superficial structures, and lower frequencies must be used for scanning deeper tissue. Ultrasound cannot penetrate bone or air.

VHUP's ultrasound equipment is quite sophisticated and provides detailed images. The ultrasonic transducer has an array of transducers emitting varying frequencies; the image can be frozen, it can be measured and calculations can be performed by the built-in computer and everything can be recorded on tape and a photographic negative with cross-sectional representations of anatomy taken in various planes. By imaging the internal architecture of organs, ultrasound differs from radiographs which depict only the silhouette of an organ.

For an ultrasound exam the animal generally does not have to be sedated. "Animals are placed on their side on the table, " explained Dr. Saunders. "The abdomen has been clipped to allow for better contact with the transducer, and a water gel is rubbed into the skin which is then coated with ultrasound gel. A gel is rubbed on the skin. Most animals relax and some go to sleep during the exam."

In a complete ultrasound exam of the abdomen takes about 30 minutes but don't just zero in on one organ but examine the entire abdomen. Often abnormalities are found that no one suspected."

Each organ presents a specific ultrasound appearance and the radiologist is able to diagnose disorders in the organ by changes in the amount of sound reflected, depending on the disease. For example, a healthy liver has a certain echogenicity (reflectivity), if the liver has a lot of fatty tissue, the echogenicity changes. "In a majority of cases, the ultrasonographic abnormalities seen in an organ are not specific for a certain disease," said Dr. Saunders. "But when these abnormalities are integrated with the history, physical examination findings, radiographic abnormalities and laboratory results we can be more specific about the disease process. In some cases biopsy of the organ or mass is needed for a definitive diagnosis.

Structural abnormalities of the following abdominal organs can be evaluated by ultrasound: liver and gall bladder, spleen, pancreas, stomach, intestines, kidneys, bladder, prostate gland, uterus, testes, adrenal glands and major blood vessels. These structural abnormalities may be caused by infection, tumors, cysts or obstructive processes.

Ultrasound is also used to examine the heart. VHUP's cardiology department has a sophisticated Doppler echocardiography unit which provides color images and allows for a detailed, non-invasive examination of the organ.
Treatment of Canine Osteosarcoma

Each year about 10,000 dogs in the United States, mostly of the large and giant breeds, are diagnosed with osteosarcoma (OSA), a painful bone tumor. This disease also occurs in humans, though not in such high numbers. Osteosarcoma in dogs affects primarily the long bones of the leg, but can affect bones of the spine, skull, or ribs.

"Over the last 10 years there have been major advances in treatment of this disease in both species," said Dr. M. Joy Weinstein, assistant professor of surgery at Penn's School of Veterinary Medicine. "But treatment protocols are still needed. Therapy for osteosarcoma of long bones includes amputation with or without chemotherapy, or limb-sparing surgery and chemotherapy. Limb-sparing surgery involves removal of the primary tumor while preserving the limb through use of a bone graft or a prosthesis. Two chemotherapy drugs that appear to be most effective in this disease are Adriamycin and cisplatin. Unfortunately, at this point in time, we cannot cure the disease, but we can give the dog a good quality of life for a number of months or years."

Dr. Weinstein, who returned to Penn after surgical specialty training at Tufts University School of Veterinary Medicine, is conducting a study assessing perioperative and postoperative treatment of OSA by administering Adriamycin and cisplatin concurrently. "These drugs usually are used alone or alternated to reduce the growth of metastases. By administering them together we hope to achieve an additive effect."

Osteosarcoma in dogs frequently manifests itself as a limp; the dog is in pain and often refuses to use the leg. Radiographs reveal a bone tumor at the end of the long bone of the leg, either front or rear. When the tumor comes to the veterinarian, the tumor has already spread through microscopic lesions to other parts of the body, primarily the lung," said Dr. Weinstein. "If we amputate the leg and give no other treatment, the median survival time is about 18 weeks, though some dogs (10 percent) live more than a year. If the animal is treated with chemotherapy, either cisplatin or Adriamycin, the median survival time increases to about 40-45 weeks, with nearly 50% of the dogs living more than a year."

Amputation of the affected limb is Dr. Weinstein's preferred surgical treatment. "It relieves the pain, the dog can get around quite well on three legs," she explained. "Most dogs walk one day after surgery and need exercise restrictions for only about two weeks." An alternative to amputation is limb-sparing surgery. She recommends this treatment for dogs that would not get around well on three legs or those cases where an owner cannot accept amputation as an option for the dog. Here the tumor and the affected section of bone are removed, and a bone graft is used to replace the missing bone. The graft can be donor bone which has been frozen and stored, but infections are common with this method.

Dr. Mark Cofone and Dr. David Diefenderfer have used autogenous or allogenic bone as the graft. Small amounts of the soft bone from the marrow cavity of the dog's own shoulder (proximal humerus), pelvis (iliac) or knee (proximal tibia) are used to replace the diseased bone. Plates and screws hold the bones in their proper orientation. It is complicated surgery and the time period until the bone graft has healed may be several months. Limb-sparing surgery is most successful for tumors of the distal radius (lower forearm) because the carpal joint (wrist) can be fused without problems.

Previously described chemotherapy treatment protocols for OSA incorporate cisplatin and/or Adriamycin, usually given at three week intervals. The drugs are administered intravenously. They are both potent drugs that act on cell division. Adriamycin prevents DNA from replicating, thus slowing the growth of metastatized tumors. Cisplatin also affects the DNA, binding to it, crosslinking the strands. Both drugs affect other rapidly growing cells in the body, such as bone marrow cells and intestinal cells. Side effects are often minimal, but can include decreased appetite, gastrointestinal upset, bone marrow suppression, kidney problems, or heart problems.

Dr. Weinstein proposes to use the two drugs concurrently, administering therapeutic doses of cisplatin and slightly lower doses of Adriamycin to further slow down metastatic tumor growth. Preliminary studies have shown encouraging results, four dogs treated are doing well six to ten months after treatment. She proposes to use the drugs perioperatively, beginning two weeks after surgery, in one group of patients for a total of three cycles, three weeks apart. In another group of patients, the first dose of drugs will be administered perioperatively, within 24 hours after surgery, followed by two additional treatments three weeks apart. "Studies in humans and rodents have shown that there is rapid growth of metastatic lesions in these species following surgical excision of primary tumors," she said. "Studies in laboratory animal tumor models show that administration of perioperative chemotherapy prevents a rapid growth phase in metastatic lesions following removal of the primary tumor." Dr. Weinstein explained that perioperative chemotherapy is not routinely administered to humans with the disease due to fear of postoperative surgical wound complications, such as infections and delayed wound healing. "Our previous results administering pre-, perioperative and postoperative Adriamycin to dogs with osteosarcoma do not support high wound complication rates. We hope to document improved survival rates for patients treated with perioperative chemotherapy; this would advance canine osteosarcoma treatment and might also encourage similar studies in human patients with the disease."

Osteosarcoma in people is a disease of teenagers and young adults. In dogs it affects primarily middle-aged animals, though it does occur in dogs under two years of age and in elderly dogs. Canine osteosarcoma may serve as a model for human osteosarcoma to chemotherapy will be investigated. The researchers hope to expand the project so that they can evaluate different clinical protocols in dogs with osteosarcoma and assess prognostic indicators and chemosensitivity assays to predict differences in the response to treatment.

Dr. Weinstein is currently searching for funding for the chemotherapy study from private sources or foundations to support the costs of the drugs. Without that support, chemotherapy drugs cost about $2,000 per patient. If support can be found, these costs to the clients will decrease considerably. Dr. Weinstein is also looking for candidates for the treatment and she hopes that veterinarians with osteosarcoma patients will refer them to the Veterinary Hospital of the University of Pennsylvania.

Dr. Weinstein graduated from the University of Pennsylvania School of Veterinary Medicine in 1983; she completed a surgery residency at Tufts University School of Veterinary Medicine and Angell Memorial Animal Hospital; and became an instructor in surgery at Tufts. She completed a research fellowship at Massachusetts General Hospital where she worked in the laboratory of Dr. Henry Mankin, a pioneering researcher in bone cancer in people.

Merck Supports Laboratory Animal Medicine Training

Merck Sharp & Dohme Research Laboratories Division of Merck & Co., Inc. has provided a postdoctoral fellowship grant in Laboratory Animal Medicine at the University of Pennsylvania. This program is being directed by Dr. Laurence Handl, a 1987 veterinary graduate of Michigan State University, who has been selected as the first recipient of the grant and is now in the first year of the program. The laboratory animal medicine program has been in existence since 1987 at the University of Pennsylvania. It is a three-year program combining a residency in laboratory animal medicine with a master's degree in a related scientific discipline. Individuals enrolled in this program also complete a one-month rotation in the Department of Laboratory Animal Resources at Merck's West Point, PA facility. This program is designed to develop competence in biomedical research and laboratory animal medicine, and prepare candidates for the American College of Laboratory Animal Medicine board certification. This joint effort of Merck and the University of Pennsylvania is an example of the growing trend in the business sector providing financial assistance to foster advanced training in scientific disciplines.
Dr. Galligan for more than a year. He has a ration sheet and feeds each cow individually according to her production. The rations formulated for his farm save him about $400 to $500 a month. Dr. Galligan visits the farm periodically to check and to revise the feeding program and to discuss other herd related problems that might arise.

The interactive computer program has five subunits: 1. a nutrient requirement section; 2. a feed bank section that stores the current composition of available feed; 3. a computational section where rations are evaluated or formulated; 4. a feeding recipe section, which displays or prints grain mix, mineral mix, total mixed ration, or stanchion bar recommendations; and 5. a comparative economic evaluator, which ranks feeds by a nutritional cost and benefits algorithm.

"We can select up to 12 fixed feed ingredients from a bank of up to 100 feeds," explained Dr. Galligan. "The basis of selection is farm availability and nutrient constraints. Selected variables ingredients are used to balance the ration for dry matter, feed energy, crude protein, bypass protein, soluble protein, acid detergent fiber, and neutral detergent fiber. Calcium and phosphorus are balanced using a combination of mineral sources.

Trace minerals that are either custom formulated or selected from a bank of proprietary supplements on the basis of limited trace elements in the ration.

The spreadsheet allows individual calculations for the various components. "We can determine what kind of hay to feed if soy meal is high in price," said Dr. Galligan. "If soy meal is low in price, then it will make up a greater part of the ration and the farmer can use first-cutting hay which does not have that great a nutrient value. However, if soy meal is expensive, then we could increase the ration formula and recommend that high quality hay be used." This kind of ration formulation requires that farmers change their habits. It is used to be that hay was fed in reverse order of harvesting, meaning that the last cut hay was fed first. Now, Dr. Galligan recommends that the cuttings be stored separately so the hay can be accurately matched to the other feed ingredients to provide the proper nutrition for the least price.

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Dr. Ray Sweeney, V’82, assistant professor of medicine, received the 1991 Lindback Award for Distinguished Teaching from the University's most prestigious teaching award.

Dr. Robert Kenney, professor of animal reproduction, is the eighth recipient of the David E. Bartlett Award. This award, sponsored jointly by the Society for Theriogenology and the American College of Theriogenologists, honors a distinguished theriogenologist who has made important contributions to the field. The award was presented at the annual conference of the organizations, held in August in San Diego. Dr. Kenney delivered the David E. Bartlett Honorary Address, entitled “Thirty-seven Years Working with Cattle, Horses and Other Creatures.” What do the Thirty-seven Years Hold?”

Dr. Gary Raiczik, V’84, was named Veterinarian of the Year by The Jersey Shore Veterinary Medical Association for her work on hyperkalemia periodic paralysis. Dr. Raiczik divides his time between the School and the New Jersey Department of Agriculture on behalf of the Pennsylvania Poultry Federation. Dr. Eckroade reviewed the unresolved scientific issues regarding Salmonella enteritidis and the logistical problem of testing large numbers of poultry houses.

Dr. Donald Abt, V’63, presented a lecture, Aquaculture in the U.S. - Where is it Going?, at the New York Farmers dinner in New York.

Dr. Robert S. Hoge, V’55, was awarded the 1991 Charles E. Bild Practitioner of the Year Award by the American Animal Hospital Association. It is the highest award given by the association. Dr. Hoge was honored for his many contributions to the veterinary profession.

Dr. Stuart Wiles, V’60, was featured in People Magazine in May. Dr. Wiles is commissioner of laboratory animals for Cambridge, MA.

Dr. Ralph E. Werner, V’68, received Distinguished Service Awards from the New Jersey Veterinary Medical Association and the Atlantic City Police K-9 unit.

Dr. Harry A. Reynolds, V’56, retired from the University of Illinois College of Veterinary Medicine faculty after 25 years of service.

Dr. David H. Nunemaker, V’68, Jacques Jenny Professor of Orthopedic Surgery, has been appointed to the Scientific Committee of the Grayson Foundation.

Dr. Dean Richardson, assistant professor of surgery, received a grant from the Grayson Foundation for a study, The Biochemistry and Morphology of Equine Articular Cartilage in Degenerative Joint Disease and their Relationship to Subchondral Bone Stiffness. The foundation also awarded a grant to Dr. Eric Tulleners, associate professor of surgery, for his study, Partial Arthrodesis in the Horse using an Extra-Laryngeal Approach.

Dr. Kenneth Bovee, Corinne R. and Henry Bower Professor of Medicine, Dr. Joan Hendricks, V’79, associate professor of medicine, Dr. Meryl Littman, V’78, associate professor of medicine, Dr. Richard Squires, lecturer in medicine, and Dr. Sheldon Steinberg, V’59, professor of neurology, presented scientific papers at the meeting of the International Biochemistry Congress.

Dr. John Simms, V’74, has been appointed for a three-year term to the Small Business/ Agriculture Committee of the American Veterinary Medical Association in Washington, D.C., and to the American Veterinary Medical Association in Denver, CO.

Dr. Leslie Dierau, V’74, has accepted an official staff position with the House Committee on Merchant Marine and Fisheries.

Dr. Adrian Morrison, professor of anatomy, has been appointed to the newly formed editorial board of the journal, Sleep, and to the International Advisory Board of the Journal of Sleep Research, which is published by the European Sleep Research Society. He is currently on leave of absence while he serves as director, Office of Animal Research Issues, Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) at NIH.

The School’s Center for Animal Health and Productivity was well represented at the 1991 Annual Meeting of the American Dairy Science Association in Logan, UT, in August. Dr. James Ferguson, assistant professor of nutrition, delivered an invited paper in the Borden, Inc. Symposium on Protein. Twelve abstracts were presented by Dr. Linda Baker, a graduate student. Dr. William Chalupa, professor of nutrition, Dr. Ferguson, Dr. David Galligan, associate professor of animal health economics, and Dr. Paul Pitcher, a graduate student. Drs. Baker, Chalupa, Ferguson and Galligan also participated in the annual meeting of the American Association of Bovine Practitioners in Orlando, FL, in September. The group gave three different two-day seminars for practitioners.

Dr. Kirk N. Gelatt, V’65, received the 1991 Cycles Fido Award through the AVMA “for work in clinical research or basic sciences that has contributed significantly to the advancement of small animal medicine and surgery.” Dr. Gelatt is considered a premier researcher and educator in the field of glaucoma.

Dr. Darryl Biery, professor of radiology, and Dr. Marc Sanders, professor of radiology, presented scientific papers at the Ninth Meeting of the International Veterinary Radiology Association (IVRA), held in Yeldehoven, The Netherlands, in August. Dr. Biery was re-elected IVRA director for North America and appointed chairman of the organizing committee for the next international meeting. The Tenth IVRA meeting will be co-hosted by the University of Pennsylvania and the American College of Veterinary Radiology in Philadelphia in the summer of 1994.

Dr. Samuel Chacko, professor of pathology, spent three weeks in Leningrad in July at the USSR Academy of Science Institute of Cytology where he did a collaborative study with Russian muscle biologists. He then returned to present a paper at the International Biochemistry Congress.

Dr. Virginia Reed, assistant professor of medicine, received one of the 1991 Samuel F. Scheidt Memorial Awards. The awards were established in 1984 by a grant from SmithKline Beecham to encourage participation in international scientific affairs and to support travel by AVMA member veterinarians to the World Veterinary Congress.

The School was well represented at the meeting of the American College of Veterinary Internal Medicine in New Orleans in May. Papers were presented by: Dr. James Buchanan, professor of cardiology, Dr. Urs Giger, Dr. Monika Gritz-Wenk, Dr. David H. Knight, professor of cardiology, Dr. Meryl Littman, Dr. Virginia Reif, Dr. Michael Rosenzweig, Dr. Richard Squires, Dr. Corinne Sweeney, assistant professor of medicine, Dr. Wendy Vaula, V’80, assistant professor of medicine/neurology, and Dr. Robert Washabaugh, V’80, assistant professor of surgery.

Dr. Dolores Holle, V’81, was appointed attending veterinarian and director of canine health management for The Seeing Eye, Inc., Morristown, NJ.

Dr. Karen Overall, V’83, lecturer in behavior, made a presentation to veterinarians and veterinary technicians at the annual meeting of the Morris Animal Foundation in Denver in June.
Dr. Mary Beth Callan, V'88, is the new transfusion medicine fellow.

Dr. Bruce Madewell, V'70, received a grant from the Morris Animal Foundation to study genetic changes in dogs with cancer. Dr. Madewell is with the University of California School of Veterinary Medicine at Davis.

Sherby Ostich, V'63, has been elected chairman of the executive board of the AVMA.

Carla Cheiffo, V'86, has received a two-year postdoctoral NIH fellowship.

Dean Edwin J. Andrews, V'67, testified before the Labor, Health, and Human Services and Education subcommittee of the House Committee on Appropriations. Andrews informed veterinary medicine's views concerning programs administered by the National Institutes of Health. Andrews was the moderator of a program, The Communication of Animal Welfare and Rights, at the AVMA meeting in Seattle. In July he assumed the presidency of the Association of Veterinary Medical Colleges and he serves as secretary of the National Association of State Universities and Land Grant Colleges Commission on Veterinary Medicine. Andrews, another program at the AAUV Symposium on Public and Corporate Veterinary Practice.

Ziskind Prize Awarded

Joseph Sito, V'93, is the recipient of the Dr. Morris L. Ziskind Prize. The prize was established by Dr. Ziskind, V'51, to reward the outstanding veterinary student receiving the highest combined grade in Poultry Medicine, Epidemiology, and Public Health.

Scholarships

Lynne Mazzone, V'93, and Kenneth Turner, V'92, were named the first Lois F. Fairchild Scholarships in Veterinary Public Health. John Moore, V'92, received the Westminster Kennel Club Scholarship. The Clark Foundation of Cooperstown, NY awarded a scholarship to Joshua Clay, V'93. Six students received educational grants from the American Kennel Club: Gillian R. Gibson, V'94, Amy Hollengren, V'93, Arthur Jankowski, V'94, Lynne Mazzone, V'93, Susan Volh, V'95, and Noelle Weeks, V'95. Ms. Mannoni also won a scholarship last semester from the Association for Women Veterinarians and she was named a 1991 Regional Jams Veterinary Scholarship Award recipient.

The New Jersey Veterinary Education Foundation awarded scholarship grants to Pamela Bendock, V'92, Tiffany Bogari, V'92, Mary Lou Ciccone, V'92, John Price, V'93, Robin Pulten, V'92, and Kenneth Turner, V'92. Ms. Bendock also received a scholarship from the Union County K.C. Sharon Lachette, V'92, is the recipient of a scholarship from the Mid-Susquehanna K.C. The Lancaster K.C. awarded scholarships last semester to Julie A. Norton, V'91, Frederick M. Rock, V'91, and Lisa A. Ruth, V'94.

Patricia M. Hogan, V'92, is the recipient of a scholarship from the Amian Foundation. Linda Casper, V'92, Cynthia DiBuono, V'92, Erin Hannabach, V'92, and Lori Ludwig, V'92, each received a Sailsbury scholarship. Jay Jasan, V'93, received a scholarship from the Animal Hospital. Ann E. Baslin, V'93, received a scholarship from the Meeting House Charter Chapter of the American Business Women's Association. Maureen Firth, V'93, was awarded a scholarship by the Maine Rehabilitation Fund Scholarship Committee.

Teaching Awards

The ballroom at the Hotel du Pont in Wilmington was filled to capacity for the Annual Student Government Dinner Dance on April 14. Centerpiece of the evening was the presentation of the 1991 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. Mark Haskins, assistant professor of pathology, was the recipient of the Class of 1994 Teaching Award. The Class of 1993 presented its award to Dr. Thomas Van Winkle, assistant professor of pathology. Dr. Charles Reid, professor of radiology, received the Class of 1992 Teaching Award. The Class of 1991 presented its award to Dr. Lesley King, lecturer in medicine. The 1991 Student Government Teaching Awards were also presented to Donna Oakley, head nurse, VHUP; Dr. Beth Ann Brockman, an intern at VHUP; and to Dr. Marjan Govers, a resident at VHUP.

Dr. Deborah G. Gillette, assistant professor of pathology, was the recipient of the Norden Faculty Teaching Award. Dr. John H. Wolfe, assistant professor of pathology and medical genetics, received the Beecham Research Award. The Dr. Jules Silver Bedside Manner Award was presented to Dr. Brockman. Dr. Celeste Walworth, junior surgery clinician, received the William B. Boucher Award for Outstanding Teaching at New Bolton Center by a House Officer. The Iams Small Animal Clinic Award was presented to Dr. Beth Callan, resident in medicine. The Resident's Award for Outstanding Faculty Teaching by a Member Faculty was presented to Dr. Robert Wassabah, assistant professor of medicine. The evening was supported by the following benefactors: Hills Pet Products, The Upjohn Company, Veterinary Medical Student Government, SCAVMA, Peterson Imaging, Inc., and ANAQUEST.

Veterinarians and Wildlife Experts Train Arab Wildlife Rescue Workers

The massive oil spills in the Persian Gulf early this year endangered many birds, marine mammals, and fish. A United Nations-sponsored six-member team, three veterinarians, two wildlife specialists and a bird specialist, was brought to Bahrain in May to help train wildlife workers to cope with the great influx of animals injured by the oil. The team was assembled by Tri-State Bird Rescue and Research, Inc. of Wilmington, DE, a group with a strong reputation for successfully rehabilitating oiled birds. Included Dr. Greg Bossart, V'78, the veterinarian at Miami Seaquarium, Dr. Josh Dein, V'80, U.S. Fish and Wildlife Service Wildlife Health Laboratory (Madison, WI), Dr. Virginia Pierce, V'87, director of the Laboratory of Pathology, Philadelphia Zoo, Lynne Finck, president, TSBRR, Jane Dalton, Dr. John Finch, assistant curator of birds at the Philadelphia Zoo. To provide additional expertise, a multi-national Oil Spill Support Team was organized. Its 14 members are experts in such fields as research chemistry, veterinary medicine, wildlife biology, animal nutrition, aviculture, rehabilitation, fish biology and fisheries biology and medicine. Three members of that team are School alumni, Dr. Leslie Diefendorf, V'74, Dr. Susan Donoghue, V'76, and Dr. Julia Langenberg, V'79.

The five-day workshop in Bahrain attracted 45 participants from Oman, Qatar, Saudi Arabia, Egypt, and Bahrain. "We were thoroughly impressed with the level of environmental awareness among the Arabs, and the enthusiasm with which they approached each topic we presented," said Dr. Pierce. "We feel confident that the programs that are developed as a result of the workshop will be staffed by competent and enthusiastic nationals with some expatriate consultants providing needed expertise, at least in the initial stages."

The workshop covered a wide variety of topics, including human health and safety, protection of vulnerable habitats, deterrent methods (to try to prevent birds from becoming oiled), field retrieval methods, the general characteristics of birds and special notes on the birds and vulnerable habitat of the Persian Gulf. The team also extensively covered aspects of medical and rehabilitative care of oiled animals, necropsy techniques, and how to design, staff, and operate a rehabilitative facility during an oil spill. Dr. Bossart gave detailed lectures on the behavior and management of oiled-injured sea turtles, dolphins and dugongs. In addition to lectures, the team provided two afternoon hands-on training sessions in bird handling, medical evaluation, and necropsy procedures.

The team also visited the Wildlife Rescue Center in Jubayl, Saudi Arabia, which was established in January in response to the oil spill. "On January 26 the Saudis were faced with a daunting task," said Dr. Pierce. "One of the largest oil spills on record in the face of a war, with no established rehabilitation facility, no staff trained in oiled animal rehabilitation, and having to deal with two of the most difficult bird species - cormorants and grebes. With temporary assistance from the British RSPCA and a Dutch expert team sponsored by the European Community, the center handled 70 to 100 birds a day during January and managed an approximately 40% release rate."

During ceremonies in Washington D.C. on June 5 the team was recognized along with the U.S. Marines for their contributions to the efforts of the Wildlife Rescue Center in Jubayl.
Echinococcus

The parasites commonly found in fecal examinations of dogs and cats are Roundworms (Ascaris), Whipworms (Trichuris), Tapeworms (Dipylidium caninum and Taenia), and Toxocara (Echinococcus multilocularis). It has been reported in north-central United States and central Canada. Foxes and coyotes are the common definitive hosts, but dogs and cats are also known to become infected by ingesting eggs passed in the feces. Infected dogs and cats can also transmit the disease to humans in a variety of ways, including by ingestion of raw meat or by respiratory inhalation of eggs in the environment.

**Pet Population Control**

The overpopulation of unwanted dogs and cats is a serious and complex problem. Considerable guerilla work is used to estimate the number of dogs and cats in the United States. Projections indicate that the dog and cat population will increase by about one million each year. It is obvious that purebreds are a minority.

**Book Review**


This book, with its most interesting illustrations, shows that cats are intelligent, sentient, and capable of expressing a unique set of emotions. It explores ways to raise and train cats properly, evaluate their intelligence and enhance their potentials.

Some statements from the text — “Cats send a variety of messages through unexpressible body language. The household cat’s ability to manipulate humans has been perfected over centuries. In most cases, when a cat wants to be picked up and petted, it is going to be picked up and petted! A cat’s facial expression will vary considerably based on changes in mood. The most common are solid, enlarged, and dilated pupils. Rubbing against a person is a cat’s way of showing affection for a human. It also allows the opportunity to scent mark that person. It is universally accepted that purring is a sign of feline contentment — other cat sounds are described. A cat’s sense of smell is guessed to be a hundred thousand times more proficient than ours.”

The three critical factors in raising a “supercat” are early socialization, early handling, and environmental enrichment. Kittens that grow up together provide social enrichment and companionship for one another. The ideal situation is to raise one of each sex together.

Lionhairs were developed by man and require human assistance with their grooming. The question of whether or not pet cats should be allowed outdoors will always be a subject of controversy. Giving a tomcat access to the outdoors exposes him to disease and danger and allows him to father numerous unwanted kittens and kill a variety of birds and small mammals.


Dogs are living longer today. A recent study shows that after weaning (infancy is the greatest danger period), the average life span has increased from 5.1 years to 8.7 years. After the first birthday, the life expectancy is twelve years. The Guinness Book of World Records (1990) lists an Australian cattle dog named Bluey as the record holder for canine longevity, at twenty-nine years, five months. Bluey worked as a stock dog for nearly twenty years!

The opening words, “Old dogs, like old shoes, are comfortable. They may be a bit out of shape and a little worn around the edges, but they suit well. Older friends know and accept our idiosyncrasies and our imperfections. And old dogs are the best friends. They not only accept us as we are, they don’t offer advice or criticism. The elderly pet makes few demands upon us and is usually happy to simply curl up by our feet.”

The book has numerous anecdotes, stresses the importance of providing for animals in emergencies, discusses rescue operations, has information on care and treatment of the problems and diseases of aging, and has an excellent chapter on dealing with bereavement.

If your dog is a member of your family, you will enjoy this book.

**V.M.D. or D.V.M.**

There are 27 Colleges of Veterinary Medicine in the United States which are accredited by the American Veterinary Medical Association. Of these, 26 award a D.V.M. Only the University of Pennsylvania grants a V.M.D. (Veterinariae Medicinae Doctoris) degree.

The University of Pennsylvania graduates can be recognized by their degree. Through 1991, the V.M.D. has been awarded to 4,702 graduates (1,011 women and 3,691 men), beginning with the first class in 1887.

To be grammatically correct, if “Dr.” is used before a name, the academic degree is not included after the name. It should be Dr. John Doe, or John Doe, V.M.D., never John Doe, D.V.M. Veterinarian is a noun, veterinary is an adjective. There is a veterinary school, not a veterinary school.
Legislators' Day 1991

A group of Pennsylvania legislators visited New Bolton Center in May for tours of the facility and presentations by faculty members.

Canine Symposium

The Twenty-second annual symposium, Your Veterinarian and Your Dogs, will be held on Saturday, January 25, 1992 at the Veterinary Hospital of the University of Pennsylvania in Philadelphia. The day-long event will consist of four presentations:

- Vaccinations: The Good and the Bad - Dr. Peter Jezek
- Diagnostic Screening and Prevention of Heartworm - Dr. David Knight
- Diagnosis of Allergic Diseases and Clinical Manifestations of Thyroid Disease - Dr. Robert Schwartzman
- Common Parasites of Canines and Their Control - Dr. Thomas Nolan

The cost of the program, including lunch and parking, is $45. Reservations are required and can be made by contacting Dr. M. Josephine Deubler, VHUP, 3850 Spruce Street, Philadelphia, PA 19104 (215) 898-8662.

Veterinary and Comparative Pathology Symposium

Dr. Michael Goldschmidt, associate professor of pathology, organized the 15th Annual Symposium on Veterinary and Comparative Pathology, held in June at the Marine Biology Laboratory in Woods, MA. The program was cosponsored by the School’s Department of Pathobiology and the Continuing Education Division of the C.L. Davis D.V.M. Foundation. In addition to Dr. Goldschmidt, the following faculty members made presentations:

- Dr. Gustavo Aguirre, professor of ophthalmology
- Dr. Robert Bullis, researcher associate in microbiology
- Dr. Mark Haskins, associate professor of pathology
- Dr. Mattie Hendrick, assistant professor of pathology
- Dr. Alan Kelly, professor of pathology
- Dr. Tom Van Winkle, assistant professor of pathology
- Dr. John Wolfe, assistant professor of pathology and medical genetics

Colloquium on Domestic Animal Cytogenetics and Gene Mapping

The Seventh North American Colloquium on Domestic Animal Cytogenetics and Gene Mapping was held at the School in July. Organized by Dr. Richard A. McFeeley, professor of animal reproduction, the colloquium was attended by an international group of cytogeneticists. Dr. Ralph L. Brinster, Richard King Mellon Professor of Reproductive Physiology, and Dr. Donald F. Patterson, Charlotte Newton Sheppard Professor of Medicine, each led a plenary session.

Course on Transport of Fresh Cooled Equine Semen

A one-day seminar on Transport of Fresh Cooled Stallion Semen will be offered to veterinarians and farm managers on November 22, 1991 at the Georgia and Philip Hofmann Research Center for Animal Reproduction at New Bolton Center, the large animal facility of the University of Pennsylvania School of Veterinary Medicine. The course, taught by members of the Section of Reproduction, will encompass the veterinary, technical, and business aspects of developing a successful program for transporting fresh cooled equine semen. Both stallion and mare management will be covered in the morning lectures and afternoon laboratory sessions.

International Workshop

The First International Workshop on Erection and Ejaculation in Horses and Men was held in September at New Bolton Center. Organized by Dr. Sue McDonnell, research assistant professor of reproduction, and funded by the Dorothy Russell Havemeyer Foundation, this is the first of an expected series of workshops on erection and/or ejaculation for review of current knowledge, consideration of future comparative research, and planning of continued interaction. The participating physicians and veterinarians came not only from the United States but also from Germany and Poland.

Dr. William Medway Honored

At the 1991 Annual Meeting of the International Association for Aquatic Animal Medicine (IAAAM) held in Marineland, Florida from May 12 through 16, Dr. William Medway was designated an Honorary Life Member for his many contributions on behalf of the association and the field of aquatic animal medicine. Dr. Medway, Professor Emeritus of Clinical Laboratory Medicine, is only the fourth member of the association to be so honored. He is both a founding member and a past president of the IAAAM.

The announcement was made during the conference banquet and took the form of a “roast” by former students representing the entire span of his career on the faculty of the Veterinary School. His “oldest” student, Donald A. Abt ‘61, initiated the “roast” and then turned the microphone over to the other conference participants gathered to pay tribute to Dr. Medway. They were John C. “Ray” Sweeney ‘71, J. Lawrence Dunn ‘73, Leslie A. Dierauf ‘74, Richard H. Lamberton ‘79, Paul F. Calle ‘78, Robert W. Ulbrich V’86, Gregory A. Lewbart ‘88, Howard N. Krum ‘92 and Roy P.E. Yanong ‘92. A whale sculpture suitably engraved is being prepared for Dr. Medway. Naturally, he offered an appropriate rebuttal to his former students when they had finished their versions of his teaching and research career.

Dr. Medway presently serves as one of nine members of the Marine Mammal Commission’s Committee of Scientific Advisors, a committee of scientists statutorily required to be knowledgeable in marine ecology and marine mammal affairs, who advise the Marine Mammal Commission on pertinent marine mammal issues.

From left to right: Dr. Medway, Dr. Abt, Dr. Ulbrich, Dr. Sweeney and Dr. Dunn.

Mr. and Mrs. Jack Billhardt and Martha Rogers, V’92, one of the three Mrs. Jack L. Billhardt Dean’s Scholars.
Alumni Day 1991

Alumni Day 1991 was a family affair with a clown for the youngsters, carriage and hayrides, and a side saddle riding demonstration by Mrs. Jack Bregman and Mrs. John Rotelli, Jr. More than 200 people attended the event at New Bolton Center.

In the morning the official business of the Veterinary Medical Alumni Society was conducted and the Alumni Awards of Merit were presented. Dr. Michael Ratner, V'59, passed the gavel of office to Dr. Jack Bregman, V'66, and introduced the officers and members of the board. They are:

- Dr. Jack Bregman, V'66, President
- Dr. Daniel D. Bleicher, V'53, President-Elect and Vice Chair, Liaison Committee
- Dr. Michael P. Ratner, V'59, Past President and Chair, Awards and Nominating Committees

**Members-at-Large**

- Dr. Malcolm Borthwick, Jr., V'69
- Dr. Pierre A. Conti, V'60
- Dr. Richard Derstine, V'57
- Dr. Diane R. Eigner, V'80, Benjamin Franklin Society Chair and Phonathon Co-Chair
- Dr. John R.S. Fisher, V'61
- Dr. George L. Harsenstein IV, V'68, Liaison - NBC
- Dr. Seth A. Koch, V'65, Annual Giving Co-Chair and Phonathon Co-Chair
- Dr. Edgar R. Marookian, V'54
- Dr. Sidney L. Mellman, V'49
- Dr. Pat A. Picone, V'78, Annual Giving Co-Chair and Phonathon Co-Chair
- Dr. Donald R. Shields, V'63
- Dr. Joseph D. Slick, V'53, Chair, Pennsylvania Veterinary Medical Historical Society
- Dr. Steven W. Syken, V'86
- Dr. Robert J. Tashjian, V'56
- Dr. Alexandra Wetherill, V'80

**Other Board Members**

- Dr. M. Josephine Deubler, V'38, Historian
- Dr. Darryl Berry, Faculty Representative
- Dr. Charles Benson, Faculty Representative
- Dr. Kathy M. Mockler, V'90, Pacesetter Representative
- Dr. Michael Moyer, V'90, Pacesetter Representative

**Student Representatives**

- Meredith Brown, V'93
- Roy Yanong, V'92
- Steve Cudia, V'94

**Ex-Officio Members**

- Edwin J. Andrews, V'67, Dean
- Nancy Martino, Director of Alumni Affairs
- Dr. Bruce E. Ilgen, P.V.M.A. President
- Dr. Martha O'Rourke, New Jersey V.M.A. President
- Dr. William Wade, Delaware V.M.A. President

Alumni Awards of Merit were presented by Dr. Michael Ratner, V'59, and Dr. Jack Bregman, V'66, to six alumni.

- Dr. Roy D. Hoffman, V'31
- Dr. Edwin A. Churchill, V'41
- Dr. Jay Simmons, V'56
- Dr. Elizabeth Atwood Lawrence, V'56
- Dr. Donald Abt, V'61
- Dr. Marc Rosenberg, V'71

Dr. Max Herman, V'59, and Dr. Jack Bregman, V'66, president of VMAS, present a plaque of appreciation to Dr. Michael Ratner, V'59, past president of VMAS.
The Commencement Exercises for the 106th graduating class took place May 21, 1991 at the Zellerbach Theatre. The commencement address was given by Professor Lord Soulsby.

Dean Edwin J. Andrews, 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 103 members of the Class of 1991. Class President Janice M. DeRiso presented comments and Dr. Jack Bregman, V'66, president of the Veterinary Medical Alumni Society, presented the class flag to Dr. DeRiso. Dean Andrews, assisted by Dr. Raymond W. Sweeney, V'82, presented awards and prizes to graduates and recognized those graduating with honors.

The administration of the Veterinarian's Oath by Dr. Bruce Igen, 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 Valerie Westmoreland
  - J.B. Lippincott Prize
  - Susan Bayard Schoen
  - 1930 Class Prize in Surgery
  - Lisa Marie Miller

- **Auxiliary to the American Veterinary Medical Association Prize**
  - Janice Madeline DeRiso

- **Auxiliary to the Pennsylvania Veterinary Medical Association Prize**
  - Kirk Theodore Smith

- **1946 Class Medal for Achievement in Pathology**
  - Ruth Sullivan

- **James Hazlin Jones Prize in Biochemistry**
  - Lee Anne Myers Palmer

- **American Animal Hospital Association Award**
  - Derek Scott Duval

- **Merck Awards**
  - Andrea Jean Facetti

- **Small Animal Award**
  - Joanne Wampler Raudenbush

- **Large Animal Award**
  - George M. Palmer Prize
  - Laura Nichols

- **Everingham Prize for Cardiology**
  - Jean Marie Beikowski

- **E.L. Stubbs Award in Avian Medicine**
  - Carol Lynn Yeskey

- **Large Animal Surgery Prize**
  - Samantha Gail Abbott

- **Large Animal Medicine Prize**
  - James Seddon Holt

- **Morris L. Ziskind Prize in Swine Medicine**
  - Robert John Lewis, Jr.

- **Morris L. Ziskind Prize in Public Health**
  - Ruth Sullivan

- **Phi Zeta Award**
  - Caryn Finegan

- **Hill's Award for Nutrition**
  - Julia Ann Norton

- **Purina Mills Award in Swine Medicine**
  - Robert John Lewis, Jr.

- **Upjohn Awards**
  - Lisa Marie Miller

- **Small Animal Award**
  - James Seddon Holt

- **Auxiliary to the Student Chapter of the American Veterinary Medical Association Prize**
  - Mark Jerome Pykett

- **Class of 1991**

  - Samantha Gail Abbott
  - Sarah Sharf Akcoun
  - Jennifer Ann Andres
  - Rita Angelo
  - Paul Raymond Avery
  - Lyon Ellen Rabin
  - Barrie Michele Barr
  - Lori Lee Banton
  - Jean Marie Beikowski
  - Mark Leonard Boccella
  - Christopher John Bonar
  - Rebecca Bonshak
  - Mary Magdalena Bowser
  - Katherine Standish Bradley
  - Elaine Judith Brots-Tobin
  - Elizabeth Anne Campbell
  - Greg William Campbell
  - Christopher Keith Cebra
  - Kenneth Klevan Cullen
  - Natalie Nero Daniels
  - Georgine Kathryn Danyly
  - Janice Madeline DeRiso
  - Nancy Kate Diehl
  - Derek Scott Duval
  - Michael Evan Dwy
  - Gregory Edmund Erdman
  - Gregory John Ertz
  - Sandra Jean Fargher
  - Andrea Jean Fossett
  - Katherine Ann Ferian
  - Caryn Finegan
  - Cindy Ellen Fishman
  - Rosemary Drey Garner
  - Eileen Marie Grace
  - Andrew Neale Germin
  - Amy L. Grauman
  - James Seddon Holt
  - Scott David Johnson
  - Janet Grace Jones
  - Michelle Marie Karpovich
  - Cynthia Ann Keen
  - Mariily silica Kloster
  - Joyce Ruth Koch
  - Margaret Nel Lackey
  - Debra Ann Lane
  - Dena Christine Lebo
  - Maria Litchfield Lewis
  - Robert John Lewis, Jr.
  - Stephen Keith Long
  - Thomas John Lyons
  - Heather Kate Mack
  - Lisa Ann Macom
  - Paul M. Marcus
  - Maureen Ann McElhinney

- **Juni Kay McGregor**
- **Michael Lawrence Milhried**
- **Lisa Marie Miller**
- **Sally Fuller Moraatzen**
- **Jaine Freedy Modiano**
- **Diane Lynn Moncur**
- **Judith Ellen Sklar Naborny**
- **Shelby Jean Nede**
- **Laura Nichols**
- **Judia Ann Norton**
- **Lois Elizabeth Pain**
- **Lee Anne Myers Palmer**
- **Jennifer Lyle Pown**
- **Mark Jerome Pykett**
- **James Stephen Quaracchi**
- **Joanne Wampler Raudenbush**
- **Robynlee Reichard**
- **William Peterson River**
- **Frederick Martin Rock**
- **Mark Louis Romi**
- **Susan Bayard Schoen**
- **Cathy Marie Schweinert**
- **Joel E. Shaw**
- **Kenneth Thomas Shariella**
- **Lindsay Scott Shreiber**
- **Matthew Wade Singer**
- **Sean David Smarick**
- **Kirk Theodore Smith**
- **Bernaert Scrooler**
- **Susan Marie Spillner**
- **Heidi Byers Stout**
- **Ruth Sullivan**
- **Lisa Perri Suslak**
- **Clare O. Thompson II**
- **Kenneth Donald Trigritt**
- **Barbara Lynn Vail**
- **Mary Bertandren Van Karp**
- **Douglas Lynn Vassick**
- **Nancy Jean Vavroch**
- **Raquel Maria Walton**
- **Kimberly Ann Werner**
- **Susan Valerie Westmoreland**
- **Mary Elizabeth Wilke**
- **Rex Brian Wingo**
- **Doug Lee Woodworth**
- **Mary Kevin Wynn**
- **Carol Lynn Yeats**
- **Leslie Ellen Ziemer**
- **Stan Michael Zuczek**

- **Summer/Fall 1991 15**

- **^ Summa Cum Laude**
- **^ Magna Cum Laude**
- **^ Cum Laude**
Bellwether 31

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VHUP News

The Oncology Clinic, under the direction of Dr. Jerry Waddle, sees new cases Mondays and Wednesdays.

The Canine Hip Clinic is held Tuesdays, 5 to 7:30 p.m. Clients can make appointments by calling 898-4680.

The Dermatology Department is now offering skin serology testing for canine allergies. A serum sample is needed and should be submitted to Dr. Robert Schwartzman’s immunology laboratory at VHUP.

Bellwether 31

University of Pennsylvania
School of Veterinary Medicine
3800 Spruce Street
Philadelphia, PA 19104-6008

Address correction requested

Continuing Education Courses for Practitioners

October 23, 1991
Small Animal Medical Problem Solving, Part I

Dr. Joan Hendricks, Associate Professor of Medicine
Dr. Lesley G. King, Assistant Professor of Medicine
Dr. Alan R. Klag, Resident in Medicine
Dr. Meryl P. Littman, Associate Professor of Medicine
Dr. Richard A. Squires, Assistant Professor of Medicine
Dr. Robert J. Washabau, Assistant Professor of Medicine

This program will illustrate the use of the problem-solving method in small animal clinical practice. A case discussion format will be utilized in solving every-day practice problems, including:

1. Tackling the Problem of Proteinuria
2. The Coughing Dog
3. Managing the Vomiting Dog
4. Hemolytic Anemia
5. Urinary Incontinence in the Dog
6. The Ascitic Dog: What to do

The case discussion will emphasize diagnosis and therapy of these common practice problems.

Sunday, November 10, 1991
Clinical Hematology in Small Animals*

Presented by Veterinary Transfusion Medicine Academic Awardees, organized by Dr. Urs Giger.

Dr. W. Jean Dodds - Coagulopathies
Dr. Kenneth Meyers - von Willebrand's Disease
Dr. Joseph Smith - Iron deficiency anemia
Dr. Urs Giger - Erythropoietin and its clinical use
Dr. Susan Cotter - Autoimmune hemolytic anemia
Dr. Robert W. Bull - Paternity testing in small animals

Dr. Susan Cotter - Emergency hematology

This one-day program provides a unique opportunity to learn from nationally recognized veterinary clinical hematologists. Each speaker will present a state-of-the-art review and the latest information about clinical signs, laboratory tests, and management of common hematologic disorders in small animals. Ms. Donna Oakley will demonstrate VHUP’s blood transfusion program and the first veterinary bloodmobile.

To register for CE courses, please contact Ashra Markowitz, Office of Continuing Education, School of Veterinary Medicine, University of Pennsylvania, 3800 Spruce Street, Philadelphia, PA

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