PRESERVING SPERM THROUGH FREEZING OF SPERMATOGONIAL STEM CELLS

Frozen sperm has long been a mainstay of the cattle and dairy industry. But sperm from many other species do not freeze well because freezing protocols vary from species to species and effective methods have been developed for only a few animals. Now Dr. Ralph Brinster, Richard King Mellon Professor of Reproductive Physiology here at the School, has developed a technique that may eliminate the need to freeze sperm. Dr. Brinster and colleagues developed a method to freeze the cells that give rise to spermatogonia and showed that these cells are productive when thawed. 

LATE BREAKING NEWS:
The Pennsylvania Legislature has voted to restore the School’s funding to 1996 levels and has provided an additional $400,000 to renovate the toxicology laboratory at New Bolton Center, bringing the total to $21,107,000.
Award for Dr. Allam

Dr. Mark W. Allam, V'32, former dean and Professor Emeritus of Surgery, received the John Whitey Eckman Award for Outstanding Service to the College of Physicians of Philadelphia. The award was presented on January 18, 1996 by Dr. Robert H. Bradway, Jr., past president and chairman of the awards committee. Following is the citation:

Mark Whittier Allam was born in Fernwood, Pennsylvania. The two happy circumstances, his middle name and the woodsly sound of his birthplace, may be in part responsible for this remarkable man's happy disposition and optimistic turn of mind. Anyone who loves animals is a lovable person, understanding, as he must, those who cannot communicate with words. Full of fun, full of wisdom — Mark Allam! We salute him; we love him!" Those words were written over 20 years ago by Dr. Katherine Boucot Sturgis, the first Lady president of our College, They are certainly still true today. I don't think anyone who has had the privilege of knowing this wonderful man would ever disagree.

Dr. Mark Allam was elected to the Fellowship on March 28, 1972, the first Veterinarian, in fact the first non-M.D., to receive that distinction, and may I say a happy distinction for the College as well. Over the many years of his association with us, Dr. Allam has served the College well on many diverse committees, as Chairman of the Committee on Audit, and as a member of the Council, our governing board, where he still sits as Councillor Emeritus. He maintains a low profile, but his opinions always count, especially in Harrisburg where he is held in highest esteem. Formerly Dean of the Veterinary School of the University of Pennsylvania, he was responsible for the creation of the New Bolton Center, a world renown center for animal husbandry and research.

In conclusion, I will again echo Dr. Sturgis's sentiments: Mark, we salute you! We love you! Ladies and gentlemen, please join me in applauding Dr. Mark Whittier Allam as the College of Physicians of Philadelphia awards him the John Whitey Eckman Award for Outstanding Service.

From the Dean

Following are remarks delivered on March 5, 1996, by Dean Alan M. Kelly to the Commonwealth of Pennsylvania House Appropriations Committee.

I wish to thank the Committee for your past support. You and your predecessors have provided the School with an appropriation for almost 90 years. This support recognizes the special contributions Penn's School of Veterinary Medicine makes to the economy of Pennsylvania and especially to the Commonwealth's #1 industry, agriculture.

Nevertheless, I am troubled to tell you that the School is once again threatened by the funding level proposed in the Governor's budget. For Fiscal Year 1997, the Governor submitted a budget for the School of $15,093,000, which is $5,609,000 or 27% less than the appropriation of $20,707,000 received in the present fiscal year. The amount proposed is virtually the same as the School received in the 1988-89 academic year, eight years ago. Adjusted for inflation, $15 million in 1989 is worth approximately $11 million today.

Cuts of this magnitude will damage the School irrevocably. Penn's School of Veterinary Medicine has the reputation of being the premier veterinary school in the world. Figure 1 outlines one measure upon which our reputation is based: listed are the numbers of papers that have been published by Penn Veterinary School faculty during the past twelve years in Nature and Science, probably the two most prestigious scientific journals in the world, compared to all other veterinary schools throughout the world. We produced 40% of the papers contributed by veterinary schools, our nearest rival produced just 5% of the papers. When compared to medical schools in the Commonwealth the results are equally favorable and are an eloquent statement of the quality of the Veterinary School faculty.

Unfortunately, our reputation as the leading veterinary school will be lost and will not be recovered in our lifetime if the Governor's proposals are sustained. Furthermore, a more predictable line of funding must be found for the School cannot survive as a quality institution with the roller coaster financing it has been received in the past several years; planning is futile, faculty and student morale is undermined, recruitment or replacement of new faculty is suspended and fund raising from the private sector, upon which we are extremely dependent, is crippled.

The School is the only school of veterinary medicine in the Commonwealth. It is also one of Pennsylvania's great bargains. Financing for almost all of the land and buildings at the 600 acre New Bolton Center campus and at the School's Philadelphia campus has come from private sources. Today, this physical plant is valued at approximately $350
million. At virtually every other veterinary school in the U.S., the physical plant, land, buildings and maintenance, come from state funds as does 60 to 70% of the operating budget. Although it is part of a private university, our School functions in every respect as the Commonwealth’s veterinary school, but in contrast to other schools we ask for only 39% of our operating budget from the Commonwealth. This is possible because we have learned to be entrepreneurial; we raise more resources from the private sector than any other veterinary school in the U.S.: we generate more income from our hospitals than any other veterinary school in the world, and we have more competitive research grants than any other veterinary school. These grants are important to our academic program in many ways, including the fact that they significantly offset our salary and overhead costs. In view of this, it is discouraging that the Governor’s budget seeks to reduce Commonwealth support to just 25% of our operating budget. Regrettably, we are also forced to charge three times the average level of tuition for veterinary education in the U.S. The disparity is illustrated in Chart 4 in your handout and Chart 5 depicts our growing concerns over the starting level of indebtedness of our graduates. In the present fiscal year we provided all Pennsylvania residents with scholarships of $1,100 and in our appropriation request seek scholarship funds to further offset our rate of tuition by an additional $2,500 in scholarships to Pennsylvania residents. This critical need is our highest priority. Unfortunately, there is no hope that we can maintain even our current level of scholarships for Pennsylvania residents if the proposed budget is enacted.

If enacted, the Governor’s proposed budget would damage not only the School, but also Pennsylvania’s multi-billion dollar food animal industry, an industry that plays a vital role in Pennsylvania’s economy. An abundant, cheap food supply is essential to the stability of the nation’s economy; food is America’s major commodity of foreign exchange. The veterinary profession provides the first line of defense in protecting the nation’s supplies of food of animal origin. Veterinary research has resulted in the eradication of a multitude of animal diseases including foot and mouth disease, swine fever, glanders, brucellosis, and bovine tuberculosis; the latter three diseases are transmissible from animals to man.

NAFTA, GATT and the 1996 Farm Bill clearly show that American agriculture must rely more than ever on research and biotechnology if it is to increase food production and remain competitive in a global economy. Through its educational, research and clinical service programs, the School of Veterinary Medicine contributes directly to the productivity of Pennsylvania agriculture so that it can compete in the global marketplace.

Disease, both clinical and sub-clinical, remains the major factor limiting animal productivity in Pennsylvania. The School conducts an active program of research into the causes and control of animal disease. This program includes research on Lyme disease, on bovine leukemia that is endemic in Pennsylvania dairy herds and on Johnne’s disease, a disease that annually costs Pennsylvania agriculture more than $6 million a year. It is worth noting that recent research suggests that the organism responsible for causing Johnne’s disease in cattle may also be involved in the pathogenesis of Crohn’s disease in man.

Because animal production is so directly a consequence of animal health, reproductive efficiency, nutrition and management practices, the Center for Animal Health and Productivity was established at New Bolton in 1986 with a mandate from the Commonwealth to develop and apply technology geared at improving the productivity and efficiency of Pennsylvania’s food-animal industries. The Center is concerned with the economics of the animal industry and has focused on Pennsylvania’s $1.5 billion dairy industry, the largest sector of the State’s agriculture industry. Faculty at the Center have garnered an international reputation for their contributions to the dairy industry. They also address critical environmental concerns facing the dairy industry in relation to farm run off and nitrogen pollution of streams and rivers in Pennsylvania and the Chesapeake Bay.

So that we may more adequately address the continuing needs of Pennsylvania’s dairy farmers, the School is presently building a new state-of-the-art dairy at New Bolton Center, the Marshak Dairy. The fundamental goal is to help Pennsylvania’s dairy farmers survive in a very difficult economic climate. The proposed budget will compromise our ability to fulfill this goal, to develop more advanced methods for the industry, to train personnel who will promote these methods in the field and to equip the Marshak dairy facility.

Recently, faculty in the Center for Animal Health and Productivity have expanded their work to the swine industry and in collaboration with other faculty in the School are now attempting to promote Aquaculture, fish farming, in the Commonwealth. This industry has the potential to grow into a billion dollar industry in Pennsylvania and is particularly interesting as it can be located in an urban setting where it can contribute to urban renewal.

The School runs the most productive poultry diagnostic lab in the State performing approximately 2/3 of the disease surveillance tests in Pennsylvania. As a result, Dr. Robert Eckroade and his colleagues were instrumental in diagnosing and controlling the devastating avian influenza epidemic that threatens the entire nation’s poultry industry several years ago. Their early diagnosis saved Pennsylvania’s poultry industry. If the smooth running of this high quality lab is hindered through lack of funds, what happens when the next new or re-emerging disease threatens Pennsylvania’s $550 million poultry industry?

Today, the poultry diagnostic lab addresses major concerns of food safety involving salmonella contamination of poultry meat and eggs. This is critically important for the industry, and also for the well being of the citizens of Pennsylvania.

In these and many other ways the School contributes to the economy of Pennsylvania and to the needs of its consumer. Unfortunately, all of these initiatives will be compromised if the proposed budget is enacted.

More than fifty percent of homes in Pennsylvania have a companion animal.
usually a dog or a cat. For many in our society, especially the lonely, the growing population of lonely senior citizens, and for the physically infirmed, pets play an immensely important role in terms of mental and emotional health. Beyond this, companion animals help millions of people cope with the everyday stresses of modern living. What happens when these animals become sick? Do we as a society feel an obligation to ensure that they are appropriately cared for? I believe that the overwhelming sentiment among Pennsylvanians is that animal ownership and proper care go hand in hand.

Penn's Veterinary School meets this need by educating more than 70% of the veterinarians practicing in the Commonwealth. Pennsylvania veterinarians refer difficult cases to our small animal hospital, including dogs in the canine corps of police departments, guide dogs for the blind, and valuable zoo animal collections. The School provides round-the-clock emergency care for injured and acutely sick animals. In 1995 more than 9,000 animals were treated in our emergency rooms.

The School has the largest basic science enterprise of any veterinary school in the U.S., and has made profound contributions to advancing human health.

There are many examples. But one of the most significant is the work of Dr. Ralph Brinster who pioneered the development of transgenic animals. Animals that have had foreign genes permanently inserted into their DNA in such a way that the genes are expressed in and alter the characteristics of specific tissues producing traits that are transmitted from generation to generation. It is widely recognized that this work represents one of the most significant advances in biological sciences of the 20th century. Dr. Brinster's work has profoundly advanced understanding of gene control in both the animal and plant kingdom. It is the foundation for current work on genetic engineering of crops and for cutting edge medical research on gene therapy. Because this technology has great potential for advancing the animal industry we have secured private funding to create the Laboratory of Animal Genetics and Germ Cell Biology at New Bolton Center with Dr. Brinster as the senior scientist. With this unique initiative we hope to continue advancing the economy of Pennsylvania's animal industry but we will have great difficulty continuing to raise funds from the private sector and recruiting outstanding faculty if the scientific excellence of the School is threatened through lack of State support.

Since the turn of the century, the General Assembly has played a fundamental role in nurturing this highly successful industrial/educational/research partnership. We recognize that we are in a period of austere budgets, but investment in the School of Veterinary Medicine is an investment in the future of animal agriculture - in productivity, efficiency and ability to compete in the world market. It is an investment in the economy of Pennsylvania that has and will continue to pay rich dividends.

1995 Saratoga Benefit Raised $115,000

The August 1995 benefit "An Evening in Old Saratoga" raised $115,000 for New Bolton Center, the large animal facility of the University of Pennsylvania School of Veterinary Medicine. The funds will be combined with the Lawrence E. Ensor, Jr. Memorial Fund to purchase a diagnostic medical ultrasound machine with color flow Doppler images. Presenting the check to Dr. Virginia Reeser, associate professor of medicine and chief of sports medicine and imaging and Dean Alan Kelly at NBC was Mrs. Robert L. Landan, Jr., of Chester Springs, PA, who chaired the Gala Committee of "An Evening in Old Saratoga". Also shown in the picture are Dean Alan Kelly and Mr. Gilbert Shick.

Through their efforts A Weekend in Old Saratoga, a non-profit group dedicated to raising funds for national and local causes, has donated over $327,000 over the last three years to New Bolton Center. The 1995 "An Evening in Old Saratoga" gala was dedicated to the memory of Lawrence E. Ensor, Jr., the late executive vice-president of the Fasig-Tipton Company.

The 1996 activities of the group at Saratoga from August 1 through August 5 will again benefit New Bolton Center.
Preserving sperm through freezing of spermatogonial stem cells  continued from front cover

The spermatogonial stem cells can be removed from the testes of prepubertal or adult animals and then frozen and stored. They can later be implanted into the testes of other animals where they will give rise to fully developed spermatozoa.

Dr. Brinster removed spermatogonial stem cells from a strain of transgenic mice that allows sperm cells to be stained blue when incubated in a special material. These cells were frozen for various periods of time, thawed and implanted into the testes of mice whose own spermatogonial stem cells had been chemically destroyed. Once implanted into the seminiferous tubules, the site in the testis where spermatogenesis takes place, the stem cells established spermatogenesis. In earlier work Dr. Brinster had shown that spermatozoa produced by donor cells were able to fertilize eggs effectively.

Spermatogonial stem cells differ from spermatozoa in that they carry the entire germ line of the male as they are diploid and they divide to replenish the stem cell populations as well as generate sperm. Each stem cell can produce over 4,000 unique spermatozoa. The ability to freeze spermatogonial stem cells has wide implications, not only for agriculture where it could be used to preserve potentially indefinitely, valuable strains of livestock, but also for the preservation of endangered species. For humans this technique could be utilized for males who have to undergo chemotherapy. The stem cells could be frozen and preserved and then later re-implanted, allowing the male to father children.

In another experiment, Dr. Brinster went a step further. Spermatogonial stem cells from transgenic rats were implanted into the testes of a strain of immunosuppressed mice. The rat stem cells gave rise to viable sperm, establishing that one species can be the host for the sperm development of another even though the length of the period for complete sperm development is different between host and donor. This opens the possibility that immunosuppressed mice could act as in vivo hosts for spermatogenesis of other mammalian species.

If scientists can develop a culture medium in which to maintain and grow these spermatogonial stem cells, many other possibilities arise. The stem cells then could be modified to correct a defective gene, eliminating specific genetic diseases forever from that particular male germ line. Modifications could be made in livestock germ cells to produce disease-resistant or better producing animals. The technique could also be used to create further transgenic models of human and animal diseases, aiding researchers in their studies of these problems.

The work was published in the June issue of Nature Medicine and the May 30th issue of Nature. Dr. Brinster's collaborators for the study of Rat spermatogenesis in mouse testis were Dr. Shauna D. Miika and Dr. Robert Hammer of the Howard Hughes Medical Institute, Department of Biochemistry, University of Texas Southwestern Medical Center, Dallas, Texas, and Dr. David Coughier and Mary R. Avarbock of his laboratory. The collaborators of the study on the Recomposition of spermatogenesis from frozen spermatogonial stem cells were Mary R. Avarbock and Clayton J. Brinster of his laboratory.

The research was supported by funds from the NIH, United States Department of Agriculture, W.M. Keck Foundation and the Robert J. Kleberg, Jr. and Helen C. Kleberg Foundation.

Dr. Brinster was the co-recipient of the First March of Dimes Prize in Developmental Biology, awarded on April 12, 1996 to him and Dr. Beatrice Mintz of the Institute for Cancer Research, Fox Chase Cancer Center, Philadelphia. The two scientists were honored for their pioneering work in the development of transgenic mice.

"We still don't know enough about the normal processes of biological development and how they sometimes go awry," said Dr. Jennifer L. Howse, president of the March of Dimes. "Basic research is essential to understanding these processes. It is laying the foundation we need to discover the origins of birth defects, and it gives us hope that one day we will be able to prevent many disabling and fatal disorders. We are delighted to recognize Dr. Mintz and Dr. Brinster for their major contributions to basic research."

The March of Dimes Prize will be awarded annually to investigators who have made a seminal discovery in developmental biology, one that has revealed a new principle of relevance to birth defects, and who have not previously received a major prize for their work.

Inaugural Scholarship Recognition Dinner

Scholarship donors met "their" students at a reception and Scholarship Recognition Dinner on November 8, 1995 in the Marshak Gallery at VHUP. About 80 students and donors got together and spent the evening in lively conversation. The 1996 Scholarship Recognition Dinner will be held on November 13, again at VHUP. If you are a current scholarship recipient or a donor, please mark your calendar.
Fast surgery for giant patients

The patients weigh a ton each and arrive at New Bolton in huge trailers from as far away as Iowa, Florida and Wisconsin. They are draft horses diagnosed as “roarers” and are brought to New Bolton because surgeons here have developed a reputation for being able to repair this condition safely.

“These Clydesdales, Belgians, Percherons and Shires are a challenge,” says Dr. Eric Tulleners, associate professor of surgery. “They weigh anywhere from 1,600 to 2,525 lbs, twice as much as the typical Thoroughbred. Their weight is a huge challenge for anesthesia as the animal can develop nerve and muscle damage from being in one position without adequate padding for too long.” To avoid this problem, clinicians at New Bolton have created a team approach for these patients to keep the time on the operating table to a minimum. “We have a well-planned anesthetic and surgical approach and because we have performed this procedure on more than 70 draft horses, everyone knows their part. We do as much of the surgical preparation as possible while the horse is standing. Our anesthesiologist and operating room nurses are skilled and dedicated and we are able to keep the anesthesia as short as possible. The anesthesia time for many of these surgeries is around one hour.”

Surgery is needed to repair a paralysis on the left side of the larynx, a common problem of draft horses. The animals make a whistling or roaring noise while inhaling and many cannot tolerate exercise. “The condition is caused by a paralysis of the muscle which moves the cartilage and vocal cord on the left side of the larynx,” explains Dr. Tulleners. “The paralyzed vocal cord collapses into the windpipe, creating an obstruction. The whistling or roaring sound is caused by the tissue flapping when the animal breathes. There are two cartilage flaps at the back of the windpipe. Normally they are upright and capable of moving into a fully open position, but when paralysis occurs, the affected flap folds over the windpipe opening every time the animal inhales. This dramatically impedes air intake. Between the flapping vocal cord tissues and the collapsed cartilage flap, the animal is deprived of about 50% of its air intake.”

This narrowing of the airway creates problems as the oxygen supply is drastically reduced. It may not be so apparent while the horse moves at a walk, but when it is asked to move at a fast trot, the animal quickly tires. Most of these horses are exhibited, drawing heavy wagons at a good trot. They usually are part of a team, perhaps as a four, six or eight horse hitch. If one or two animals in this team cannot maintain speed because of fatigue, then the hitch cannot function. Draft horses usually begin their “working careers” later than race horses, so the condition often does not become evident until the animal reaches five to seven years of age. “It’s not a life threatening problem,” says Dr. Tulleners, “but it interferes with performance. Roaring in horses is also not a new problem, it is mentioned in 16th century works on horses.”

New Bolton Center’s operating room in the Kline Center is equipped to handle these equine giants. The monorail used to move patients from the induction stall to the operating table is strong enough to carry the load and the table is big enough to handle the huge patients.

“We use a two-pronged approach to correct the problem,” says Dr. Tulleners. “First, with the aid of an endoscope an Nd:YAG laser is used to remove the collapsed vocal cord, a technique which is called a ventriculocordectomy. Then an incision is made in the neck to reach the cartilage flap to tie it back permanently (laryngoplasty). The procedures are performed under sterile conditions. We are able to complete both procedures in an average time of 45 minutes. Obviously, we strive to keep the duration of anesthesia as short as possible.”

Recently Dr. Tulleners performed a retrospective study of 65 draft horse patients to determine the long term outcome of the surgery which he first performed in 1984. The time period covered was 1984 to 1995. All the horses were treated for left laryngeal hemiplegia. They were 61 geldings, and four mares. Of these animals, seven had previous surgery for the condition at other clinics which had failed.

All the horses were treated by prosthetic laryngoplasty, and a left ventriculotomy or ventriculocordectomy was done on those animals which had not had a ventriculotomy. After the surgery four of the horses, developed transient (less than 12 hours) single limb myopathy or neuropathy which responded completely to medical therapy. The incision in all but one animal healed without trouble. One horse developed an infection at the incision which was cured with drainage and antibiotics. None of the animals had difficulty swallowing, excessive coughing, development of pneumonia, or nasal discharge. Owners reported that 77% of the horses did not make any more respiratory noise and returned to normal exercise tolerance and they considered the results of the procedure to be excellent. A good result was reported for 11% of the horses, with noise being reduced by 90%. A fair result, defined as an estimated 50% reduction in objectionable noise and improvement in exercise tolerance, was achieved in 8% of the horses. A poor result, defined as an inconsistent reduction of noise heard during exercise was seen in 4% of the horses.

“We are very happy with these
results,” says Dr. Tulleners. “They prove to us that the team concept and the carefully devised anesthetic approach enables us to safely and efficaciously treat these animals with no long term adverse effects. The key is that every member of the team knows what to do so we can be extremely efficient and keep anesthesia time to a minimum. It is wonderful to watch these horses regain their stamina and go back to work, fit and quiet. We have now treated over 70 draft horses from 15 states and three Canadian provinces.”

**Vaccination Program Against Pseudorabies**

Pseudorabies, also known as Aujezsky’s disease, is a viral disease of swine causing reproductive failure, neurologic signs and death in baby pigs, and respiratory diseases in growing swine. In 1989, a national pseudorabies eradication program was initiated after consideration by state, federal, and industry leaders of the costs of such a program and potential benefits to the swine industry. The goal of this program is elimination of pseudorabies from the national swine population by the year 2000. Progress toward this goal was slow at the beginning of the program, but has been gaining momentum in recent years. Currently, about 3,500 of the nation’s 200,000 swine herds are quarantined for pseudorabies infection.

On these quarantined farms, procedures to control the disease are carried out. These procedures include segregation of different age groups, removal of infected animals, and vaccination of breeding and growing swine.

Vaccination or the natural infection induces high levels of antibody to appear in the colostrum of sows, and this antibody is passively transferred to their progeny soon after birth. This antibody protects the young pig against natural pseudorabies infection, but also has the potential to inhibit pigs’ response to vaccine given later in life. This phenomenon is well recognized and evidence for this inhibition is obtained via serological sampling.

Dr. Paul M. Pitcher, clinical educator in the Department of Clinical Studies - New Bolton Center, spent two years with USDA-APHIS, Veterinary Services assisting Pennsylvania Bureau of Agriculture officials in the State-Federal Industry cooperative program to eradicate pseudorabies. During his tenure there, he worked with many quarantined producers in establishing effective cleanup plans. Typically, serial sampling of a cross-section of pigs of various ages was carried out as part of establishing vaccination programs on these farms which would be effective in controlling the disease. The results of these investigations indicated that the response of piglets to pseudorabies vaccine could be predicted based on semi-quantitative interpretation of antibody levels at the time of vaccination.

Dr. Pitcher, after joining the School's faculty in July, 1994, built on experience gained in pseudorabies control and utilized his work with the USDA as pilot work for a controlled field study to further investigate the interaction between passively transferred maternal antibody to pseudorabies and the response to pseudorabies vaccine. This study, completed last summer, used pigs in two commercial units - one at New Bolton Center, one in Lancaster county. Nearly 1200 blood samples were collected and analyzed at BAI's Summerdale laboratory for the presence of pseudorabies antibody.

Results of this investigation showed that pigs from non-immune sows exhibited no impairment of immune response to pseudorabies vaccine, even when vaccinated as young as six weeks of age. Pigs from immune sows exhibited inhibition of the primary serologic response to vaccine if antibody levels were in the “positive” range of an ELISA test at the time of vaccination.

One of the most encouraging findings of this study was that pigs demonstrated immune system priming and an anamnestic serologic response to pseudorabies vaccine, even if the primary serologic response was completely inhibited due to high levels of maternal antibody. These findings have important implications for the design of vaccination programs in swine herds infected with pseudorabies. If sustained antibody levels are needed, pigs from sows immune to pseudorabies should be booster vaccinated against pseudorabies. That is, pigs need to receive two doses of vaccine, at least two weeks apart in order to be fully protected against natural infection throughout the growout period. A single dose of vaccine is insufficient to stimulate a biologically significant response in such pigs. Evidence for immune system priming should be encouraging to producers battling the disease in their herds, because it means that benefits are being realized from the initial dose of vaccine, even though no serologic response occurs. The findings also have important implications for immune responses to other antigens.

Dr. Pitcher presented the findings of this work to practitioner groups at the 27th Annual Meeting of the American Association of Swine Practitioners in Nashville in March, 1996 and the 14th International Pig Veterinary Society meeting in Italy in July, 1996. In addition, a pamphlet will be prepared for distribution to swine producers via the Pennsylvania Animal Health and Diagnostic Commission and the work will be published in a peer-reviewed journal later this year.
Student Government Teaching Award Dinner Dance

On March 30, students, faculty and staff gathered for the annual Student Government Teaching Award Dinner Dance at Longwood Gardens. Each of the classes presented awards. There were also awards presented by the residents, interns and the nursing staff.

Dr. Regina Turner received the Class of 1997 Teaching Award from Scott Weber, V97.

Dr. Donna Dombach received the Class of 1998 Teaching Award from the class president.

Dr. Paul Orsini received the Class of 1999 Teaching Award from the class president.

Ann Bonnbaugh (V96) received the Class of 1996 Veterinary Technician Teaching Award.

Dr. Eileen Heldmann received the Lulu and Lucy Silver Annual bedside Manner Award and the Class of 1996 Intern Award from Dr. Joan Hendricks.

Dr. Eileen Heldmann received the Jute and Lucy Silver Annual bedside Manner Award and the Class of 1996 Intern Award from Dr. Joan Hendricks.

Mary Lou Rosato presented the Veterinary Technician Award. medal on by Harcum students to Stephanie Gishon (VHUP).

VMSG president, presented the VMSG Support Staff Award in Virignia Toplis (V96).

Dr. James Wilson was congratulated by Dean Kelly upon winning the SCVMA Teaching Award.

Wendy Curtis Uhle presented the Veterinary Technician Award. medal on by Harcum students to Stephanie Gishon (VHUP).

Hillary Fordyce, V96, received the Senior Student Patient Care Award from Jane Cohen (VHUP). This award was presented by the nurses.

Dr. Kenneth Orshalk, and Dr. Cynthia Ward received the Residents award for Outstanding Teaching by a Faculty member.

Dr. Elisabeth Rozinski received the Interns Mentor Award for Teaching by a Resident.
VHUP Endoscopy Service

The Rottweiler was anesthetized, soundly asleep, as it was wheeled into the new Endoscopy Suite on the third floor of VHUP. The dog had a chronic history of vomiting and diarrhea, and VHUP doctors wanted to perform upper gastrointestinal tract endoscopy for the purpose of obtaining a biopsy.

Not so long ago, gastrointestinal biopsy would have required abdominal surgery and a lengthy recovery. "We have recently made the transition from a fiber optic system to a (Pentax) video endoscopy system," said Dr. Robert Washabau, a gastroenterologist and associate professor of medicine. "As with the fiber optic system, the new video endoscopy system permits us to examine both the upper and lower gastrointestinal tract. The resolution of the newer system is just fantastic. Our clients and referring veterinarians especially appreciate the color image printouts. As with fiber optics, we can perform tissue biopsy, retrieve ingested foreign bodies, and perform some nutritional interventions. Many of these procedures are now less invasive to the animal and less costly to the client."

The new video endoscope came with special fittings that permit VHUP doctors to adapt the "older" fiber optic endoscopes to the new system. In addition, two new cystoscopes were purchased to permit examinations of the lower urinary tract of cats and dogs. The VHUP Endoscopy Service now has the ability to perform upper and lower gastrointestinal endoscopy, bronchoscopy, cystoscopy, rhinoscopy, and laparoscopy.

"We are now using the endoscopy equipment to place feeding (percutaneous endoscopic gastrostomy or PEG) tubes in animals in need of nutritional support. Before endoscopy systems, gastrostomy tube placement would require abdominal surgery. Endoscopic placement is a relatively minor procedure," explained Dr. Washabau.

The Endoscopy Service provides routine services five days per week. However, emergency services are available 24 hours a day, seven days a week. Residents are trained in the use of the equipment, and a full-time technician is assigned to the suite. An Outpatient Clinic is also held each Friday for special cases sent in by referring veterinarians. The Outpatient Clinic was developed for those clients who did not wish to hospitalize their animals.

Education and clinical research are the other missions of the Endoscopy Service. "A video projection system permits us to train our residents and interns, and better educate our students to new developments in endoscopy," said Dr. Washabau. "We now have an extensive library of video recordings for the edification of our future students, interns and residents."

VHUP is participating in a national study of Helobacter infection in cats and dogs. "This is an emerging disease entity in the dog and cat population," said Dr. Washabau. "The endoscopy program at VHUP will play a very pivotal role in establishing the incidence, diagnosis, and therapy of this infectious disease."

Development Offices Changes

Susan Barrett has been appointed associate director for development for the Philadelphia campus. Ms. Barrett was director of alumni affairs and annual giving. Eugenia Warnock was appointed to this position. Ms. Warnock comes to the School of Veterinary Medicine from the Law School where she was assistant director of annual giving.

Polo Benefit for New Bolton Center

The Brandywine Polo Club will hold a polo match to benefit New Bolton Center on September 8, 1996 at the Brandywine Polo Club near Toughkenamon, Chester County. The match is scheduled for 3 pm. Dean Alan M. Kelly will present the trophy to the winning team.
Dr. Sherbín W. Ostrich, V'63, is the first recipient of the Hellwether Medal, a new award presented by the dean for outstanding contributions to the School of veterinary medicine. Dr. Ostrich is the current president of the American Veterinary Medical Association.

Dean Alan M. Kelly was inducted into the College of Physicians of Philadelphia.

Dr. Michael Conzemius, assistant professor of surgery, passed his surgery boards and is now a diplomate of the American College of Veterinary Surgeons.

Dr. Patricia McManus, V'80, has joined the faculty here as assistant professor of pathology and heads the diagnostic laboratory at VHUP.

Dr. Perry Habeker, V'81, joined the faculty as assistant professor of pathology in the Laboratory of Large Animal Pathology.

Christine Chapman, an animal care technologist and animal health technician in University Animal Resources at VHUP, was named a 3 Employee of the Month. This is a University-wide recognition program.

Dr. Michael Kotlikoff, V'81, professor of pharmacology, has been appointed chair of the Department of Animal Biology. He replaces Dr. Leon Weiss who chaired the department for many years.

Dr. Phillip Scott, professor of microbiology, has been appointed chair of the Department of Pathobiology.

Dr. Urs Giger, professor of medical genetics, has been appointed chief of the Section of Medical Genetics.

Dr. Virginia Reef, associate professor of medicine. Dr. Mark Saunders, V'81, assistant professor of radiology, and Dr. Bernard Walsh, resident in radiology, made presentations at the annual meeting of the American Institute of Ultrasound in Medicine. Dr. Reef then traveled to the University of Murcia in Spain where she gave a three-day seminar in musculoskeletal ultrasonography of the horse together with Dr. Celia Marr who spent several years at the School during her postdoctoral work in ultrasonography.

Dr. Reef then traveled to Dubai, United Arab Emirates, for the First International Equine Symposium on Soft Tissue Injuries in the Equine Limb to present "Treatment of Superficial Digital Flexor Tendon Injuries with Beta-Aminopropionitrile-Fumarate: Sonographic Evaluation of Early Tendon Healing and Remodeling."

Dr. Paul J. Suorsa, V'56, has been appointed to the Pennsylvania State Board of Veterinary Medicine by Governor Ridge. Dr. Suorsa is in practice in Slippery Rock, PA.

Dr. Maria Jannone, V'82, has been elected vice president of the New Jersey Veterinary Medical Association.

Dr. Paula S. Henthorn, assistant professor of medical genetics, received a grant from the American Kennel Club Canine Health Foundation for "Molecular Genetic Characterization of Canine Cystinuria for the Development of Carrier Tests."

Dr. David Kritchevsky, professor of biochemistry, received the 1996 Supelco-AOCS Research Award from the American Oil Chemist's Society for research on the cholesterol mechanism. The award is presented annually to a scientist, technologist, or engineer who has been responsible for outstanding original research on fats, oils, lipid chemistry or biochemistry, and has published the results in technical papers of high quality.

Dr. Gregory Bossart, V'78, is the host of a new television show to be aired nationally. The program "Vanishing Species and the Wilderness Vet" will highlight vanishing wild animal species around the world.

Dr. Don Neiffer, V'92, was featured in a story about the Pittsburgh Zoo where Dr. Neiffer is one of the two zoo veterinarians.

Jessica Stehr, V'98, has been named a Ballard Student. She serves as an ambassador for the Morris Animal Foundation.

Dr. Margaret Lackey-Cebra, V'91, has been named a Fellow of the Morris Animal Foundation.

Dr. Gail Smith, V'74, associate professor of surgery, has received the 1996 American Veterinary Medical Association Award for Excellence in Research for his work in objectively describing the laxity of the canine hip.

Dr. Duncan Ferguson, V'79, has been appointed a member of the Morris Animal Foundation Scientific Advisory Board.

Dr. Charles Newton, professor of surgery, and Dr. Steven Fluharty, associate professor of pharmacology, each teach an undergraduate course at the University. Their courses were among the top ten most requested courses offered to undergraduates. Dr. Peter Hand, V'61, teaches a course in the College of General Studies and it was one of 11 CGS courses among the 80 highest
ranked undergraduate courses.

Dr. Douglas B. Watson, V'37, was honored by the Virginia-Maryland Regional College of Veterinary Medicine earlier this year. The college named its Heritage Room the "Douglas B. (Duke) Watson Heritage Room." Dr. Watson served on the faculty of the Virginia Polytechnic Institute for 23 years. A surprise visit to the ceremony was made by Dr. Arthur Bartenslager, V'37.

Dr. Steven W. Atwood, V'80, was recently appointed to the Massachusetts State Board of Veterinary Medicine by Governor William F. Weld. Dr. Atwood also serves on the Executive Board of the New England Association of State Veterinary Medical Boards, representing Massachusetts.

Dr. Richard Carnevale, V'73, has been appointed senior vice-president for science at the Animal Health Institute. Prior to this Dr. Carnevale held the position of associate deputy administrator for science at FSIS.

David Allgeier, V'97, was chosen to represent the School in the Pfizer Animal Health Student Representative Program. The program provides students with the opportunity to interact with prominent professionals and industry leaders and gain increased exposure to the animal health industry.

Dr. Kathryn Michel has been appointed clinical assistant professor of nutrition. She recently received a research grant from Purina to characterize the nutritional needs of patients.

Kenneth Mullin, director of medical records at VHUP, was a recipient of a 1995 National Student Recognition Award presented by the American Health Information Management Organization. Mr. Mullin is pursuing a master's degree at Temple University.

Dr. Colin Harvey, professor of surgery and dentistry, received the Merck Creativity Award for Innovative Teaching for his dental education program. At the recent World Veterinary Dental Congress in Vancouver, Canada, Dr. Harvey was presented with the inaugural Research and Education Award of the American Veterinary Dental Society for his contributions to veterinary dentistry. Dr. Harvey presented several papers at the congress as did Dr. Paul Orsini, assistant professor of anatomy and dentistry. Dr. Marco Gioso, veterinary dental resident, and Bonnie Miller, VHUP dental hygienist. Dr. Harvey also recently presented papers at the World Veterinary Congress in Yokohama, Japan, and at the European Veterinary Dental Society and Federation of European Companion Animal Veterinary Associations Congress in Brussels, Belgium.

Dr. Neil Moore, professor of physiology in medicine, presented seminars at the University Rochester, the University of Oklahoma and at the University of Buffalo on "Interaction of Antiarrhythmic Agents with Automatic Implantable Cardioverters Defibrillators." He gave a multi-media computer presentation at a symposium sponsored by the College of Physicians and Surgeons, Columbia University, in Cancun, Mexico, and at a symposium sponsored by the Southern California Medical School, held in Vail, CO.

Dr. Adrian Morrison, professor of behavioral neuroscience, has been re-elected to a second four-year term as secretary-general of the World Federation of Sleep Research Societies.

Dr. Lawrence Jay Linnetz, V'70, has been elected treasurer of the Association of Avian Veterinarians. Dr. Linnetz is in practice in Bristol, CT.

Dr. Harry W. Werner, V'74, and Dr. Richard A. Mansmann, V'68, were named to the board of the American Association of Equine Practitioners.

Nancy White, V'98, and Steve Pokorney, V'98, were successful in their bid to bring INTERVET, the national student newspaper, to Penn. They will be the editors for the next year.

Dr. Gerhard Schaad, professor of parasitology, received the Anniversary Award of the Helminthological Society of Washington D.C. for research excellence in the field and for service to parasitology and society.

Dr. James B. Lok, associate professor of parasitology, received the Norden Teaching Award.

Dr. Thomas J. Van Winkle, V'75, associate professor of pathology, received the Lindback Teaching Award.
Early Neutering

Pet overpopulation is a leading cause of death in dogs and cats with millions of unwanted animals euthanized each year. Many animals adopted from shelters are never neutered and this is the basis of the problem. Most veterinarians recommend the procedure be performed between five and eight months, but neutering before puberty (four months in cats and six months in dogs) is a safe and effective means of pet population control with minimal surgical and anesthetic risks. Several studies have found that early neutering affects skeletal and physical development, behavior and urethra function in the same manner as "traditionally" timed surgery.

In many cases it may not be indicated, but early neutering should be supported as an aid in pet population control.

AKC Statistics

There were 1,277,039 dogs registered by the AKC in 1995. Leading the list were Labrador retrievers, followed by Rottweilers, German shepherd dogs, golden retrievers, beagles, poodles, cocker spaniels, dachshunds, Pomeranians and Yorkshire terriers. The highest ranking terrier (16th) was the miniature schnauzer.

There were 1,252 All-Breed AKC Conformation Shows held in 1995 and the title of Champion (CH) was won by 20,036 dogs. Titles were awarded in 30 other AKC event categories — field trial, obedience, hunting, herding, lure coursing, agility and earthdog.

The Labrador has been America's most popular breed for the past five years. Its trainability has made it the most widely used guide dog in the world. Its easily maintained coat is another trait adding to its popularity.

Pothehilled Pigs

After ten years, many misconceptions about pothehilled pigs still exist and homelessness has led to establishment of shelters for abused, neglected and abandoned animals. They are not ideal household pets. Aggression is probably the number one reason for needing to find a new home for the pig. Another problem is size — they keep growing for several years and rarely weigh less than a hundred pounds at maturity. Although they are reputed to be non-shedding, they "blow their coat" at least once a year, resulting in extreme scratching.

Generally, they are not full-time house pets and should have access to an outside area at all times. PIGS, a sanctuary in West Virginia, will adopt out pigs to homes without small children, in pairs or to homes seeking a companion for their pig. Careful thought must be given before bringing an exotic pet into a home.

BSE

Bovine Spongiform Encephalopathy (BSE), commonly known as "Mad Cow Disease", was first identified in the United Kingdom in 1986. It is not known to exist in the United States. Import restrictions have been in place since 1989 and active surveillance efforts began in 1990. Research to date does not show connection with meat; the brain and spinal cord have been found to be infective. Milk and milk products are considered safe. Gelatin is considered safe for human consumption because BSE infectivity is destroyed in the production process.

There is much misinformation and speculation about the disease. The latest information and fact sheet is available on the Internet on the APHIS (Animal and Plant Health Inspection Service) home page at http://www.aphis.usda.gov. The School’s Center for Animal Health and Productivity has put together comprehensive information on BSE that is updated regularly on its Internet home page. You can reach it at:
http://explained.nbc.upenn.edu/bseinfo.html.

Cavalier King Charles Spaniel

On January 1, 1996, the Cavalier King Charles spaniel became the 140th AKC recognized breed competing at championship shows. This toy breed is descended from the small comforter spaniel of the 16th century. Ladies of the court found the little dog would serve as a hot water bottle and flea catcher as well as an adornment and companion. Their name comes from King Charles II, who, according to diarist Samuel Pepys, spent more times playing with his dogs than attending to affairs of state.

The Cavalier is one of the largest members of the AKC's toy group, weighing about 16 to 20 pounds. They come in four distinct colors. The two broken colors are Blenheim (white with chestnut markings) and tricolor (white with black and tan markings) and the whole colors are ruby (very rich red) and black and tan (black with tan markings). Whole colors should have no white markings. The breed is not trimmed but the coat must be brushed. A trimmed dog is severely penalized in the show ring.

The standard describes the temperament as gay, friendly, non-aggressive, sporting, gentle and affectionate. Cavalier tails rarely stop wagging, especially when the dogs are running.

A book which gives more detailed information is Sheila Smith's Cavalier
Book Review


This medical reference guide represents the work of 32 authors on the faculty and staff of the School of Veterinary Medicine, University of California. The book provides medical information in a way which helps the owner understand disorders and how they are dealt with by the veterinarian. It will help make the dog owner a better care giver and provide information the veterinarian often does not have the time to give.

Beginning with selecting a dog and discussions about the different breeds and their characteristics, there are chapters on living with your dog and what to expect from puppies and the older dog. "As an estimate, one might say that small-breed dogs become aged at approximately 11 years, medium-sized dogs at 10 years, large-breed dogs at 9 years and giant-breed dogs at 7 years."

Behavior, including misbehavior, is well-covered. "Unfortunately, people often choose a dog because of its size, coat, or distinctive coloration, or because it is cute as a puppy. The primary reason for choosing a particular dog should be its behavior. Tendencies to challenge an owner for dominance, engage in excessive barking, seek affection, or be easily trained are certainly more important than a dog's color, size or shape."

There are chapters on nutrition, reproduction, birth control and genetics. Diseases, including infectious diseases and cancer, are explained. There is a guide to help confirm an owner's suspicion that something is wrong and veterinary attention should be obtained. Vaccinations and vaccination schedules are explained.

The glossary has many definitions not found in home dictionaries. The book has answers to so many questions, it should be very useful to the owner seeking knowledge about health disorders and preventative steps to improve the overall quality of life and care for their pets.

Dogs and people have interacted for thousands of years. Man has used dogs as hunters, herders, guardians and companions. In The Domestic Dog, its evolution, behavior and interactions with people, and anthology compiled by James Serpell, Marie A. Moore Associate Professor of Human Ethics and Animal Welfare at the School, Dr. Serpell and others discuss the evolution of the dog into the animal it is today.

The collection of material is scholarly and is not an easy read. However, it is quite interesting and a lot of the information has not been discussed in the popular dog press. Based on firm scientific research, the book dispels many myths and stereotypes about dogs, and it will be the definitive reference work on dog behavior for many years to come. The volume is helpful to those working with dogs. It is as herding or hunting dogs or our pleasant companion animals.

The book is divided into three sections: Domestication and evolution; Behavior and behavior problems; and Human-dog interactions. There are plenty of illustrations and charts and each chapter ends with a reference section which lets those interested in finding further information dig a little deeper.

The Domestic Dog is published by Cambridge University Press, the paperback edition is $19.95, the hardback edition is $69.95.

Dr. Peter Dodson, professor of anatomy, has written his third children's book. In An Alphabet of Dinosaurs creatures from the ankylosaurus to the zephyrosaurus are shown hunting, eating, running and fighting in great detail and vivid color. The brief text panels are interesting and a distinctive, anatomical feature for each animal is shown as a line drawing. Youngsters will enjoy this book, not just the pictures, but also the challenge of sounding out the names of the beasts.

The brief chart section in the back book gives an overview of "what, where, when" and is prepared so that children can understand the subject matter. The color illustrations are by Wayne D. Barlowe and the line drawings are by Michael Meaker. The book is published by Scholastic Inc., its price is $14.95.

King Charles Spaniels Today (Howell Book House, 1633 Broadway, New York, NY 10019. $25.95 hardcover).
DIXIE, THE WONDER DOG
By Gwynne McDevitt

Gordon Setter FC/AKC Falcons
Doubledee Dixie, the Wonder Dog, has done it again. The first wonder, of course, was that she ever got trained. Going on to win both her AKC field championship titles. The second wonder, after a year of disappointment and travail, was that she has given me a beautiful litter of five healthy puppies, whelped March 10, 1995, sired by my dog, The Shootist.

Dixie’s problems with first time motherhood began June 8, 1994, when she lost her litter, also sired by The Shootist (Shooter) with only a few weeks to go in her pregnancy. Dixie had suffered a miscarriage. She was taken to the Veterinary Hospital of the University of Pennsylvania where her treatment was overseen and coordinated by Dr. Robert Washabau, associate professor of medicine, without whom the miracle of Dixie’s puppies would not have occurred.

Dr. Washabau reported that Dixie was in good health despite the recent miscarriage. An abdominal ultrasound study revealed a dead fetus in one uterine horn, and bony fragments in the other uterine horn. Dr. Washabau had hoped that Dixie would pass the fetus and fetal fragments with medical treatment, but this was not to be the case. Thus, Dixie underwent caesarean section.

Dr. Brockman, who performed the surgery at VHUP, noted a mild to moderate inflammation or infection involving both uterine horns. Dixie recovered from surgery uneventfully and was discharged from the hospital eight days after admission. Dr. Washabau gave an excellent prognosis for recovery, but a more guarded prognosis for future fertility. He was concerned that Dixie might have difficulties with future breedings because the final biopsy report had shown chronic active endometritis with Enterococcus infection. So, Dixie was subsequently treated with Clavomox for three months. Needless to say, I had heavy doubts that it would be wise for me to breed Dixie again.

I started to work her in August slowly at first to get her ready for September field trials. She is such a joy to run and really loves it. Receiving placements in most of the trials in which she ran, she won first in an Amateur Gun Dog Stake, second in an Amateur Gun Dog Stake, third in Open Limited and Gun Dog and a fourth in an Open Limited Gun Dog Stake.

During the last competitive stake of the Fall season, Amateur Gun Dog at the GSCA Mason-Dixon Regional, she ran a rather controlled race for her, with three nice finds and received a red ribbon in a field of 18 dogs. At the end of her performance, she had a suspect hypoglycemic episode, suddenly keeling over on her side. I thought she had a heart attack. Dr. Pat Lyons came to the rescue and with the help of Susan DeSilver and Bill Walter, she was taken to the nearest veterinarian. She recovered nicely. At the end of many tests by Drs. Knight and Washabau at the Veterinary Hospital of the University of Pennsylvania, she was found to be healthy. It was suggested that I feed her a small amount of food each morning, especially before competitive events and to watch her closely. She had never had a hypoglycemic episode before six years of age, and fortunately, has not had another one.

Dr. Ray Giuliani, my regular veterinarian, said that in all probability this was a one-time event.

While at a field trial in Connecticut in the Fall of 1994, I told Jean and Kevin Culver about Dixie and how the would lost her pups. I also mentioned that Dixie, who has good OFA certification and is sound in both mind and body, is my last direct link to my wonderful foundation bitch and beloved companion, Doubledee Highland Dare. I so badly wanted puppies from her. They told me that from their experiences, my dreams of Dixie pups were still possible. They suggested that I contact Dr. Robert Hutchinson at the Animal Clinic Northview in North Ridgeville, Ohio, who had success with some of their bitches who had a history of difficult pregnancies. After consulting with my veterinarian, I called Dr. Hutchinson and we decided that when Dixie came into season again, we would put her immediately on Clavomox and send her and the stud dog to Ohio where he would surgically inseminate her. The only treatment throughout the pregnancy was Clavomox. On February 3, ultrasound showed nine pups, although three were later re-absorbed. A program of careful monitoring was followed with progesterone level tests, ultrasound and x-rays.

True to form with Dixie, the births were not easy, and work for me, Dr. Giuliani and my friend Brenda Massi. Dixie had mild dystocia which occurs when the uterine muscles are too weak to dispel the fetus. Five pups needed human help to be born, losing one large female in the process. The last, a small female arrived easily. Dixie really did not try too hard, looking at us with annoyance about the whole affair. The final tally was two male pups and three females. I was ecstatic! She was a wonderful, perfect mother, very protective for a few days, making me wary of getting too close. She took her new motherhood seriously and well until the pups were weaned.

With five active youngsters bounding around my yard, I look forward to the 1996 field trial stakes. Yes, I am keeping them all - could there be any other way?
Open House

The School held its first Open House in more than 10 years on September 23, 1995. Thousands came to New Bolton Center to look at the hospital and displays prepared by faculty and clinicians from both campuses.

The exhibits encompassed the entire school, representing the two hospitals as well as the basic sciences. People found out about toxic plants and parasitic diseases, could compare x-rays of dogs and horses, were treated to explanations about ultrasound, had scintigraphy and laser surgery explained, and were able to peer through microscopes at tissue samples.

The ICU was transformed into a neonatal unit inhabited by foals created from blankets and pillows, hooked up to monitors, fluid pumps, ventilators and the like to show the advanced care available. Computers were set up where people could view information about VHUP's Emergency Service. find out about different breeds of pigs and learn about feed rations.

There were several breeds of horses on display and in the livestock barn, pintoed pigs and chickens were a bit hit. Other attractions were the dog agility demonstrations and a six-horse Percheron hitch. These two will again be present for this year's Open House to be held on Saturday, September 21, 1996 at New Bolton Center. Other attractions are planned: cattle breed exhibition, oxen team, llama obstacle course demonstration, Animal Blood Mobile, Delaware State Police Canine Unit demonstration, and much more. Students will staff an Emergency Tent for the treatment of injured stuffed animals. Admissions personnel from the School and from Harcum Junior College will be on hand to provide information about the education of veterinarians and veterinary technicians.

The 1996 School of Veterinary Medicine Open House will be from 10 AM to 3 PM on September 21, 1996 at the School's large animal campus, New Bolton Center, 322 West Street Road, Kennett Square, PA. Admission and parking are free. Schools planning to send busses need to call 610-444-5800, ext. 2182, to let the School know.

New Bolton Center Presents Lecture
On Equine Emergency Care

On the evening of April 18, 1996, the School offered a free lecture for the public at New Bolton Center (NBC). The presentation, Basic First Aid and Emergency Care for the Horse, included a lecture followed by a live demonstration. Topics covered such basics as how to take a horse's pulse and temperature to more complicated procedures like how to stop severe bleeding while waiting for the veterinarian, how to wrap a fractured leg, and how to recognize colic and what to do about it. The course was intended for novice horse owners, 4-H and Pony Club members, or anyone who felt a need to brush-up on the basics of emergency care.

Basic First Aid and Emergency Care for the Horse was presented by Dr. Janet Johnston, head of Emergency Services at NBC and Dr. Krista Seltzer. Dr. Johnston is a clinical instructor in the Department of Clinical Studies and director of the Connelly Intensive Care Unit at NBC. Dr. Seltzer is a clinical associate in emergency services.

Originally intended to be a class only held in the Warner Amphitheater for 90 people, the response was overwhelming with 300 people calling to attend. Dr. Seltzer was invited to teach a second course in Alumni Hall. One hundred and eighty people of all ages, from as far away as Freehold, NJ, Harrisburg, PA; Laurel, DE and Port Deposit, MD, attended that evening. The remainder went on a waiting list for a second lecture which will be given Thursday, September 26, 1996 at 7 PM.
Death of Dr. Israel Live

For more than 60 years, Penn's School of Veterinary Medicine played a central part in the life of Dr. Israel Live, V'34. He joined the pathology faculty upon graduation and taught for quite a few years beyond his appointment as emeritus professor in 1977. He continued working on small research projects at the School until 1993. Dr. Live died on December 23, 1995 at the age of 87.

Dr. Live, born in Austria in 1907, had studied at the University of Vienna prior to coming to the Veterinary School. Dr. Live became the first veterinarian to earn a graduate degree from Penn, a masters degree in 1936 and a Ph.D. in 1940. He was appointed assistant professor in veterinary pathology in 1943, though his main interest was in bacteriology. He supervised the work in the clinical pathology laboratory until 1946 when he moved to the Department of Bacteriology and Immunology and was appointed assistant professor of bacteriology and immunology. He became professor of microbiology in 1953 and held similar appointments in the Graduate School of Medicine and the Graduate School of Arts and Sciences.

Dr. Live enjoyed teaching and encouraged student participation in his classes. He taught for more than fifty years. He also supported student scholarships through annual donations and was a member of the University's Benjamin Franklin Society.

Dr. Live's research interests centered around brucellosis and then later around the characterization of human and canine Staphylococcus aureus and his work contributed important basic information. On sabbaticals Dr. Live pursued the study of staphylococci at other institutions, in 1961 at the Pasteur Institute in Paris, France, and in 1969 at the Statens Serum Institute in Copenhagen, Denmark. He also conducted some research at the University of Bergen, Norway.

In 1953, Dr. Live served as president of the American Association of Veterinary Bacteriologists. In 1950 he became a member of the expert panel on brucellosis, World Health Organization, and was chairman of the National Brucellosis Conference in 1976. Dr. Live was a charter diplomate of the American College of Veterinary Microbiologists, a fellow of the American Academy of Microbiology, and a member of the following associations: the American Society of Microbiologists, the American Association of Immunologists, the American Public Health Association, and the Association of Research Workers in Animal Diseases in North America.

A memorial service was held June 10, 1996 at the Bodek Lounge of Houston Hall.

Dr. Live is survived by his wife, Anna Harris Live, and two sons, David and Ted.

Time Capsule for the Dairy

The new solar dairy facility, rising now from the field along Byrd and Line roads at the School's New Bolton Center campus, was the reason to let oracles speak about the state of dairying in the year 2020 and to mark the renaming of the facility to the Marshak Dairy. Former Dean Mark W. Allam, after whom the facility was to be named originally, requested that it should be named after former Dean Robert R. Marshak "who did a great deal to develop New Bolton Center and it is fitting to celebrate the dairy in his honor."

Predictions ranged from cows with improved and better placed udders, made by Secretary of Agriculture Charles Brosius to the development of mini cows for city dwellers, delivered by a pupil from the Upland Country Day School. All the predictions were placed in a gleaming milk can that will be sealed behind plexiglass in the new dairy and will be opened in 25 years.

Among the oracles were Dean Alan M. Kelly, Senators Clarence D. Bell and Roger A. Madigan, Representatives Arthur D. Hershey and Joseph R. Pitts, Leon H. Wilkinson, Richard W. Newpher, William C. Nichol, Dr. Stephen Syken, Dr. David Nunamaker, Dr. Richard McFeeley, Dr. David Galligan, Dr. Raymond Sweeney, Dr. Mark Allam, Dr. Robert Marshall, Mr. Bruce Rappoport, Mr. Barry Stupine, and Lindsay Bodenstab, Peter Dunby, Michael Melton, Gary Seuese, Stephen Taylor, representatives from the Fourth Grade Class at The Upland Country Day School.

The construction of the dairy is proceeding on schedule and a dedication is planned for October.
Penn Annual Conference

Many thanks to the hundreds of veterinarians, many of whom are alumni, who attended the 1996 Penn Annual Conference at the Adams Mark Hotel on January 24 and 25. We are also grateful to the many exhibitors who provided support for the conference.

Dr. Charles Newton presented certificates to:

About the Penn Annual Conference

The 1997 Penn Annual Conference will be held on Wednesday, January 29 and Thursday, January 30 at the Adams Mark Hotel. The Conference offers ten hours of continuing education credit. This will be the only continuing education program offered by the School during 1996-1997.

Due to decreasing practitioner attendance at the School's one-day continuing education programs, and a plethora of local, state and national continuing education programs, we believe that directing resources toward the Penn Annual Conference will better serve our audience and the profession.

Several months ago, a questionnaire was sent to 1,100 alumni within a 50-mile radius of the School. Three hundred responses (27%) were received. The following emerged:

- 76% responded they would not be inconvenienced if courses were no longer available through the School, providing the Penn Annual Conference was maintained;
- 94% attended local and national continuing education courses rather than, or in addition to, the School's one-day programs;
- 91% felt the courses were not practical, 20% did not have time to attend and 11% felt the fees were too high.

During 1996-1997, five of eleven continuing education courses were cancelled due to lack of participation. Rather than compete in a market that is saturated with half-day or full-day continuing education courses, we plan to maintain and improve the Penn Annual Conference, which attracts between 700 to 800 veterinarians every year. Clearly, this is an area where we will strengthen our commitment.

We addressed this issue in March with the Alumni Liaison Committee, and would be pleased to speak with any veterinarian who wishes additional information or has comments or suggestions. Please feel free to contact:

Ashra P. Markowitz
Director of Continuing Education
School of Veterinary Medicine
University of Pennsylvania
3800 Spruce Street
Philadelphia, PA 19104
A Bequest to Support Equine Endowment

G. Violet Hayes was a long-time Welsh pony breeder and managed a riding school and summer day camp in Gwynedd Valley, PA. She taught generations of children to ride and to enjoy horses, especially her beloved Welsh ponies. She was one of the first Welsh breeders to breed her many stallions to Thoroughbred mares to produce show ponies. She was the Pennsylvania Horsebreeder Association's Horsewoman of the Year in 1986. Ms. Hayes used the services at New Bolton Center and when she died, at the age of 89, in December of 1992, she left part of her estate to the School. This money will be used to support endowment for equine sports medicine and research in physiology. Her bequest creates a lasting way to reflect her devotion to horses and to Welsh ponies in particular.

Scholarships

Kelley Hullihan, V'97, received a scholarship from the Mid-Susquehanna Valley Kennel Club. The William Goldman Foundation awarded a scholarship to Mary Jane Potter, V'97.

Elizabeth Bunting, V'97, received the Dr. J. E. Salsbury Scholarship and a Dr. Palace H. Seitz Memorial Scholarship from the Pennsylvania Veterinary Foundation. Christine Harshbarger, V'97, was also a recipient of a Seitz Memorial Scholarship.

Bethany Grohs, V'98, was awarded the Lois F. Farchild Scholarship in Veterinary Public Service. Brian Higgins, V'99, and Steven Bensinger, V'98, each received the Hill's Dean's Scholarship. Emily Graves, V'99, was awarded the Ethel G. and Allen H. Carruth Dean's Scholarship. The Samuel T. and Emily Rawnsley Dean's Scholarship was awarded to Mary Wallace, V'99. Jennifer Clarke, V'99, is the recipient of the Dr. M. Josephine Deebler Dean's Scholarship.

The Berks County Kennel Club has awarded scholarships to Andrea D. Straka, V'97, and Debbie L. Wardius, V'98. Christopher Lindquist, V'97, has been awarded the Bushy Run Kennel Club Scholarship. The recipient of the Iris M. McGee Scholarship is Marie Yakubik, V'97. Jonathan Roth, V'97, is the recipient of the Richard A. Dorr, Jr. Memorial Scholarship.


Pandora Davis, V'99, is the recipient of a 4-H Scholarship from the Cape Cod 4-H Club. Jennifer Bouma, V'97, received a scholarship from the Chautauqua Region Community Foundation.

Planned Giving Programs for the School of Veterinary Medicine

Over the years, the School of Veterinary Medicine has received generous support from donors who have made planned gifts through the Planned Giving Programs of the University of Pennsylvania.

Planned gifts are flexible, tax-advantaged arrangements that enable donors to make substantial gifts in ways that complement their personal financial planning. They can be designed to generate life-long income, obtain significant income tax deductions and reduce or eliminate estate taxes. Planned gifts can also be a means of converting low-yielding assets into a higher income stream at a reduced capital gains cost.

The Office of Planned Giving Programs of the University of Pennsylvania offers a variety of life income arrangements including: Charitable Remainder Trusts and Charitable Lead Trusts. The Office of Planned Giving Programs can also help donors tailor bequests and structure gifts of life insurance and other assets for the benefit of the School of Veterinary Medicine.

Participation in any of Penn's Planned Giving Programs also bestows the benefits of membership in The Charles Curtis Harrison Society. Those benefits include annual luncheons, seminars and the University's planned giving newsletter, Partners in Penn's Future.

The Office of Planned Giving Programs is always willing to meet with donors and their financial advisors to design the most advantageous ways of giving to the School of Veterinary Medicine. For more information, please contact John Foster or Deborah Layton of the Office of Planned Giving Programs at: 1-800-223-8236.
**Special Gifts**

The following contributed gifts to the Friends of New Bolton Center in memory of the person listed:

**In memory of Mrs. Eunice Brockett:**
- Mr. and Mrs. Stuart Armstrong
- Mr. and Mrs. Howard E. Belcher
- Ms. Shirley S. Harcastle
- Capt. and Mrs. Joseph J. Kliment
- Ms. Catherine C. Larmore
- Ms. Marion L. Latham
- Mr. and Mrs. Douglas P. Lloyd
- Mr. Larry Moore and Ms. Sharon Moen
- Ms. Marjorie Phillips
- Ms. Elizabeth G. Pitl
- Mr. and Mrs. Theodore Megella
- Wyeth-Aerex Laboratories

**In memory of Mr. John S. Piersol:**
- Robert D. and Jane W. Foard
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- Maryland Horse Shows Association, Inc.
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**In memory of Mr. Michael J. Casey:**
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**In memory of Mr. F. George Sperling:**
- Mrs. Sara G. Sperling

**In memory of Mr. Lowell B. Possinger:**
- The Stroudsburg Area Education Association

**In memory of Mrs. Eunice Brockett:**
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