

Bellwether 12

University of Pennsylvania // Summer 1984

EQUINE DENTISTRY

WHEN a horse has a toothache, investigating the trouble is no easy task. So unless a problem is evident, it is often overlooked. Yet, a toothache may signal other more serious ailments.

According to Dr. Christine Uhlinger of the Field Service Unit at New Bolton Center, equine dentistry is one area of veterinary medicine that has received little attention until recently. The reason for this, she said, is partly due to the horse's anatomy.

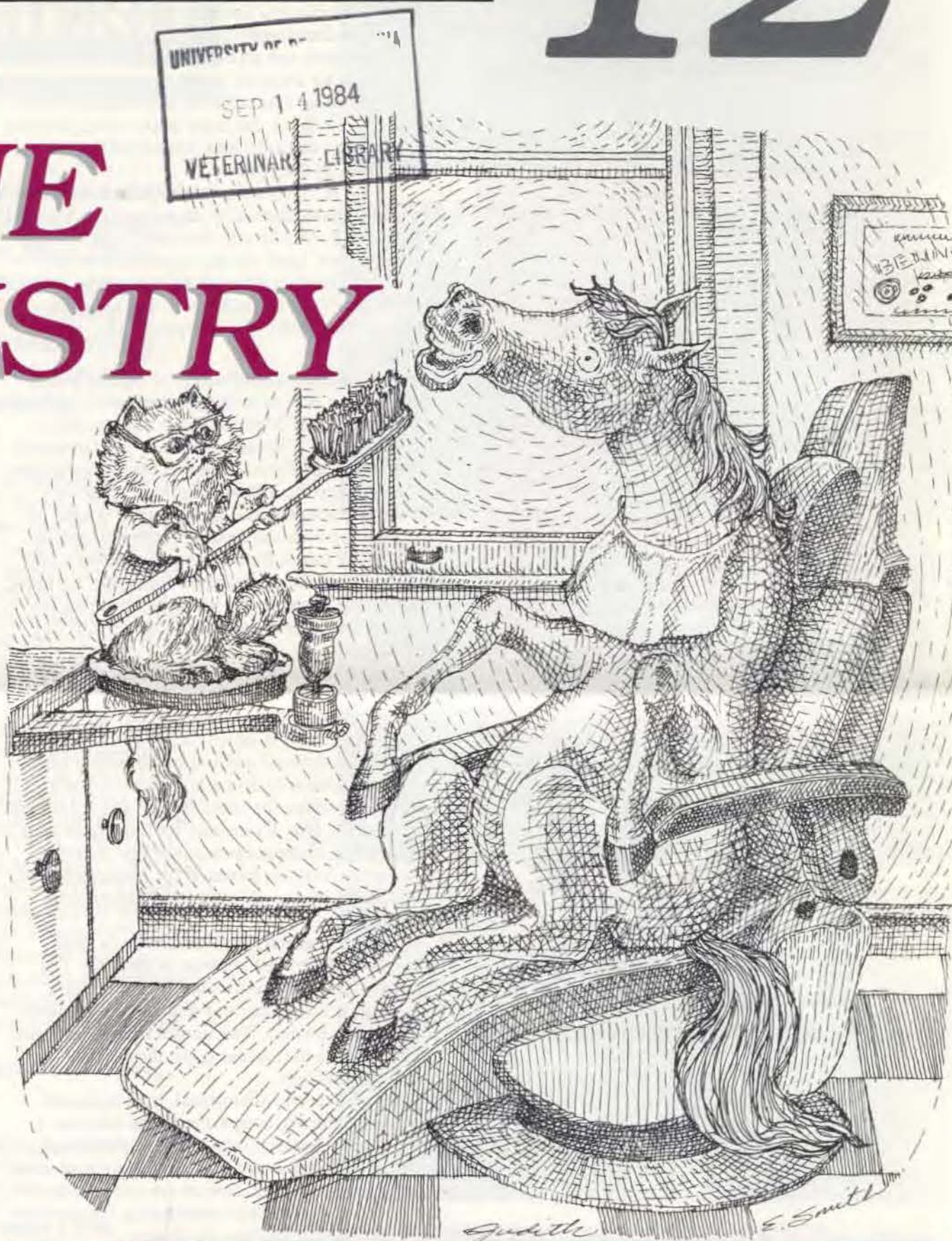
"A horse's mouth is a long, dark and dangerous tunnel. There is no easy access into it. Traditionally, if there was no obvious facial swelling or other problem, it was a part of the horse's anatomy that was, frankly, easier to avoid. 'If you don't look, you don't see,'" she explained.

Traditionally, equine dentists were lay people, like the farriers who attend to horses' feet. While some were and still are quite knowledgeable, most veterinarians would prefer that equine dentistry remain in the realm of medicine.

"Given the advances in every other area of equine medicine, equine dentistry is still operating in the seventeenth century. But that is changing and we are working to develop new technology and new tools that will make it easier to examine and treat dental problems in horses," she said.

Following a literature search, Dr. Uhlinger also discovered that relatively little had been documented about equine dentistry since the 1920s. In fact, she said, after 200 years there is still no agreement on what to call a horse's teeth. That has prompted her to publish a nomenclature of terms.

Dr. Uhlinger has also designed a dental examination form for horses' teeth that is similar to the charts dentists use for their human patients.



"The dental form is our first big advancement. Like the dentist's chart, there is a diagram of the horse's mouth, numbering the teeth L-1, L-2, L-3, and so on. When a horse is examined and treated, the information is recorded and put in to the computer. Now that we have a data base, we have a clearer picture of our caseload, including dental health history, previous treatments and required follow-ups," she noted.

Dr. Uhlinger first became interested in equine dentistry through her field service work. Often she would be called out to treat a horse for colic or determine the cause of a behavioral problem. On examining the animal, she would often discover that the root of the problem was in the mouth.

"There is an old saying about horses . . . 'No foot, no horse.' Well, you could literally substitute 'no tooth, no horse.' A horse with a missing tooth is in deep trouble. Left unattended or untreated, this condition can alter a horse's behavior, limiting its usefulness, and even shortening its life span," she said.

While an equine dental exam may be time consuming and even dangerous to conduct, Dr. Uhlinger said that veterinarians who do them frequently find surprising defects like split and missing or extra teeth that can lead to serious health problems.

Often a horse's behavior will signal trouble in the mouth. It may eat too slowly or it will avoid

continued on 2

BELLWETHER NO. 12 SUMMER 1984

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EQUINE DENTISTRY

continued from 1

drinking cold water. Holding its head at a tipped angle or refusal to accept a bridle are also indications of possible oral health problems. More obvious are facial swelling, bleeding from the mouth or gums and an offensive odor, which could mean an abscessed tooth. Breathing difficulties can be caused by sinusitis, a condition resulting from missing or damaged upper teeth. Bottom jaw problems can turn into osteomyelitis, an inflammation of the bone.

"A lot of the problems with horses' teeth are caused by malocclusion or improper fit of top and bottom teeth. Unlike our own and those of other species, horses' teeth are not static. Horses are constantly grinding down their teeth while new teeth erupt. If the animal's teeth don't occlude properly, they won't wear properly," she explained.

Dr. Uhlinger coordinates the equine dental clinic at New Bolton in cooperation with the Center's Surgical and Medical Departments and in liaison with Dr. Claude La Dow of the University of Pennsylvania Dental School. Many of the dental instruments have been borrowed from the School and adapted and modified for equine use.

Helping with the dental program is equine surgeon Dr. Loren Evans, who has shown a special interest in the dental cases. Also, Dr. La Dow, an area oral surgeon and horseman has lent his expertise to the problems of equine dentistry at New Bolton.

Determining treatment for dental problems is not always easy. A missing tooth can precipitate worse health problems for the animal extracting the abscessed tooth is usually a last resort.

"The traditional method of extracting horse teeth was to literally drill a hole in the horse's head and hammer the tooth loose," she explained. "Fortunately, Drs. Evans and La Dow have now developed an alternate procedure that involves splitting the tooth to loosen it for extraction. The animal must be anesthetized for these surgical procedures.

"Before antibiotics, several famous race-horses were destroyed because of sinusitis. The condition may be serious since it can interfere with normal breathing, and treatment is unpleasant for some owners. The sinuses must be drained or flushed and the animal given medication," noted Dr. Uhlinger.

Because of the anatomical, logistical, and dynamic problems, coupled with the fact that a horse's tooth is seven inches long from root to crown, traditional human solutions like root canal therapy and prosthetic devices are not yet feasible. Dr. La Dow is currently investigating the possibility of endodontic therapy for horses.

As hard as it is to examine the mouths of horses, sheep are even more difficult patients. They hate to open their mouths, Dr. Uhlinger said. Holding up a skull from a sheep that had died of an abdominal impaction, she indicated several missing teeth that had prevented the animal from chewing its food. Loss of teeth can lead to a variety of nutritional disorders, such as "wasting ewes."

"I am confident that there is dental disease in all animal species. Like humans, dogs and cats are more prone to cavities and periodontal disease," noted Dr. Uhlinger. "While horses don't get many

carries or cavities, they tend to wear down the tooth enamel. They are constantly grinding their teeth, leaving sharp edges and long protuberances. Routine dental care includes teeth floating or filing."

There are strong correlations between humans and small animals, noted Dr. Uhlinger. She also claims that pigs make wonderful models for human dental problems, because, like humans, they are omnivores.

"We saw six horses one day. Two had unreported diseases; one had a dental tumor, and one had an extra tooth, with no opposing teeth. The extra tooth had driven into its bottom jaw. After Dr. Evans ground the tooth down a little, the animal was OK," related Dr. Uhlinger and added that a variety of dental tumors can be surgically removed.

"Another case involved a horse that had been brought over 400 miles to New Bolton for determination of a behavioral problem. The animal had been continuously shaking its head. On examination, I found that a baby tooth had become lodged between its gum and the jaw. When I removed the tooth, the animal stopped shaking its head."

In the area of sports medicine, Dr. Uhlinger and her colleagues are looking at the effects of performance stress on horses' teeth and at certain behavioral similarities between human athletes and their equine counterparts. They are trying to determine what normal occlusion is for horses and whether horses grind or chew when they are running. Putting transducers and bite plates in the animal's mouth, can help answer these questions.

"We are thinking of funding research in comparative dentistry. By availing ourselves of the incredible human dental technology, we hope to evolve better methods of saving equine teeth, instead of extracting them," said Dr. Uhlinger. "We need to invent new diagnostic methods and tools; develop specialized oral radiographs, and better surgical techniques. We need to find ways of diagnosing a problem before it becomes a crisis," said Dr. Uhlinger, citing osteomyelitis as an example.

Osteomyelitis, a disease of the bone and gingiva that is similar to advanced periodontal disease in humans, was traditionally not diagnosed until there was jaw swelling and already too advanced for simple treatment.

Now routine health care of horses and other animals includes a dental checkup. The first dental examination is usually done when the horse is 18 months old. An extra "wolf" tooth is usually removed in the young animal. According to Dr. Uhlinger, "floating" or teeth filing should be done between six and twelve months a year. Without the proper dental care, the normal equine life span may be shortened.

Horse and other animal owners are quite enthusiastic about New Bolton's dental health program, which includes continuing education seminars for area practitioners. Frequently, the veterinarians get calls from area dentists who offer their expertise on equine dental problems.

A member of the Field Service Unit since 1979, Dr. Uhlinger specialized in herd health, parasitology and infectious diseases in horses, sheep, and goats. She earned her V.M.D. degree from Penn in 1979. A resident of Kennett Square, Dr. Uhlinger is a horsewoman who does some eventing on a "low level." She is also the consulting veterinarian to the Rose Tree Pony Club and the Brandywine Valley Driving Club.

Carol A. Watson

CENTENNIAL AWARD OF MERIT

Dean Robert R. Marshak presented the Centennial Award of Merit to thirty six practitioners at a special ceremony on May 19 in Philadelphia. The prestigious award, given in recognition of outstanding contributions to veterinary medicine, was presented during Alumni Day 84 at the School of Veterinary Medicine, University of Pennsylvania.

The recipients of the award were:

Dr. Wilbur B. Amand (V'66), Wawa, Pa.; Dr. Arthur V. Bartschlager (V'37), Churchville, Va.; Dr. John H. Brown (V'32), Marietta, Pa.; Dr. J. Robert Brown (V'37), New Castle, Pa.; Dr. Daniel M. Burnside, III (V'56), Quakertown, Pa.; Dr. Edwin A. Churchill (V'41), Chesapeake City, Md.; Dr. Peter H. Craig (V'55), Pennington, N.J.; Dr. David W. Crisman (V'37), Havertown, Pa.; Dr. Russell S. Detwiler (V'15), Reading, Pa.; Dr. William D. Donovan (V'48), Ligonier, Pa.; Dr. La Verne N. Dougherty (V'62), New London, Pa.; Dr. J. Stuart Evans (V'59), Pittsburgh, Pa.; Dr. Fred Fernich (V'63), Smithtown, N.Y.; Dr. Lawrence J. Friedman (V'67), Lynbrook, N.Y.; Dr. Richard C. Guise (V'44), Harrisburg, Pa.; Dr. J. Walter Hastings (V'42), Cambridge, Mo.; Dr. Carlton R. Hower (V'51), Paoli, Pa.; Dr. Elinor B. Jenny (V'49), Unionville, Pa.; Dr. Robert P. Lawrence (V'30), Holmdel, N.J.; Dr. Louis Leibovitz (V'50), Woods Hole, Ma.; Dr. Robert L. Leighton (V'41), Davis, Ca.; Dr. Edward J. Lemos (V'57), Dover, N.H.; Dr. John D. McCullough (V'43), Tampa, Fl.; Dr. Edward Mersky (V'61), Strasburg, Pa.; Dr. Calvin Moon (V'52), Trenton, N.J.; Dr. Margaret L. Petrak (V'52), Jamaica Plain, Ma.; Dr. Larry K. Schaeffer (V'69), Exton, Pa.; Dr. Raymond C. Snyder (V'33), Upper Darby, Pa.; Dr. Robert W. Stewart (V'68), Bethlehem, Pa.; Dr. Henry H. Stover (V'34), Langhorne, Pa.; Dr. Amos W. Stults (V'35), Hopewell, N.J.; Dr. Peter Theran (V'61), South Weymouth, Ma.; Dr. Max A. VanBuskirk (V'56), Lewisburg, Pa.; Dr. William H. Waddell (V'35), Honolulu, HI.; Dr. Clifford F. Wright, Dr. (V'49), Bath, Pa.; Dr. Charles G. Ziegler (V'34), Catonsville, Ma.

The awards ceremony was part of the School's year-long celebration of its Centennial Year.

1 Dr. John H. Brown (V'32) receives the award. Dr. Richard C. Guise (V'44) looks on.

2 Dr. Edwin A. Churchill (V'41) receives the award. Dr. Lawrence J. Friedman is seated on the left.

3 Dr. William H. Waddell (V'35) receives the award. Dr. J. Walter Hastings (V'42) is seated at the left.

4 Dr. Elinor B. Jenny (V'49) receives the award.

5 Dr. Robert L. Leighton (V'41) receives the award.

The awards were presented by Dr. Robert R. Marshak and Dr. William D. Hardy, Jr.



BATTERY POWER TO POWER A HORSE



IMPLANTING a pacemaker is a routine procedure in human medicine and there are millions of people who owe their lives to tiny battery packs placed just beneath their skin. In veterinary medicine pacemakers are sometimes used to help dogs which have heart problems. And now it appears that pacemakers also have a place in large animal medicine.

Bucky, a big brown American Quarterhorse is living proof. The eight-year old gelding, an active, alert animal has a permanent pacemaker and he is thriving, thanks to the efforts of Dr. Virginia Reef, a cardiologist at New Bolton Center. "When the horse was given to us last November he could hardly walk and would faint at the slightest exertion," explained Dr. Reef. "His weight was down to 1,200 lbs. and he was scarred from his many falls."

The horse had been trained as a hunter and competed at horse shows. "About a month before we saw him here, he began having fainting spells," said Dr. Reef. "At first they happened a couple of times a week, then they increased in frequency to several times a day."

Bucky's problem was diagnosed as an arrhythmia caused by a heartblock. Electric impulses which cause a regular heart beat, could not pass through his heart muscle; this caused a slow and irregular beat. "His heart beat only ten

times a minute," said Dr. Reef. "The normal rate for a horse is 32 to 40 beats a minute, though the heart rate of athletic horses can be as slow as 26 to 30 beats. Ten beats were just not enough to keep such a big animal going and he fainted."

Electrocardiographic examination revealed that Bucky had an inflammation of the AV node and that the block was located there. He was given anti-inflammatory drugs and his condition improved. When treatment was stopped, the arrhythmia reoccurred and was more severe. The drug regimen was resumed and his condition improved only to worsen even though the horse was still receiving the medication. "We got his heartbeat up to 30 beats a minute but we could never restore a normal rhythm" said Dr. Reef.

She then decided to fit Bucky with a temporary pacemaker. An electrode was inserted through the jugular vein into the right ventricle and connected to a battery pack. No improvement was noted. "A horse's heart is very big, larger than a cow's and the chambers are vast," she said. "The electrode was floating in the chamber but it did not make contact with the walls, so the impulse could not get to the muscle."

Another approach was tried. This time Dr. Reef used a bipolar electrode which had four tiny barbs at the end. Once again a catheter containing the wires and the electrode was fed through the vein. The barbs attached the electrode to the tip of the right ventricle, into the tissue. The wires were connected to a lithium battery which is 5 cm x 4½ cm x 1 cm, slightly larger than a Zippo lighter. "The equipment was donated by Pacesetters, Inc., and Jack Oliver, Ph.D., a member of the firm, helped us with Bucky," she said. "When the device was originally developed he had tested it in dogs and cows. We had to use the longest catheter available, 85 cm, and it was barely long enough."

Initially the battery was placed under the skin at the base of the neck. After a few weeks it became evident that the skin over the pack was dying, so another place had to be found for the powerpack. This time it was inserted under a muscle at the base of the neck. An extension wire had to be attached to make the connection between the wires and the pulse generator. By placing the battery under the muscle the veterinarians had attached it firmly to the horse's body. Changing the device will be a little more involved, though the procedure will not be necessary for five years.

Bucky's heart now beats 45 times a minute. It is faster than normal but it is the slowest speed the pulse generator can be programmed for. The equipment was developed for humans who have a higher heart rate than horses. "We could change the heart rate without taking the battery out," said

Dr. Reef. "But we wouldn't want to do it, it is fast enough."

Since the pacemaker has been in place, it hasn't missed a beat. Bucky's general health improved within three to four days after the surgery. The fluid disappeared from his lungs and his kidneys began to function normally. Now he is a picture of health and the only thing that distinguishes Bucky from other horses is the slight bulge at the base of his neck; one has to look closely to detect it.

While vigorous and active, the horse cannot resume his career as a hunter. The heart rhythm is at a fixed rate and cannot increase to meet the demands of rigorous exercise. "There is a new pacemaker which increases the number of beats as the need arises, but it is quite expensive, and we are working with donated equipment," Dr. Reef said. She explained that a pacemaker has a limited application in horses. It can be used to correct arrhythmias caused by disease, as in Bucky's case, but it cannot help in the case of a congenital defect, such as ventricular septal defect, the most common congenital heart problem seen in horses.

She also pointed out that a pacemaker is not needed for arrhythmias frequently seen in race horses. "These active horses often slow down a little, perhaps by 20 to 30 seconds over a distance. When they are examined it is found that they have atrial fibrillation. This can be treated with drugs and in most cases the animal returns to normal and resumes its racing career." She said that the heart of a normal horse is so large that arrhythmias develop easily even though the heart is healthy.

Pacemakers, as Dr. Reef sees it, can be vital in saving valuable mares or stallions with arrhythmias that cannot be corrected through drug treatment. "With a pacemaker these animals can lead normal reproductive lives. The procedure is simple and the animal can be saved."

Bucky, the only horse at the moment with a permanent pacemaker, has earned his place in the annals of veterinary medicine. He will move to a farm in Chester County to lead a quiet life in the pasture. Forgotten are the fainting spells, the scars are healed and he is once again a happy, active Quarterhorse, thanks to a device which weighs just a few ounces, yet is capable of powering 1,400 lbs. of gleaming horseflesh.

Dr. Reef came to New Bolton Center in 1979 after receiving her D.V.M. degree from Ohio State University. She completed an internship and a residency at the School and is now a lecturer. Cardiology is her specialty and she has a great interest in exercise physiology.

Since the pacemaker has been in place, it hasn't missed a beat. Bucky's general health improved within three to four days after the surgery.



Helma Weeks

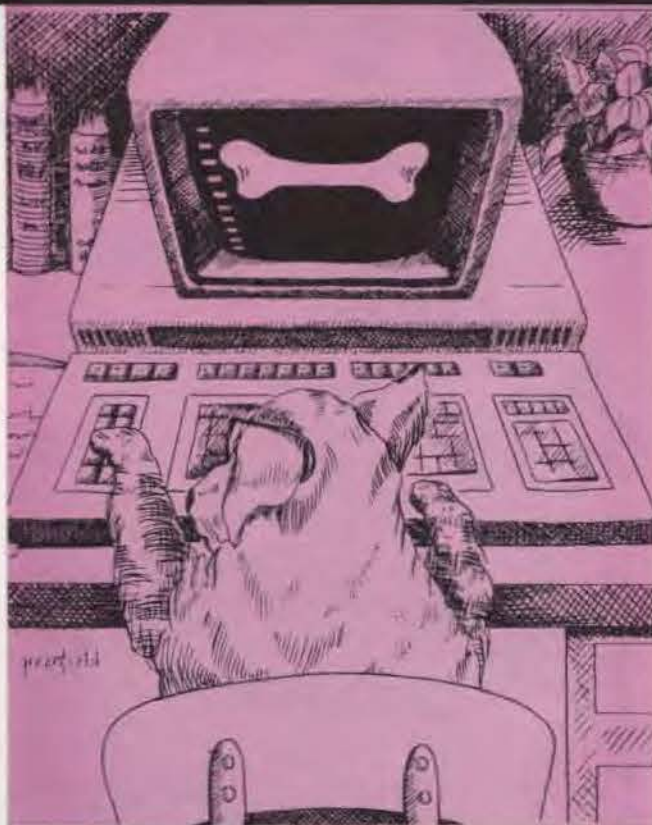
"ON THE HORIZON"

PAPERWORK and recordkeeping associated with dog boarding, breeding, showing or racing require a staggering amount of time, patience, and care. Health, nutrition, pedigrees, whelping, and show information must all be kept track of and somehow related to breeding dates, special diets, vaccination schedules and more. In addition, these diverse but related facts must be kept at one's fingertips for immediate recall. All of us know how difficult, tedious, and time-consuming this task becomes when many years of records are filed in drawers or cardboard boxes. Help, however, may now be on the horizon.

The Epidemiology Section at the University of Pennsylvania's School of Veterinary Medicine has received a two-year grant from ALPO Pet Foods Inc., to ascertain the needs of breeders and kennels and to develop computer software that will be compatible with many of the popular microcomputers currently on the market. The eventual goal is to create a computer network of concerned kennel owners who are electronically linked with veterinary experts at the Veterinary Hospital of the University of Pennsylvania (VHUP) so that health problems can be detected early and solutions provided before matters become serious.

This project was begun in the summer of 1983 by a team consisting of Drs. Lawrence T. Glickman and Alice Jayne Payton at VHUP and Messrs. John Louchhiem and Joseph Doherty, computer software specialists from The Reohr Group, Inc., Media, Pa. Initially, the team visited different types of kennels to determine the needs and expectations of kennel owners. They then spent several months outlining and defining the principal components of the kennel record system and how these components relate to one another. Also considered were techniques to facilitate data entry into the computer so that users would not be overwhelmed by the new "gadget in their midst" and how to keep costs down by using commercially available software whenever possible. Finally, they had to decide on the most affordable computer hardware to support the system and how the machines would communicate with VHUP.

The software package developed is suitable for kennels or breeders with up to 500 dogs. Dr. Glickman feels that "the basic software package will contain about 80-90 percent of what most people want and that additional capabilities can be added as the program matures." The basic package offers the capacity to enter and retrieve information for individual dogs or for groups of dogs. Individual dog data includes: identity (name and AKC number), markings, age, sex, breed, and comments or special notations. Programs will be provided for creation of a four-generation pedigree and an individualized history of treatments, illnesses, diet, weight, reproduction, and show or racing performance. For the kennel as a whole, there is a reminder list for vaccinations, coming events, and a mailing list of clients or other kennels. The customized software can be used in conjunction with standard word-processing packages to send out mailings or with graphics packages to display data.



The minimum hardware necessary to support such a system consists of a desk-top microcomputer, a monitor or videoscreen, a printer, and a modem to permit hookup with the computer in the Section of Epidemiology. Dr. Glickman pointed out that "having this hookup will enable us to send member kennels announcements of new developments in veterinary medicine, warnings regarding new diseases or product recalls, and abstracts of articles from veterinary journals and have them appear on the printer or screen at the kennel. Upcoming shows, seminars, or other

events could be announced in a similar manner." Kennel owners could also choose to electronically send part or all of their records to VHUP for analysis or advice if they suspect a problem. In addition, pedigree records could be transmitted to VHUP for determination of the coefficient of relatedness between two dogs before they are mated. Whenever possible, the kennel's own veterinarian will be alerted to any potential problems. Eventually, we hope that many veterinarians will participate in this network as they acquire computers in their practices. Provisions will be made to ensure that all records in the network are confidential and can be released only with approval of the kennel involved.

Currently, the initial software package is being tested in one kennel and shortly will be placed in a second. The two computers being evaluated are the IBM-PC and the Columbia which is an "IBM-PC work alike." However, other microcomputers may also be used. In each of these kennels, our software experts help to assemble the equipment and test it. They also provide instruction and ongoing technical support to the kennel personnel who are responsible for data entry and retrieval.

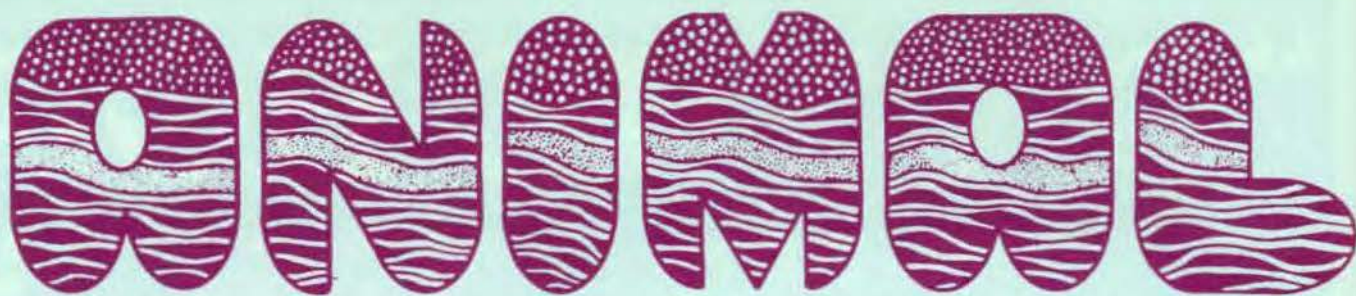
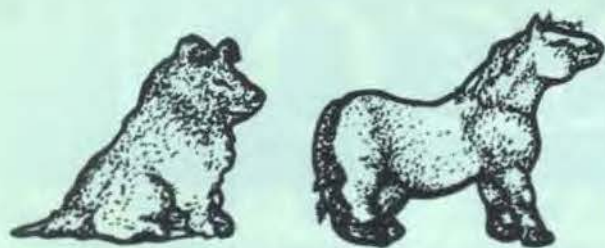
During the next six months, the software will be refined further. Based on our experience and by evaluating your responses to the questionnaire below, additional improvements will be made and priorities established for future development. Details regarding hardware, software, subscription procedure and availability will be announced as soon as possible. Additional information and a demonstration will be available at VHUP during the AKC Centennial Dog Show in November 1984.

1. Name [Optional]: _____
2. Address [Optional]: _____

 _____ zip _____ Phone _____
3. Dog Breed(s): _____ Kennel Size: _____
 Major use of dogs: _____
4. What do you consider to be the three most useful features of a kennel management system? Please rank them from 1 to 3.
☐ Individual dog data ☐ Pedigree data ☐ Show data ☐ Medical data ☐ Dietary data
☐ Breeding, whelping data ☐ Other _____
5. Do you own a home computer? ☐ Yes ☐ No ☐ Considering purchasing one
 If yes, what kind? _____
 If yes, would you purchase our kennel software, if it was compatible with your current computer? ☐ Yes ☐ No ☐ Maybe
6. If you do not own a computer, would you consider purchasing the kennel software and a computer recommended by VHUP?
☐ Yes ☐ No ☐ Maybe
7. If you purchased the kennel software and/or hardware, would you consider subscribing to a VHUP service that assisted you with computer or kennel veterinary problems and sent you announcements and abstracts of veterinary medical articles on a regular basis?
☐ Yes ☐ No ☐ Maybe
8. We anticipate that the computer hardware (includes screen, modem, printer, terminal, word-processing software, spreadsheet) will cost \$3,000 to \$4,000. Do you consider this to be a reasonable investment?
☐ Yes ☐ No ☐ Possibly
- Would you be willing to spend \$500-\$1,000 for the kennel software package as described in this article? ☐ Yes ☐ No ☐ Maybe
- What would you be willing to spend for a yearly subscription to the VHUP Network? \$ _____
9. Additional comments or suggestions would be welcome: _____

Thank you for your time. Please return to:

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SEVENTH ANNUAL FELINE FANCIERS SYMPOSIUM

Nearly 100 cat fanciers attended the all-day program held on Saturday, March 31, at the Veterinary Hospital of the University of Pennsylvania. Generous support for the program was provided by Kal Kan Foods, Inc. Following are brief excerpts from the talks.

Jean Holzworth, D.V.M., Senior Staff Member at Angell Memorial Hospital, Boston, Massachusetts, spoke on THIRTY YEARS OF EXPERIENCE IN FELINE MEDICINE. Dr. Holzworth graduated from Cornell in 1950 and has specialized in diseases of the cat since then.

She said that she feels that the greatest threat to cats at this time is FIP (Feline Infectious Peritonitis). This seems to be a "new" disease, possibly caused by a mutation of a coronavirus. It is possible that there are mild cases which recover, but, once clinical signs have appeared, there is no effective treatment and the disease is almost always fatal. Researchers are working on perfecting serologic diagnosis and developing a vaccine.

A solution of Clorox is the best disinfectant.

There has been enormous progress in cat nutrition. Scientists have discovered many special requirements for cats. Cats cannot survive on most commercial dog foods or a vegetarian diet. Calcium deficiencies develop if the diet is muscle meat with no milk. Vitamin A is required but too much causes bone deformities. Vitamin E deficiency causes steatitis and is associated with dark-meat tuna diet. Taurine is essential—a deficiency leads to blindness. Clam juice is the best source of taurine. A low magnesium diet is said to prevent urethral obstruction, although there may be other factors involved. Cats should be encouraged to drink water. "Fad" diets should be avoided.

Spayed females live longer and have fewer problems than male cats. Dr. Holzworth has several patients over twenty years old. The females rarely have problems with urinary obstructions.

It is important that veterinarians identify cats by breed and color because there are breed-related problems and possible color-related problems. Also, breeders should have a good post-mortem examination of every kitten that dies. Congenital heart problems and other conditions must be correctly identified to prevent their becoming established in a breeding program.

Siamese have a number of breed-related conditions. Bob- and kink-tails are being bred out, as is cross-eye (squint). Cloth-eating is believed to be inherited in certain strains. "Rolling-skin Disease" (psychomotor epilepsy) predominates in Siamese and Siamese crosses. It responds to treatment with low doses of primidone. Hairlessness and hypotrichosis have been reported. Hip dysplasia has been reported in a Siamese and its family. Congenital eye and heart problems occur. Some deformities in kittens (cleft palate, hare lip, etc.) may be inherited or the result of griseofulvin treatment for ringworm. Adenocarcinoma of the intestine and anal sac abscesses are found in Siamese much more often than in other breeds.

Persians are slow to mature and breed. The flattened face in show types causes occlusion of tear ducts and overflow of tears as well as malocclusion of the upper and lower jaws.

There are reports of a hypothyroid family of Rex cats. Thyroid therapy produces growth of hair. There are questionable claims that the Rex is hypoallergenic. It is believed that feline saliva is the cause of most allergic reactions to cats.

ENDOCRINE DISEASES OF THE CAT was the topic of J. Eugen Eigenmann, D.V.M., Ph.D., Assistant Professor Medicine.

His discussion included diabetes mellitus. It occurs in cats, usually in animals five years old and older. Clinical signs include weight loss and increased thirst. The appetite may be normal, exaggerated, or decreased. In the later stages, there may be depression and vomiting. The treatment



consists of insulin administration and, if possible, a constant diet. The cause is now known but obesity may trigger the disease—this has not been proven.

Hyperthyroidism occurs in cats, usually those older than six years. The signs are weight loss, increased thirst and appetite, nervousness, diarrhea, hair loss and vomiting. In advanced cases, there may be depression. Because of the cardio-toxic effects of thyroid hormone, affected cats may show signs of heart failure. Treatment includes use of thyroid suppressing drugs or surgical removal of one or both thyroid glands.

K. Ann Jeglum, V.M.D., Assistant Professor of Medicine (Oncology) spoke on WHAT'S NEW WITH THE FELINE LEUKEMIA VIRUS?

There are two tests available in cats suspected of FeLV infection. The Immunofluorescent Antibody Test (IFA) also known as "FeLeuk Test" and "Hardy Test" requires a blood smear. If positive, it means that THIS CAT IS SHEDDING VIRUS AND IS THEREFORE CONTAGIOUS. The ELISA (Pitman-Moore Test) may be done in the practitioner's office on a small drop of serum. This test does not measure the virus within cells. IT DOES NOT TELL YOU WHETHER THE CAT IS OR IS NOT SHEDDING VIRUS. If positive, you do NOT know if the cat is contagious.

A FeLV negative test does not mean that your cat is protected against FeLV or will never contract FeLV.

Prolonged direct contact is necessary for transmission of FeLV. Virus is excreted primarily via saliva but it may be present in urine, feces and respiratory secretions. Grooming, sneezing, litter boxes and feed bowls are major modes of transmission. Young kittens (6 mos.) are most susceptible due to immature immune defenses. The virus does not live outside the cat's body long—24 hours to several days at most. The virus is killed by most disinfectants.

No effective vaccine is available now.

There is no evidence to date of transmission of FeLV to humans. Also no human disease (including cancer) is known to be caused by FeLV. The newly discovered human leukemia virus is not related to FeLV.

FELINE EMERGENCIES WERE DISCUSSED BY Rebecca Kirby, D.V.M., Assistant Professor of Emergency Medicine and Head, Emergency Service, VHUP. She went over the procedures followed in emergencies and discussed several cases.

Four common emergency problems are trauma (hit by car, fallen out of a window, dog-cat fight or cat-cat fight, etc.), inability to urinate, labored breathing, and vomiting.

In trauma cases, the most life-threatening problem must be treated first and then the animal must be carefully observed for the next 24 to 48 hours. Slow internal hemor-

rhage and ruptured urinary bladder may not be detected immediately.

When a cat is unable to urinate due to blockage, toxic wastes accumulate and lead to shock as well as heart and kidney failure. The crystals plugging the urethra can usually be removed by back-flushing, although surgery may be required in some cases. The owner should seek veterinary advice when urine is not produced.

There are many causes of labored breathing and often the animal must be stabilized in the oxygen cage before an effort is made to determine the cause.

Common causes of vomiting are ingestion of foreign bodies, intestinal obstruction, poisonings, metabolic diseases, parasites, tumors and drug sensitivities. Many cats vomit periodically due to ingestion of plant material, hairballs or dietary sensitivities and at home management may be sufficient after a telephone discussion. Vomiting becomes an emergency when there is evidence of dehydration. These patients require fluid therapy and diagnostic measures to determine the cause.

BREEDS AND VARIETIES AT DOG SHOWS

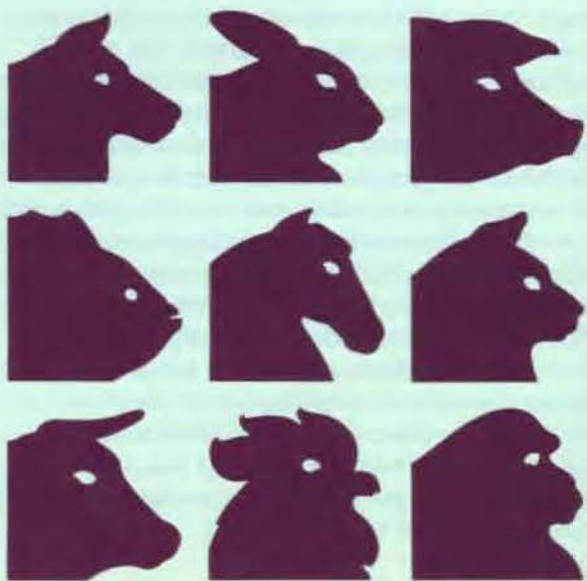
Some breeds of dogs which differ from each other in coat (color, length, texture) or size are classified as varieties at AKC shows. American Cocker Spaniels are divided into solid color black, ASCOB (any solid color other than black) and parti-color (patches of two or more colors). Bull Terriers may be white or colored. English Toy Spaniels are "King Charles and Ruby" which are considered solid-colored, the King Charles being black and tan while the ruby is rich chestnut-red. "Blenheim and Prince Charles" are broken-colored dogs, the Blenheim red and white, the Prince Charles tri-colored (white, black and tan).

Dachshunds may be long-haired, smooth (shorthaired) or wirehaired. The Rough Collie has an abundant coat while the Smooth variety has a short, flat coat. Fox Terriers have either a smooth coat or are wirehaired (broken-coated). Chihuahuas may have a smooth or long coat.

Beagles are divided by size (under 13" at the shoulder) and 13-15" in height. Any Beagle over 15" high is disqualified at AKC shows. Poodles also are classified by height. The Toy is 10" or under at the shoulder, the Miniature Poodle must be under 15" with a 10" minimum height and the Standard is 15" or higher.

The Manchester Terriers are divided by weight. The Toy must not exceed 12 pounds and the Standard must be over 12 pounds and not exceeding 22 pounds (heavier is a disqualification).

Different varieties of the same breed may be bred, with the offspring registered according to coat and size.



BRANKS



THOUGHTS DURING HOT WEATHER

The current raccoon rabies outbreak in the mid-Atlantic area makes it especially important that dogs and cats are vaccinated against this disease. During warm weather, dogs and cats are outside and there is greater exposure to wildlife (foxes, skunks, bats, etc.). There is a significant increase in the number of cats with rabies. Raccoon rabies poses a dangerous problem in that the raccoon is frequently an urban-suburban animal living in close proximity to man. Vaccinated dogs and cats are fully protected.

Death from heat stroke comes quickly when a dog is left in a closed automobile during very hot weather. Even if windows are partly open, a buildup of heat can kill a dog or cat quickly. It's better not to leave pets in cars during the warm weather months. The treatment includes cooling the animal as quickly as possible—a tub of cold water or packing with ice. Neither is readily available in a parking lot. If you travel with a dog, a well-ventilated crate or window barriers are essential.

Fleas always seem to be more of a problem in summer. The flea visits the dog to feed, then drops off and lays eggs. It is necessary to treat the entire environment. None of the insecticides will kill the eggs, but new products can be used to fog a room and kill adults and larvae in rugs, drapes, upholstered furniture, and cracks in floor and walls. After a house has been closed for a few weeks, an army of hungry fleas will be ready to attack any warm-blooded creature which enters. Foggers are especially good to get this situation under control. There is no way to fumigate outdoors. It seems that fleas can be controlled but not eliminated. Treatment of the dog may be external—sprays, dips, powders and collars, or insecticides may be given by mouth. Whatever product you use—follow the directions carefully. Be careful what you use on cats!

Some pet owners object to pesticides and use a flea comb to catch fleas. Daily grooming with the fine-toothed comb will remove fleas which must be dropped into a pan of hot water to kill them. It is said that it is possible to completely control a household flea infestation in this way.

VETERINARY STUDENTS

Statistics recently released show that during the 1983-84 academic year there were 8,744 students enrolled in the 27 veterinary colleges in the United States. Two of the new colleges (North Carolina and Tennessee) will not graduate their first class until 1985. The first class entered Wisconsin in 1983. There was a total enrollment of 1,025 in the three Canadian veterinary colleges.

There were 4,628 (52.9%) men and 4,112 (47.1%) women enrolled in the United States, but in Canada 549 (53.6%) of the students were women with 476 (46.4%) men.

Approximately 31% of all qualified applicants were accepted in the 1983 first-year class. There were an additional 2,215 students enrolled in graduate degree (M.S. and Ph.D.) programs and certificate programs (internship and residency).

The American Veterinary Medical Association, in September 1983, had 37,342 members and lists 6,621 non-member veterinarians. With over 2,000 1984 graduates, some feel that the profession is becoming over-crowded. However, the opportunities in the field are expanding. Information may be obtained from A.V.M.A., 930 N. Meacham Rd., Schaumburg, IL 60196, on veterinary colleges and programs for training animal technicians. The Bulletin of the University of Pennsylvania's School of Veterinary Medicine, giving admission requirements and information about courses, may be obtained by writing to the Office of the Dean, 3800 Spruce St., Philadelphia, PA 19105.

BOOK REVIEWS

There are a number of books giving details on different breeds of dogs. One of the best is the recently published *The Complete Rottweiler* by Muriel Freeman (Howell Book House, 1984). The introduction states "This book is intended to impart, to all who read it, an appreciation of the Rottweiler's great heritage, and the knowledge necessary to be able to pass it on to future generations intact." The book covers history, guidance for a potential owner, the breed standard, showing, training, breeding, care and feeding of puppies, health problems as well as information about Clubs and Rottweilers in other countries.

Potential owners are told that breeds characteristics must be recognized and understood and that proper training of a puppy is essential. "An obedient Rottweiler is a pleasure. An undisciplined one can grow to be a menace."

This book should be read by anyone considering a Rottweiler as a family dog. Those who are familiar with the breed will find much useful information. *The Complete Rottweiler* is a well-researched model for the ideal breed book.

The Complete Jack Russell Terrier by D. Brian Plummer is also available from Howell Book House published in England in 1980 by the Boydell Press. Although not registered by the American or English Kennel Clubs, they are quite popular hunt and working terriers. The thirty-six excellent illustrations show these dogs working and give a good idea of their appearance. The Jack Russell Club of Great Britain has developed a provisional standard to achieve a uniform type. The book answers many questions about this little dog which thrives without formal recognition as an established breed.

CENTENNIAL AWARD FOR DR. HOLZWORTH

The Centennial Award of Merit was presented to Jean Holzworth, D.V.M., Senior Staff Member, Angell Memorial Hospital, in a special ceremony on March 30, 1984.

Dr. Holzworth began her academic career not as a veterinarian but as a classical scholar. She received her A.B., M.A., and Ph.D. in Latin from Bryn Mawr and taught Latin and Greek at Mt. Holyoke and Bryn Mawr.

At this point, there was a reawakening of Jean's childhood interest in veterinary medicine (as a child of eight, she set up a veterinary clinic and busied herself in treating the sick cats and rabbits on her farm in Connecticut). To explore the possibility of pursuing a career in veterinary medicine, Jean took a year off from teaching and worked as a ward attendant at the Speyer Memorial Animal Hospital in New York City (the forerunner of The Animal Medical Center). Subsequently, she entered the Veterinary School at Cornell University, where she received her veterinary degree in 1950.

Following graduation from veterinary school, Jean went directly to the Angell Memorial Animal Hospital in Boston, where she began to specialize in the diagnosis and treatment of diseases of the cat. Through her writings and lectures, which are at the same time charmingly original and scholarly, Jean has long been recognized as the major authority on cat diseases in the world. The many interns and residents that have trained at Angell Memorial Hospital since she came there 30 years ago have received from Jean Holzworth, not only tangible medical knowledge, but a lasting fascination with cats and their diseases. And, if they were at all interested in writing scientific papers about their observations, they learned something else from Jean: how to write coherently and unpretentiously.

Jean Holzworth's present projects include editing and writing a large part of a two-volume work on *Diseases of the Cat*, which will be published by Saunders here in Philadelphia.



Dr. Jean Holzworth

ALUMNI DAY

1984



Mummers entertained alumni as they spent a pleasant afternoon with classmates.



OVER 350 graduates, guests and friends attended Alumni Day on Saturday, May 19, 1984 as the School continues its year-long Centennial celebration. A huge tent, balloons, and a band of mummers brightened the quadrangle on Saturday.

Dr. Evan L. Stubbs, V'11, continues to hold the record as our oldest alumnus attending Alumni Day! This year alumni joined us from as far away as Israel—Uri Bargai, V'59, and Hawaii—William Waddell, V'35.

Reunions were held for classes graduating in 1934, 1939, 1944, 1949, 1954, 1959, 1964, 1969, 1974, and 1979 at the Franklin Plaza Hotel and the Hilton Hotel of Philadelphia.

Dr. and Mrs. Mark W. Allam view the portrait of Dr. Allam presented by the Veterinary Medical Alumni society. The portrait will be hung in the school.



Class agents, Nancy Brown, V'73, Pierre Conti, V'60, Leigh Marsh, V'59, and James Simpson, V'78, participate at the class agents' breakfast on May 19, 1984



William D. Hardy, Jr. President of the Veterinary Medical Alumni Society, presents the class flag to **Steven Peoples**, President of the Class of 1984



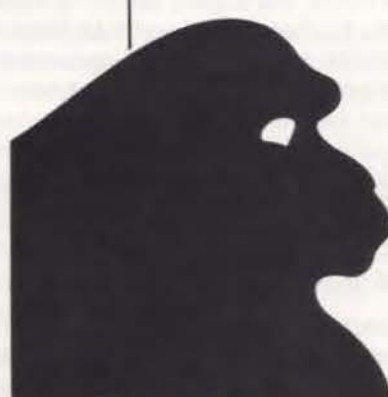
Alumni enjoying the buffet luncheon during alumni day May 19, 1984



The class of 1954 celebrates the centennial and their reunion.



Kenton S. Stokes, V'68, past president of the Veterinary Medical Alumni Society congratulates his successor, **William D. Hardy, Jr., V'66**.



Centennial Medals

TO HONOR outstanding contributors to the field of veterinary medicine during the centennial year of the University of Pennsylvania's School of Veterinary Medicine, a Centennial Medal was created.

On May 18, 1984, this medal was presented to seven outstanding men and women who have contributed significantly to the field of veterinary medicine.

During a festive ceremony at the University Museum in Philadelphia Dean Robert R. Marshak offered the following laudations:



Dean Robert R. Marshak, Mrs. Elizabeth C. Clark and Dr. Mark W. Allam

WE HONOR Elizabeth Carsey Clark—Benefactress, naturalist and conservationist, exemplar of the dog fancy. She whelped her first litter of puppies in 1938, and she has been involved with dogs ever since. But during World War II, giving first priority to her nation's mortal danger, she joined the war effort as a pilot assigned to ferry B-17 and B-24 bombers across the Atlantic Ocean to be used in subduing the German war machine.

ELIZABETH CLARK lives on a beautiful 330-acre hilltop farm near Maurertown, VA and is passionately interested in all forms of animal life, traveling the world to observe and to study them. In 1980 and again in 1983 she took photographic safaris in East Africa. She travels to Baja, California when whales beach. She was involved in an Earthwatch project in Florida that studied the circadian rhythm of horseshoe crabs. In 1981 she learned scuba diving in Hawaii in order to observe aquatic species first-hand.

ELIZABETH CLARK is a well-known breeder of Miniature Schnauzers, Gordon Setters, and English Cocker Spaniels, and she is an AKC-licensed judge of several sporting and hound breeds. She is show chairman of the Shawnee Kennel Club in Winchester, VA. Her judging assignments have taken her all across the U.S. and abroad.

ELIZABETH CLARK'S late husband, Whitney, was a dairy farmer in Fairfax County, VA, and by her own reckoning, she has been associated with University of Pennsylvania veterinarians nearly all her life. Indeed, her veterinarian today is Dr. William Truban, Class of 1953, who happens also to be the Republican Leader in the Virginia State Senate.

MRS. CLARK has been a member of the Ladies Committee of our Small Animal Hospital since 1980, and in 1982 she endowed the Elizabeth and William Whitney Clark Professorship in Nutrition at the School of Veterinary Medicine. Professor David Kronfeld, our first Clark Professor, presides over the only Section of Nutrition in an American school of veterinary medicine.

WE ARE DEEPLY GRATEFUL to Elizabeth Clark for her sustained interest, support and friendship and we ask her now to help us celebrate our hundredth anniversary by accepting the Centennial Medal of the School of Veterinary Medicine.



Dr. Mark W. Allam presents the Centennial Medal to Mr. Charles S. Wolf

WE HONOR Charles S. Wolf—University Trustee, Chairman of our Board of Overseers, business and civic leader, farmer, wise counselor, generous benefactor, and warmest of friends. Although twice a Wharton alumnus, he has taken our School of Veterinary Medicine to his heart and with wisdom, optimism, patience and good humor, he has helped us to stay the course through many difficult years. His boundless faith in the School's mission and in its faculty, his willingness to work hard to secure its fiscal integrity and to represent its interests and concerns to his fellow Trustees and to the University's Central Administration have, through the long years, encouraged and inspired the dean and his faculty.

IF THE ESSENCE of friendship is entireness, a total magnanimity and trust, then we have its purest expression in our great friend Charles Wolf, to whom it is now our purest pleasure to present the Veterinary School's Centennial Medal.



Dr. William D. Hardy, Jr. receives the Centennial Medal.

WE HONOR William D. Hardy, Jr., in recognition of his outstanding contributions as scientist, teacher and alumnus of our School of Veterinary Medicine.

A BRILLIANT INVESTIGATOR in the field of comparative oncology, he is responsible for major advances in our knowledge of viral leukemogenesis. His work at the Sloan-Kettering Cancer Center on the major internal antigens of the mammalian C-type viruses, on the relationship between the feline and murine leukemia viruses, on the serologic diagnosis of feline leukemia virus infection, on the immunologic responses of cats to FeLV and FeLV infected cells, and on the natural mode of transmission of FeLV, has securely established his place among the giants in viral oncology research.

A LOYAL ALUMNUS, class of '66, he has been active and highly visible in alumni affairs. By this time tomorrow—on Alumni Day—he will have assumed the Presidency of the Pennsylvania Veterinary Alumni Society, an office of special importance in this, the School's Centennial Year.

BILL HARDY also holds an academic appointment as adjunct associate professor of Oncology in the Veterinary School, so that generations of our students have been privileged to bear his superb lectures on feline leukemia.

BILL HARDY'S career illustrates, as well as any I have known, the unlimited possibilities of contributions to biomedical knowledge through the comparative approach, particularly through the study of spontaneous animal models of human disease.

WE WELCOME our great colleague back to Pennsylvania and ask him to accept this well-deserved recognition—the Veterinary School's Centennial Medal.



The Centennial Medal is presented to Mrs. Grace L. Lambert as Sheldon Hackney, president of the University looks on

GRACE LANSING LAMBERT—Benefactress, Overseer, breeder of fine animals, nature lover, conservationist, and most gracious lady.

GRACE LAMBERT has been a member of the Veterinary School family for very many years—interested in New Bolton Center because of her Morgan horses, and in our Philadelphia campus because of her Labrador retrievers and other dogs. She has served on our Board of Overseers since 1976.

HER RAPPORT WITH NATURE is best described in the words of her late husband, Gerard Lambert. He said "Gracie is an outdoor girl. She loves anything out of doors from animals to flowers to rainstorms. She is an animal lover and somehow animals know that." One has only to visit her home to sense this kinship with animals, both wild and domestic. Her dogs adore her, birds fill her garden with song, and at dusk, dozens of deer graze peacefully in meadow and orchard.

ALTHOUGH Grace Lambert is most familiar with the School's clinical services, she did not hesitate to dedicate the Professorship she has recently endowed to the discipline of cell biology, understanding that the great advances in clinical medicine generally result from research in basic science disciplines. We are proud, grateful and privileged that Grace Lambert's broad interests encompass our School of Veterinary Medicine and we are especially pleased that the first incumbent of the Grace Lansing Lambert Chair in Cell Biology, Professor Leon Weiss, a true renaissance man, reflects so well her intelligence, broad knowledge, sensitivity, open-mindedness, and caring. We agree with Gerard Lambert who said that Gracie is "the most generally adored woman I know" and we ask her now to honor us by accepting the Veterinary School's Centennial Medal.



Dr. Mark W. Allam presents the Centennial Medal to Dr. George C. Poppensiek

WE HONOR George C. Poppensiek—Penn alumnus, scholar, and academic leader.

HIS MANY significant contributions to virology, to diagnostic laboratory medicine and to international veterinary medicine led him in 1959 to the stewardship of our sister institution at Cornell University. There, during 15 years as dean of the New York State College of Veterinary Medicine and as Professor of Microbiology, he carried forward Cornell's great tradition of excellence in teaching, in research and in patient care. As dean, he eloquently articulated to many important constituencies, the nature, the breadth and value system of veterinary medicine, helping to raise public awareness and thereby, public support for veterinary medical education and research. He now serves Cornell and his profession as the James Law Professor of Comparative Medicine.

DURING A 42-YEAR long furlough from his alma mater—his V.M.D. was conferred in 1942—George Poppensiek never relinquished his ties with Pennsylvania, nor did he lose touch with his extraordinary classmates, including our own Professors David Detweiler, John Martin and Charles Raker.

WE ARE PROUD to welcome back this distinguished Pennsylvanian and we ask him to accept the Veterinary School's Centennial Medal as one measure of our admiration and appreciation for his achievements as an academic leader in the field of veterinary medicine and of our esteem for a wonderful colleague.



Dr. Leon Z. Saunders receives the Centennial Medal.

WE HONOR Leon Z. Saunders—a faculty colleague, teacher and distinguished scholar.

OWING TO his monumental work in neuro and ophthalmic pathology, he holds a special place amongst veterinary and comparative pathologists. A prodigious worker, he has authored more than eighty technical papers and five superb books and he is a co-founding editor of *Veterinary Pathology*, the premier journal in its field. He has served as President of the World Federation of Veterinary Pathologists and of the American College of Veterinary Pathology.

LEON SAUNDERS'S scholarship extends well beyond the interests of traditional academic pathology. His extraordinary book, *Veterinary Pathology in Russia 1860-1930*, is the only history of veterinary pathology in any country, bringing to light many surprising and important discoveries made during those halcyon days of Russian veterinary pathology.

IN 1958, Leon moved from the Brookhaven National Laboratory to become Head of Pathology and Toxicology at Smith Kline and French, rising through the ranks of that prestigious Philadelphia-based corporation to his present position as Vice-President for Safety Evaluation at Smith Kline and French Laboratories.

HIS PRESENCE in Philadelphia has been a blessing for our School of Veterinary Medicine because, since 1958, he has been an important teaching member of the Faculty. His piercing intelligence—logical, demanding, precise—his rock-hard integrity, his qualities of courage, loyalty, and compassion, combine to make him a tremendous force of a man.

HONORED MANY TIMES and in many parts of the world, we are proud to add our tribute to Leon Saunders by asking him to accept the Veterinary School's Centennial Medal.



Dr. W. Jean Dodds and Dr. Mark W. Allam

WE HONOR W. Jean Dodds—a distinguished veterinarian and world-class scientist, a colleague and teacher in our School of Veterinary Medicine, a national leader in advancing her profession and in fostering a responsible approach to animal welfare in the scientific community.

THE WORLD'S leading authority on bleeding disorders in animals, she is Chief of Hematology in the New York State Department of Health and adjunct professor of medicine at both the Albany Medical College and the University of Pennsylvania's School of Veterinary Medicine. A sought-after member of NIH Study Sections, she chaired the National Research Council's recent study on Specialized Veterinary Manpower Needs through 1990, and she now serves as President of the Scientist's Center for Animal Welfare.

JEAN DODDS'S brilliant career has been a superb model for other women, whose admission to the profession of veterinary medicine in significant numbers, is a relatively recent phenomenon.

WE ARE PROUD of our enduring and productive association with Jean Dodds and we are most grateful for her warm friendship. With admiration and affection, we ask her to accept the Veterinary School's Centennial Medal.



Mrs. Grace L. Lambert and Dr. Leon P. Weiss.



Mrs. Elizabeth C. Clark, Sheldon Hackney, Mrs. Grace L. Lambert



Dr. Robert R. Marshak and Dr. Leon Z. Saunders

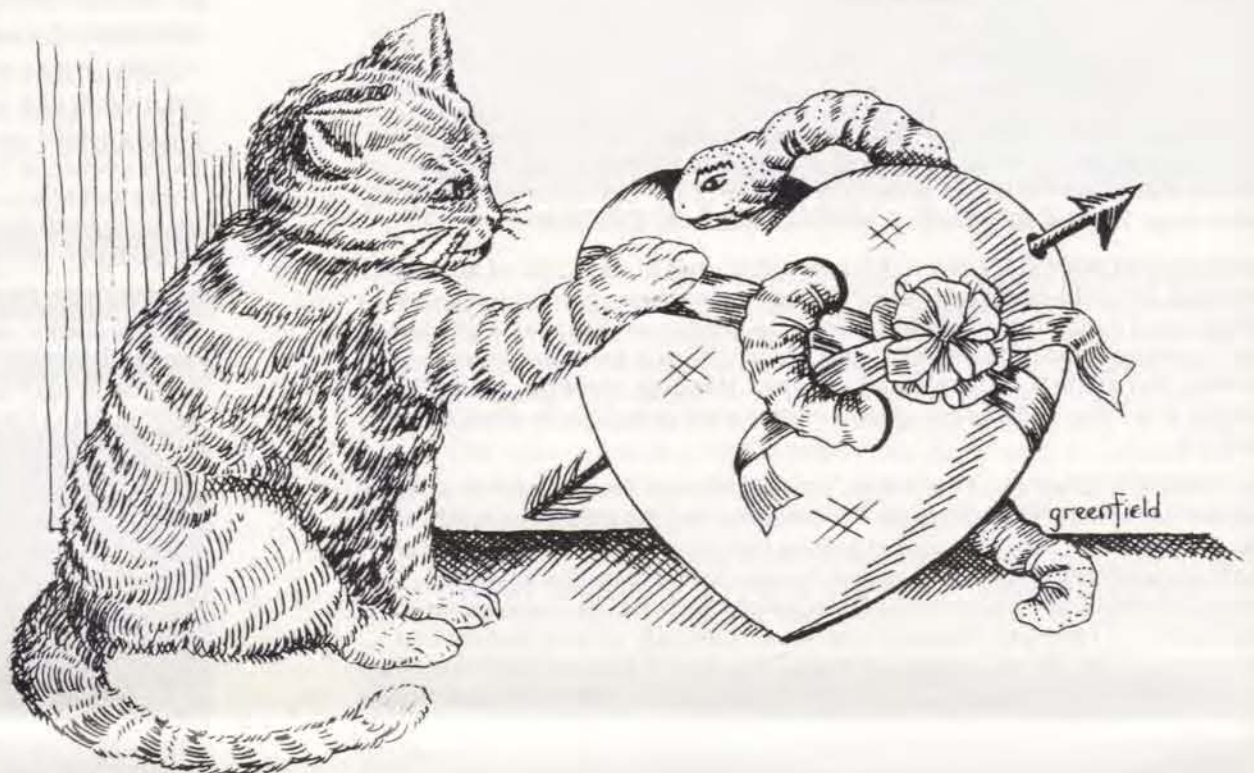


Dr. George C. Poppensiek and Mr. Charles S. Wolf



Dr. Mark W. Allam congratulates Dr. Leon Z. Saunders

CATS TOO CAN HAVE HEARTWORM



HEARTWORM infection, a disease commonly affecting dogs, is also seen in cats. "Cats are not equally at risk with dogs," explained Dr. David Knight, Chief of the Section of Cardiology at the University of Pennsylvania's School of Veterinary Medicine. "But heartworm disease in cats is probably more prevalent than we think, particularly in animals which live outdoors."

Unlike dogs, cats are not regularly tested for heartworm disease, nor are they maintained on preventive drugs. The presence of heartworm is difficult to detect in felines. "In infected cats microfilariae are generally found in low numbers or are absent entirely," said Dr. James B. Lok of the Laboratory of Parasitology at the School. "Cats are relatively inefficient hosts for *Dirofilaria immitis*. Infective larvae may mature but in many cases they do not reproduce well in the cat." Laboratory studies found that heartworm can reproduce in felines but that production of microfilariae is frequently suppressed by the cat's immune system.

Heartworm is spread by mosquitoes, an intermediate host necessary for the development of the parasite. Adult heartworms live in the pulmonary arteries and the right ventricle of the host animal, and can cause severe interference with the pulmonary circulation and function of the heart. Female worms give birth to live motile embryos called microfilariae which are released into the circulatory system of the host. They are carried to the capillaries close to the surface of the skin. From here they are ingested

by a mosquito taking a bloodmeal. The microfilariae develop through three larval stages in the mosquito's body before they are capable of entering a mammalian host through the bite wound the mosquito makes upon taking another bloodmeal. The larvae undergo two more molts before reaching a juvenile stage when they take up residence in the cardiovascular system. There they mature and begin to reproduce.

Cats with heartworm present various signs of illness, relating to cardiopulmonary disease and some, like vomiting, which ordinarily do not suggest such problems.

According to Dr. Lok, 15 to 25 percent of infected dogs can be expected to develop an occult infection in which microfilariae produced by the adult heartworms do not reach detectable levels in the blood. In the cat the rate of occult infection is much higher, making diagnosis difficult by the commonly used tests to detect microfilariae. The veterinarian may detect the disease in cats by alternative methods using the ELISA (enzyme linked immunosorbent assay) or by radiographing the chest. The

ELISA detects antibodies against *D. immitis* and radiographs are useful for identifying signs of pulmonary vascular disease which are characteristic of the infection.

"Cats can be treated for heartworm," said Dr. Knight. "The disease is managed the same way as in dogs." According to Dr. Knight there is no reason why cats cannot be placed on the preventive, though it must be kept in mind that the animal has to be free of microfilariae before the drug can be given.

Cats with heartworm present various signs of illness, relating to cardiopulmonary disease and some, like vomiting which ordinarily do not suggest such problems. "If suspicious the animal should be carefully examined and an ELISA performed if microfilariae are not found before ruling out heartworm disease," said Dr. Knight. He stated further, that while the disease was not as severe a problem as in dogs, the practitioner should be aware of it and be looking for it. "We really should be paying more attention to it, as it is out there." If heartworm is detected early, the treatment is fairly simple and the animal can live a normal life. For dogs, the early detection has paid dividends since, according to Dr. Knight, the clinic now rarely sees animals with severe damage due to heartworm disease.

Helma Weeks

CENTENNIAL YEAR AFFAIRS

Since October 2, 1884, marks the founding date of the School of Veterinary Medicine, it follows that a number of affairs are scheduled for the month of October 1984. Here is a list of major events for this exciting month:

Monday, October 1.

AWARDING OF CENTENNIAL MEDALS. The Veterinary School will award Centennial Medals to eighteen individuals in recognition of their outstanding contributions to veterinary medicine. The ceremony will take place at 5:15 P.M. in the Rainey Auditorium of The University Museum of the University of Pennsylvania and will be followed by a reception.

Tuesday, October 2.

FOUNDERS DAY DINNER. Plans are now being finalized for this affair which will recognize the founding of the School in 1884.

Thursday, October 4.

MAN AND ANIMALS—LIVING, WORKING AND CHANGING TOGETHER. An exhibit at The University Museum of the University of Pennsylvania. This exhibit presents the fascinating story, beginning more than 10,000 years ago, of man's role in the domestication of the dog, horse, cow, and cat. The central theme of the exhibit will portray the ways in which man influenced the biological variations and observable changes in these and other animals as civilization developed. Interwoven in the exhibit will be a portrayal of some of the contributions of the School of Veterinary Medicine in this process. The exhibit will be open to the public through June 1985.

Monday, October 15.

UNIVERSITY CONVOCATION. The University of Pennsylvania will award honorary degrees to nine individuals in a ceremony held in The University Museum of the University of Pennsylvania.

Monday, October 15 through October 17.

CENTENNIAL SCIENTIFIC PROGRAM. An outstanding array of speakers will present papers on both applied and basic science. A printed program will be available in the near future.

Tuesday, October 16.

BIRTHDAY PARTY. This will be the fun event of the year. The Party, held at the First Troop Cavalry Armory, 3rd and Chestnut Streets, Philadelphia, will be strictly informal and will feature on Old Philadelphia theme, with Philadelphia-style food, drinks, and dancing. Everyone is invited. Tickets (\$30 each) are now available in the Centennial Office of the Veterinary School. Watch for more detailed information.

Wednesday, October 17.

"A 100-YEAR JOURNEY-AN EVENING WHEN THE PAST MEETS THE PRESENT." The organization of Minority Veterinary Medical Students will sponsor a cocktail-dinner to honor Dr. Jane Hinton (V'49), the first black woman graduate of the Veterinary School, and Dr. John B. Taylor (V'08) the first black graduate. Time and place to be announced. For information call the Centennial Office, 898-1475.

Sunday, October 21 through October 23.

ANNUAL MEETING OF THE AMERICAN COLLEGE OF VETERINARY RADIOLOGY. See announcement under Rosettes and Ribbons.

INTERNATIONAL CLUB

Many of us have chosen veterinary medicine for careers because we care about the quality of lives. Those of us who are also adventurous would like to work abroad. In the interest of these pursuits, University of Pennsylvania Veterinary Students have formed the International Club. So far, we have been very successful at building a substantial membership, forming a network with International Clubs at other veterinary schools, and providing information, through lectures and newsletters, about the worldwide situation of veterinary medicine. Students' interests in international veterinary medicine has surfaced since the inception of our club. In light of this newly discovered enthusiasm, I am sure there are other students and faculty members who could contribute to the fulfillment of our club's goals. We would greatly appreciate you sharing your experiences with us.

Barbara Flickinger
Senior Student

A Legacy and A Promise

by John Martin, V.M.D.

A book to treasure, read and pass down for years to come. A "must" for all graduates, alumni, faculty, friends and animal lovers of all ages. *Lists all graduates and faculty since 1884!*



Here is my order for _____ copies of the 100-Year History, *A Legacy and A Promise*.

☐ Enclosed is my check for \$ _____ (\$27.95 each pre-paid).

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Centennial Office
UNIVERSITY OF PENNSYLVANIA — SCHOOL OF VETERINARY MEDICINE
3800 Spruce Street Philadelphia, Pa. 19104

ROSIE AND RUBENS

Dr. Robert E. Davies, Benjamin Franklin and University Professor of Molecular Biology, received the Christian R. and Mary F. Lindback Award for Distinguished Teaching at a ceremony held in the Rare Books Room of the Van Pelt Library on April 26, 1984. Some of the comments offered by students, colleagues, and alumni in support of Dr. Davies' selection for this prestigious award were: "World renowned...demanding, stimulating, permanent in effect...open to questions and criticism...erudite, fair...articulate, colorful and absorbing...unflinching work to improve curriculum and teaching...I am doing all that I can to copy his approach."

Dr. Adrian R. Morrison, professor of anatomy, was one of the 283 Guggenheim Fellows named this year across the nation. Seven other Penn faculty members joined Dr. Morrison in receiving this outstanding award—a number that tied the University for third place with Cornell (the University of California at Berkeley received 13 awards, and Harvard University was awarded 9 fellowships). Dr. Morrison's award covers a year's travel and research. The award recognized his research into the physiology of sleep. Guggenheim Awards are made on the basis of demonstrated accomplishment in the past and strong promise for the future.

On March 12, 1984, the Zoological Society of Philadelphia and the Aquavet Program of the Veterinary School sponsored an illustrated lecture by the famed explorer, **Jean-Michel Cousteau** at the Irvine Auditorium of the University of Pennsylvania.

We are sad to report the death of Mrs. Harriet R. Lentz, widow of Dr. Frank E. Lentz, on March 20, 1984. Dr. Lentz was a member of the faculty for 42 years. Mrs. Lentz is the donor of the pharmacy at VHUP which was named in honor of her and in memory of her late husband.

In the last issue of *Bellwether* we reported that the Veterinary Hospital of the University of Pennsylvania (VHUP), had been awarded an AAHA Certificate. We now have more information on this important event. The award was made on January 6, 1984, by Dr. John McCarthy, president of the American Animal Hospital Association, and designates VHUP as an approved hospital member of the AAHA. In presenting the award to Dr. Kenneth Boyce, chairman of the Department of Clinical Studies, Dr. McCarthy remarked, "Your desire and willingness to subject your Hospital to the evaluation necessary to achieve this designation indicates not only a desire on your part to meet AAHA standards, but, more importantly, a commitment to teach the importance of standards of practice and facility to your students."

On October 21 through 23, 1984 the Veterinary School will host the Annual Meeting of the American College of Veterinary Radiology. Practitioners are invited to attend the three-day scientific program. The first day of the program is directed specifically toward the interests of small animal and equine practitioners. For further information, contact the Veterinary School's Continuing Education Office or Dr. Darryl Biery.

Dean Robert R. Marshak has been appointed to the Science Advisory Board of the School of Veterinary Medicine of the Hebrew University of Jerusalem. The appointment was made by Dr. Don Patinkin, president of the University. The School of Veterinary Medicine at this institution will begin operation in October 1985, and the director of the School will be Professor Kalman Perk.

Mr. Edwin Newman, the well-known news correspondent, will deliver the address at the Palace H. Seitz Dinner of the Pennsylvania Veterinary Medical Association in Philadelphia on October 14, 1984. The affair is scheduled for 6:00 P.M. at the Hershey Hotel, and Mr. Newman's topic will be "Preserving A Civil Tongue." Advance reservations are necessary. \$35 a couple.

Dr. Alan M. Klide, associate professor of anesthesia, has been invited to present a "Refresher Course" at the Annual Meeting of the American Society of Anesthesiologists in New Orleans, October 1984. Dr. Klide's presentation before the group of international authorities on anesthesia is titled "Comparative Anesthetic Techniques: Common Laboratory Animals, People, and Other Exotic Species." Dr. Klide is the first veterinary anesthesiologist, and the first veterinarian to present a "Refresher Course" before the Society.

A record crowd of over 6,000 persons attended the Annual New Bolton Center Open House on April 14, 1984. Included in the many demonstrations and facilities viewed by the visitors were the recently established neo-natal foal unit, the swimming pool for anesthetic recovery, Virgil, the world's first test-tube calf, (now a 1,361-pound bull), surgical suites, farrier shop, and Bucky, the first horse to receive a cardiac pacemaker. As usual, Miss Cathy Larmore, director of external affairs, did a superb job in arranging the affair.

The Honorable Penrose Hallowell, Secretary of the Department of Agriculture for the Commonwealth of Pennsylvania recently announced the awarding of a grant of \$21,447 to be used for the study of "The Effect of Protein Degradability and Estrous Detection on Dairy Reproduction." The researchers, all at New Bolton Center, are Drs. James D. Ferguson, Terry R. Blanchard, John Fetrow, and William Chalupa.

Dr. Julie Staver (V '82), considered to be one of the nation's greatest field hockey defensive players will represent the United States in the 1984 Olympic Games in Los Angeles. Dr. Staver has played field hockey for eighteen years, the last ten on the Womens National Team. She was chosen to play in the 1980 Olympics, but was denied the honor because of the boycott. Since graduation Dr. Staver has worked part time at the Rockhill Animal Hospital near Sellersville, PA, with Drs. Richard (V '57) and Thomas (V '74) Derstine.

Velma W. Goode, assistant to the dean, was elected to the Board of Directors of the Public Television Station, WHYY, (Philadelphia). Mrs. Goode is the wife of the Honorable W. Wilson Goode, Mayor of Philadelphia.

Cathy Cantanzaro, a senior student, was awarded a \$500 scholarship and plaque by the Agricultural Division of Pfizer Inc., New York, N.Y. The award was presented by Dean Robert R. Marshak on June 22, 1984.

Dr. William W. Moyer, assistant professor of surgery, and **Dr. David P. Nunamaker**, Jacques Jenny Professor of Orthopaedic Surgery have been awarded a \$325,000 grant by the Horsemen's Benevolent and Protective Association, New York Division. The award, the largest in Thoroughbred racing history, was announced by Mr. William C. MacMillen, Jr., president of the Association. The funds will be used for research on the relationship between bucked shins and other common bone injuries, and will include an examination of training practices and race-track surfaces, including a comparison of the safety features of dirt and wood chip tracks.

Dr. Ralph L. Brinster, Richard King Mellon Professor of Reproductive Physiology, delivered the Fourth Annual Burroughs Wellcome Distinguished Lecture on April 5, 1984, at the Philadelphia College of Pharmacy and Science. Dr. Brinster's lecture was titled "Introducing New Genes Into Animals."

Upon the recommendation of Dr. Marc A. Rosenberg, ALPO Petfoods Inc. has awarded **Dr. Darryl N. Biery**, professor of radiology, a \$1,000 grant which will be used to purchase a radiographic viewing system which will enhance the teaching of students and staff. Dr. Rosenberg is a consultant to ALPO, and is adjunct associate in medicine in the Veterinary School.

The Collaborative Research and Teaching Program, initiated several years ago by the Dental and Veterinary Schools at Penn has been well received, and this past academic year fourteen veterinary students spent 1.5 days rotating through various clinics in the Dental School.

Dean Robert R. Marshak was joined by Sheldon Hackney, president of the University in sending a scroll to two European veterinary schools that are celebrating anniversaries this year. These are the Faculty of Veterinary Science at the Rijksuniversiteit-Gent, celebrating fifty years of Dutch Speaking Education in Veterinary Science, and the Veterinary School of Bologna, marking its bicentennial.

Congratulations to **Dr. Corrinne Raphael Sweeney**, lecturer in Medicine on her selection for the 1984 Norden Award for Distinguished Teaching in the Field of Veterinary Medicine.

Dr. Robert J. Rutman, professor of biochemistry, has been appointed research professor in the Department of Biology at Lincoln University, effective March 15, 1984.



Dr. Robert E. Davies

ALUMNI AND CONTINUING EDUCATION CORNER

July 1984

Dear Colleagues:

In May, you received a letter from us describing the School's five-year fund-raising campaign. The **SECOND CENTURY FUND** will help improve the School's financial strength through substantial increases in endowment and student financial aid. The **ALUMNI COMMITTEE** has been hard at work over the past several months organizing Alumni geographically to participate in the Campaign.

The following states have alumni representation:

CALIFORNIA:	Richard A. Mansmann, V'68
CONNECTICUT:	Michael R. Ratner, V'59
DELAWARE:	Donald A. Gooss, V'63
FLORIDA:	Walter A. Woolf, V'60
	Robert L. Ticehurst, V'34
MAINE:	Richard A. Mansmann, V'68
MARYLAND:	A. Cleveland Brown, V'59
	Harold E. Schaden, V'40
NEW HAMPSHIRE:	Edward J. Lemos, V'57
NEW JERSEY:	Marvin Rothman, V'58
	Harold M. S. Smith, V'43
	Jarvis J. Badgley, V'59
	David A. Meirs II, V'54
	Robert R. Shomer, V'34
	Louis Wasser, V'61
NEW YORK:	Manuel A. Gilman, V'45
NORTH CAROLINA:	Jack O. Whitaker, V'51
PENNSYLVANIA:	Loy C. Awkerman, V'52
	Clifford F. Wright, Jr., V'49
	Susan K. McDonough, V'68
	Arthur Richards, Jr., V'49
	Everett E. Denlinger, V'47
	A. Wayne Mountain, V'51
	Sherbyn W. Ostrich, V'63
RHODE ISLAND:	William O. Condon, V'70
VERMONT:	David H. Baldwin, V'51
	J. Clyde Johnson, V'62
VIRGINIA:	Robert L. Booth, V'35
WASHINGTON, D.C.:	A. Cleveland Brown, V'59

Chairmen are needed for all states not listed, e.g. Massachusetts, Ohio, Georgia, etc. If you wish to join this active and growing group of alumni as we work toward a stable financial environment for the School, please call the Alumni Office of the School at (215) 898-4234, or Dr. Loy C. Awkerman at (717) 665-2338. We would be delighted to hear from you whether you wish to volunteer, or have questions or comments regarding the Campaign.

Sincerely,

Loy C. Awkerman, V'52

Clifford F. Wright, Jr., V'49

The Centennial Scientific Conference will be held on Monday, October 15, Tuesday, October 16 and Wednesday, October 17, 1984 at the Bellevue Stratford Hotel in Philadelphia. The Pennsylvania Veterinary Medical Association has deferred its Annual Meeting for this unique Continuing Education Program. The Conference is sponsored by the School as part of its year-long centennial celebration.

PROGRAM

MONDAY, OCTOBER 15, 1984 — 9:00 a.m.-Noon
Dr. Charles C. Capen: Calcium Metabolism: Recent Advances in the Pathogenesis of Diseases Involving the Calcium Regulating Hormones

Dr. Thomas Maniatis: General Molecular Medicine

Dr. Stephen Ettinger: Drug Therapy in Small Animal Cardiology—1984

Dr. Doug Leach: Practical Applications of Equine Locomotion Research

Dr. Donald Walker: Bovine Male Urogenital Surgery

TUESDAY, OCTOBER 16, 1984 — 9:00 A.M.-5:00 P.M.
Dr. Susan Cotter: Medical Oncology in Small Animal Practice

Dr. Shirley Johnston: Clinical Management of Reproductive Disorders of the Male Dog and Cat

Dr. Donald Piermattei: Orthopaedic Problems of the Lower Limb

Dr. Lewis Sokoloff: Localization of Functional Activity in the Nervous System by Metabolic Probes

Dr. Anthony Stannard: Equine Dermatology

Dr. Otto Radostits: Clinical and Laboratory Diagnosis of Abdominal Disease in Cattle

Drs. William Hardy, Max Essex, and Susan Astrin: Research in Small Animal Oncology

Dr. Ollie Ginther: Equine Reproduction

Drs. Toby Hayes and Lance Lanyon: Wolff's Law

Dr. Reuben Mapletoft: Reproductive Management in the Bovine—1984

Dr. Joe Morgan: A Review of Radiographic Patterns of Joint Disease in the Dog

Dr. John A. Reif: Contemporary Urban Zoonoses

Dr. Glenn A. Severin: Advances in Ocular Therapeutics

WEDNESDAY, OCTOBER 17, 1984 — 9:00 A.M.-Noon

Drs. Jack Bloom and Hugh Lewis: Large Animal Clinical Pathology

Dr. Peter J. Ihrke: The Diagnosis and Management of Canine Pyodermas

Dr. Niels C. Pedersen: Feline Clinical Immunology

Drs. Kenneth Warren and E. J. Soulsby: The Current Status and Future of Parasitology

Dr. Wayne Wingfield: Echocardiography in the Diagnosis of Small Animal Heart Diseases

Dr. Joe Morgan: Large Animal Radiology

Registration Fee—\$135

EVENTS

OCTOBER

- Founders Day Dinner, University Museum Preview of the exhibit "Man and Animals—Living, Working and Changing Together"*
- 2** *The University Museum of the University of Pennsylvania*
- 4** *Public opening of the exhibit "Man and Animals—Living, Working and Changing Together"*
- 14** *Palace H. Seitz Dinner/Lecture, Hershey Hotel, Philadelphia*
- 15** *Special University Convocation in honor of the School of Veterinary Medicine, University Museum*
- 15-17** *Centennial Scientific Conference*
- 16** *Centennial Birthday Party*
- 17** *A 100 year journey—an evening when the past meets the present, a reception and dinner sponsored by the Minority Veterinary Medical Students*
- 21-23** *Annual Meeting, American College of Veterinary Radiology, Philadelphia*
- 28-29** *Conference of Schools of Veterinary Medicine and Schools of Social Work, Philadelphia*

NOVEMBER

- 6-9** *Sixth International Conference for the Cardiovascular Dynamics Society, Philadelphia*
- 15-16** *Special tours of VHUP (by reservation only)*
- 16** *AKC Centennial Specialties Dog Show, Civic Center, Philadelphia*
- 17-18** *American Kennel Club Centennial Dog Show, Civic Center, Philadelphia*
- 19** *Kennel Club of Philadelphia Dog Show, Civic Center Philadelphia*

NEW EVIDENCE ABOUT POTOMAC FEVER

Potomac Fever is one step closer to being solved as a result of recent collaborative research findings by the National Veterinary Services Laboratories, APHIS, USDA, Ames, Iowa; College of Veterinary Medicine, Urbana-Champaign, Illinois; and the University of Pennsylvania's School of Veterinary Medicine at New Bolton Center. The combined research effort gave additional evidence that a Rickettsial *Ehrlichia* sennetsu-like agent may be involved in Potomac Fever. Several horses and one New Jersey stallion, all of which had clinical signs of Potomac Fever, developed antibodies to this agent after contracting the disease. All of the cases, except the one from New Jersey, were tested for these specific antibodies prior to developing signs of Potomac Fever and were found negative.


Further research work will focus on the isolation of organisms from the blood of infected horses and a study on the efficacy of the antibiotic, tetracycline, in preventing this infection in horses. Tetracycline is one of the drugs of choice for human Rickettsial disease, such as Rocky Mountain Spotted Fever. Though agents in man and animals may be similar, no evidence exists to date that people are affected with Potomac Fever.

The Morris Animal Foundation, which provided partial funding for initial studies of the disease at the University of Pennsylvania's School of Veterinary Medicine and the Virginia-Maryland Regional College of Veterinary Medicine, has provided additional funding to follow up on this lead. The Foundation, a public, nonprofit organization, sponsors studies of diseases

THE CENTENNIAL BIRTHDAY PARTY

October 16, 1984
7-11 p.m.
1st City Troop Cavalry Armory
23rd and Chestnut Streets
Philadelphia, PA
Philadelphia-Style Food
Music — Dancing
Dress—Informal
Tickets \$30
Student tickets \$15

*Order now from the Centennial Office
School of Veterinary Medicine
3800 Spruce Street
Philadelphia, PA 19104*



of horses, cats, dogs and zoo animals through grants to veterinary colleges.

The researchers involved include Dr. Allen Jenny, National Veterinary Services Laboratories, Ames, Iowa; Dr. M. Ristic and Ms. Syndi Holland, Univer-

sity of Illinois, Urbana-Champaign, Illinois; and Drs. Jonathan Palmer, Robert H. Whitlock, Charles Benson, Helen Acland, Fern Tablin and Peter Mann, all from the University of Pennsylvania at New Bolton Center, Kennett Square, Pennsylvania.

Bellwether

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