

Ceremony Opens Equine Performance Testing Clinic

At a ribbon cutting ceremony on November 8th the College of Veterinary Medicine at Cornell dedicated its Equine Performance Testing Clinic, the only facility of its kind in New York State offering state-of-the-art technology and expertise in evaluating, diagnosing, and improving the athletic performance of horses. A tour of the facility and a demonstration of the Clinic's capabilities followed the ceremony.

The centerpiece of the Clinic is a Swedish SATO high-speed treadmill capable of going up to thirty-five miles per hour and tilting to a 10 percent slope. The treadmill allows veterinarians to assess many conditions in the horse's upper and lower airways and also allows daily workouts of horses regardless of season or weather. The treadmill will be an integral part of the work conducted in the Clinic's three units: the Respiratory Function Testing Unit which is now operational; the Lameness and Gait Analysis Unit, which will open early in 1990; and the Fitness and Performance Testing Unit, scheduled to open in the near future.

So far the treadmill has been used to assess more than 150 horses, primarily thoroughbred and standardbred



At the heart of the Equine Performance Testing clinic is its high-speed treadmill. Dr. Renata Rehder (far left) controls the treadmill's speed, while Dr. Richard Hackett (at the horse's head) and Dr. Norm Ducharme (far right) use an endoscope to evaluate respiratory function.



racehorses, although hunters and jumpers and even draft horses have been evaluated on the treadmill. "We can now reach and monitor the equivalent of peak performance in an exercising horse under controlled conditions," says Dr. Richard P. Hackett, head of Cornell's Large Animal Clinic and director of the Respiratory Function Testing Unit. "Also there's little likelihood of causing a lameness or injury when testing the horse."

A unique aspect of the new

Respiratory Function Testing Unit is its ability to measure airflow accurately without interference or added resistance. The key piece of equipment is a highly sophisticated flowmeter designed for Cornell's equine researchers. Made from light-weight aluminum and weighing only about two pounds (compared with the old-fashioned flowmeters, which weighed fifteen pounds), the flowmeter is the only one of its kind capable of accurately measuring the massive peak respiratory

flows generated by exercising horses.

For evaluation of problems in the upper airway, an endoscope—a two-meter-long tube housing a video camera—videotapes the movements of the larynx while the horse is resting and as it is exercised up to a gallop. The videotape is later replayed in slow motion, or even frame by frame, for precise evaluation. Researchers also use a novel computer program to trace and measure the dimensions of the airway and interface

the data from the treadmill, the flowmeter, the pressure sensors, and other equipment.

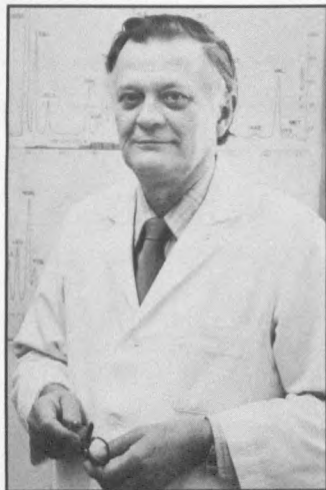
Using this technology, veterinarians will be able to evaluate much more thoroughly, for example, whether loud breathing noises ("roaring," or laryngeal hemiplegia), bronchitis, or bleeding (exercise-induced pulmonary hemorrhage, or EIPH) in an exercising horse affects performance. The Respiratory Function Testing Unit also enables researchers to evaluate such airway problems as palate displacement, epiglottal entrapment, and pharyngeal collapse.

The Equine Performance Testing Clinic will soon introduce the Clinic's second and latest unit—the Lameness & Gait Analysis Unit. Instrumentation for the unit will be installed early in 1990. Veterinary surgeons working in the unit will first analyze normal motion in the horse and later, as data are accumulated and expertise develops, will analyze difficult lamenesses.

The opening of the third and final unit of the clinic, the Fitness and Performance Testing Unit, is scheduled for the near future. The unit will be designed for the

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**Dr. Emmett
N. Bergman
1929-1989**



ology in the Division of
Biological Sciences.

He was actively involved in teaching in the professional veterinary curriculum and his research on the intermediary metabolism of ruminants gained him national and international recognition. He was supported in his research by the National Institutes of Health for the entire time he was at Cornell.

Bergman was a member of the American Veterinary Medical Association, the Association for the Advancement of Science, the New York Academy of Sciences, and the American Institute of Nutrition. He served terms as president and vice president of Phi Kappa Phi and as president of Phi Zeta. He was also a member of Sigma Xi and Gamma Sigma Alpha Zeta.

Bergman is survived by his wife of thirty-six years, Mary; one son, Emmett, Jr.; three daughters, Susan Bergman, Margaret Piper, and Patricia Bergman; one sister and seven brothers, four grandchildren; and many nieces, nephews, and cousins.

Memorial contributions may be made to the Emmett N. Bergman Memorial Scholarship Fund, Office of Public Affairs, College of Veterinary Medicine, Cornell University, G2 Veterinary Research Tower, Cornell University, Ithaca, New York, 14853-6401.

Dr. Emmett N. Bergman, a professor of veterinary physiology at the College of Veterinary Medicine at Cornell, died October 11, 1989, after a short illness. He was 60 years old.

Dr. Bergman was born in Slayton, Minnesota. He attended the University of Minnesota, where he received his B.S. degree in 1950, his M.S. and DVM degrees in 1953, and his Ph.D. degree in physiology and pharmacology in 1959. In 1961 he joined the faculty of the College of Veterinary Medicine at Cornell as an associate professor of physiology and he became a full professor in 1966. He held a joint appointment in the College of Veterinary Medicine and the Section of Physi-

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First AVMA Fellow Looks Back on Washington Year

Martha Gearhart, DVM. '79, recently completed a yearlong appointment as the AVMA's first congressional science fellow. Gearhart worked on the personal staff of Senator Kent Conrad (Democrat from North Dakota). Senator Conrad is a member of the Senate Subcommittee on Agriculture, Nutrition, and Forestry. These are Gearhart's thoughts on Washington, the fellowship, and the role of veterinarians in the legislative process.

What were your responsibilities in Senator Conrad's office?

I handled several committee issues for Senator Conrad. Of course anything related to veterinary medicine I handled, but my primary responsibilities were conservation issues and agricultural research. For example, I staffed a hearing on soil conservation research, wrote support letters, and monitored appropriations for agricultural research projects funded in North Dakota. I also drafted a bill on agricultural conservation that could serve as a model for the conservation title of the 1990 reauthorization of the 1985 Food Security Act.

What was it like making the transition from veterinarian to Congressional Fellow?

The fellowship was very different from practice. Technical expertise didn't make me the key strategist; I was basically a researcher. When I had sole responsi-



Dr. Martha Gearhart with Senator Kent Conrad (D. North Dakota) in Washington, D.C.

bility for a project, that was fun. Otherwise, what I could do depended on the people above me and their priorities. That was the crux of the transition from private practice to office work for me—the change from being the employer to being the employee. But I was not frustrated by federal bureaucracy. Overall, things may seem to go slowly to someone on the outside, but when you're in the office, things are moving rapidly because you're going from issue to issue, and there's always something going on.

It's an exciting life, with lots of issues and ideas, but it's exhausting. I think that's part of the reason a lot of legislative staffers leave for other jobs. Veterinarians think they work long hours? These staffers are there twelve hours a day, six or seven days a week. They're in at six in the morning; they leave at nine at night. And when a bill is going through, there are people working around the clock, rewriting the versions to get it through. It's intense work. I personally had better hours than I did during my ten years in practice, but had I been a key person for the senator, I would have had much worse hours.

Do you feel you understand the legislative process now? If someone were to plump a law down in front of me and ask how in the world this provision ever happened, I probably couldn't tell them what processes and compromises came up with the bill. However, I certainly understand the hearing process and the important role played by the legislative staff of an elected official.

What does the fellowship mean to the veterinary profession?

I think the fellowship represents something exciting to the profession. We need to see an increased participation of veterinarians at all levels of government. Like most science and health professionals, no one thinks anyone will listen to them and no one thinks it's their job to talk to their elected officials. But the legislative process is an information-dependent process, and veterinarians have depended on veterinarians in federal government or academics or professional organizations to take care of them. It doesn't really work that way. The AVMA is aware of that and would like to use the fellowship to demonstrate that fact to

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Use Insect Repellents Carefully on Cats, Cornell Pharmacologist Warns

Cat owners, concerned that their pets may bring ticks carrying the organism responsible for Lyme disease into the house, may poison their cats if they apply excessive amounts of insect repellents with the chemical DEET on the animals, a veterinary pharmacologist at Cornell University warns.

Instead concerned cat owners should keep their pets indoors. Pharmacology professor Wayne S. Schwark has advised veterinarians to be on the lookout for signs of DEET poisoning in cats. Symptoms include seizures, tremors, or loss of coordination, salivation and vomiting.

Health officials in New York, New Jersey, and Connecticut issued a warning in August about excessive use of DEET repellents on human beings, especially children. Overexposure to DEET causes neurological problems in humans, including seizures, comas, and slurred speech.

DEET is the abbreviation of N, N-diethyl-M-toluamide, an ingredient in some insect repellents now being advertised as protection against the deer tick that carries Lyme disease bacteria in the northeastern United States.

When deer ticks carrying the Lyme disease bacteria were found on white-footed mice in the Northeast, some cat owners became concerned

that their mouse-catching-pets could spread the infection to the family. "That's no reason to slather the cat with insect repellent," Schwark said.

"Cats are more vulnerable than human—or even dogs—to most toxic substances," he explained. "They don't have an abundance of the enzymes that breakdown toxic substances in the liver. That's why cats are easily poisoned by overdoses of drugs such as aspirin that are usually considered innocuous." Kittens and old cats are particularly susceptible to toxic substances.

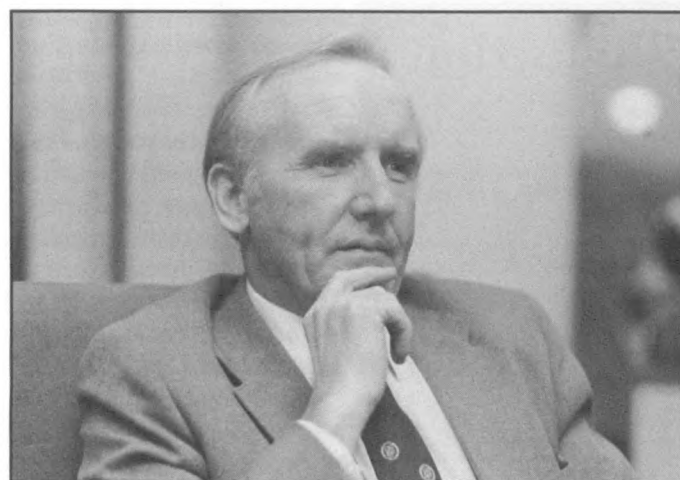
"Lyme disease is one more reason to keep cats indoors," the pharmacologist said, citing feline leukemia, rabies, and automobiles as other hazards of the outdoor life. If confining a cat indoors is not possible, said Dr. John Saidla, extension specialist in the Cornell Feline Health Center, some of the pinhead-sized ticks may be removed with a fine-toothed flea comb. Many of the antiflea products approved for cats have some repellent action against ticks, he added.

Schwark and other experts revealed the latest advances in medical care for cats at this year's Feline Specialist Seminar, sponsored by the Cornell Feline Health Center and the American Association of Feline Practitioners at Cornell's College of Veterinary Medicine. The five-day seminar in August attracted 186 feline veterinarians from twenty-six states including Alaska, and from Canada, the Philippines, and France. Next year's seminar, to be held the week of August 6, 1990, will cover information on the kidneys and urology, blood and anemia, and leukemia and neoplasia of the cat.

Humane Association Honors Physiologist

Dr. David Robertshaw, professor and chairman of the Department of Physiology at the College of Veterinary Medicine, was recently honored by the New York State Humane Association at its annual corporate meeting. Robertshaw was awarded the association's certificate of appreciation in recognition of "the outstanding service he has performed on behalf of animals." He has been responsible for coordinating the course in Veterinary Ethics, a new course initiated in 1988 for students in the Doctor of Veterinary Medicine program.

Robertshaw's scientific work is concerned with the interactions of water metabolism



Dr. David Robertshaw

and thermo regulation with specific reference to desert-adapted mammals and with the physiology of exercise. His most recent work has been carried out in Morocco on the camel, since the camel is probably the best-adapted domestic animal of the desert. Thus his work helps to provide the physiological basis for long term for long term survival in the desert without the availability of water. In 1989 Robertshaw visited Indonesia where he studied the adaptation of imported

sheep and their crossbreds to the thermal environment. He also provided the physiological guidelines for the care of the dog that accompanied Mary Margaret Goodwin in her jog across the Himalaya Mountains.

With Dr. Emmett Bergman and Dr. Richard Rawson, also of the Department of Physiology, Robertshaw is also looking at the role of exercise in glucose utilization in the pre-diabetic state associated with obesity.

Continuing Education Has New Director

Dr. Charles E. Short ends a ten-year term as director of continuing education at the College of Veterinary Medicine. His successor will be Dr. John Saidla. Short has been a familiar and friendly face at continuing education functions and thanks largely to his efforts the college's continuing education program annually attracts participants from across the country. Short, also the chief of the Section

of Anesthesiology in the Department of Clinical Sciences, now looks forward to devoting more time to his research into pain and its alleviation.

Saidla is a relative newcomer to the College. He joined the college's faculty in 1988 as the new feline extension veterinarian and assistant director of the Feline Health Center. His latest foray into continuing education was the Feline Specialists Seminar, held in August and attended by over 180 veterinarians. Saidla is also the associate editor of the Cornell Animal Health Newsletter and writes for many of the Feline Health Center's

publications. A 1961 graduate of Auburn University, Saidla was a private practitioner for twenty-five years before joining Cornell's faculty.

**Open House
Saturday,
April 21**

Production and Production Diseases: Conference Looks at Factors Related to Metabolic Disease

One of the goals of genetic engineering in animals is to increase their productivity. For example, a gene is inserted into an embryo that will increase levels of naturally occurring growth hormone for better growth rates or milk production. But does greater productivity increase the incidence of metabolic diseases? According to Dr. Francis Kallfelz, organizer of last summer's Seventh International Conference on Production Disease in Farm Animals at Cornell, this question deserves attention.

"Metabolic diseases are abnormalities in the input-output relationships, that is, the relationships of food intake to useable output in terms of milk, meat, or egg production. Somehow an animal is not able to support an optimal level of production, and that's what causes production diseases. Production disease research has been ongoing, but there are still many unanswered questions. Recent innovations with respect to improving productivity provide further incentives for a

better understanding of the factors related to production disease."

Every three years since 1968 researchers have been gathering to discuss production diseases in farm animals. Participants in the Cornell conference came from around the world to discuss these diseases in dairy cattle, poultry, swine, and horses. One highlight of the conference was a session on the possible relationship between new production stimulants, such as bovine somatotropin and beta adrenergic growth promoters, and production diseases in farm animals.

While metabolic diseases have been studied for some time, it wasn't until 1971 that Dr. Jack Payne of the Institute for Research on Animal Diseases in England coined the term "production disease." A feature of this year's conference at Cornell was the first Jack Payne Memorial Lecture, given by Dr. I. M. Reid, associate director of the Institute for Research on Animal Disease. In his lecture, entitled "Production Disease in Farm animals: Past, Present and Future," Reid discussed the possible effect of molecular biology and genetic engineering being used to increase productivity and their possible role in increasing the incidence of production disease. He pinpointed several trends that could result in major structural and economic changes for domestic and worldwide agribusiness: the ability to manage biotechnology and related technologies will determine future economic success on the farm; changes in food quality and composition will take on equal importance, resulting in new markets, market niches, and the development of products branded with "premium quality." It will also

The ability to manage biotechnology will determine future economic success on the farm.



be possible to breed animals that can produce new commercially valuable proteins. Reid noted that questions dealing with property rights, such as patents, licenses, and contracts pertaining to vertical and horizontal integration, will become increasingly important in the operation of agribusiness and farming.

In the three days of the conference, researchers made over eighty presentations. While all presented some aspect of production diseases, the category was broad enough to include talks on how production is influenced by the interaction between behavior and stress, metabolism, epidemiological considera-

tions, immune status, abnormalities in metabolism and digestion, and fertility. For example:

- A field survey by clinicians at the College of Veterinary Medicine, Michigan State University, suggests that dietary copper, serum vitamin E, and exercise are associated with the incidence of developmental orthopedic disease in weanling horses.

- Researchers at Colorado State University's Department of Clinical Sciences evaluated the economic, production, and health factors influencing the decision to milk dairy cows four times a day. They found that if a herd is averaging more than 14000 pounds per day, it was more profitable to milk four times a day. At 14000 pounds and less, strategies combining four daily milkings of heifers and higher-producing cows with three daily milkings of intermediate and lower-producing cows was most profitable. The decision to

milk cows four times a day was most sensitive to the price of milk.

- The results of a study by researchers in England of the effect of bovine somatotropin on the performance of dairy cows during their first two lactations showed that bovine somatotropin increases the yield of milk and milk constituents but may impair reproduction.

- Researchers at Massey University in New Zealand found that plasma concentrations of urea (presumably related to protein synthesis) and of insulinlike growth factor-1 are both potentially useful markers of subsequent productivity. This would be an alternative to selection based on production. High-production animals could be selected on the basis of their metabolic characteristics during the growth period before puberty. Such selection schemes could markedly improve rates of genetic gains.

- Researchers in Neustadt, West Germany, found that if recombinantly derived bovine somatotropin is used immediately after calving, the catabolic processes are intensified which consequently cause more stress on the energy metabolism.

- A study by researchers at the State University of Ghent, in Belgium, found that estimation of adrenoceptors present on circulating lymphocytes and blood platelets can be used to predict milking characteristics of cows. As the degree of heredity for milking characteristics is high, blood cells may become a useful tool for selection of dairy cattle.



A recent gift of the Kuipers family in memory of their dog Candy provided funds at a critical time for the purchase of a surgery table for the Small Animal Clinic



Critical Care Laboratory: Practical & Educational

In the Veterinary Medical Teaching Hospital a cat that is unable to urinate, a bird with respiratory problems, and an anesthetized horse undergoing surgery may all have something in common. They may all owe their rapid diagnosis and treatment to the Critical Care Laboratory. The laboratory was made a reality through generous support from the Alumni Unrestricted Gift Fund.

Located on the interstice of the Small Animal Clinic and the Large Animal Clinic, the Critical Care Laboratory contains a Radiometer blood gas machine, a Johnson and Johnson dry chemistry unit (provided through alumni support), and a five-headed microscope. According to Dr. Sharon Center, a medicine clinician in the Small Animal Clinic, the equipment is vital to the management of the large number of difficult cases that are referred to the hospital. "We'll be able to determine whether we need to have animals in the oxygen cage or treated with nasal oxygen based on the blood gas measurements," said Center. "We'll be able to judge the response to therapy in animals with severe cardiac and respiratory disease, and we'll be able to manage the acid-base imbalances that develop in animals with severe renal and liver disease."

The proximity of the laboratory allows clinicians to more accurately adjust the constituents of fluids ad-



During hospital rounds, students use the 5-headed microscope in the Critical Care Laboratory.

ministered to patients in the Intensive Care Unit. The blood gas machine permits anesthetized patients to be more accurately ventilated and to be provided with adjuvant drugs to make their anesthesia safer and more effective. For blood gas and dry chemistry tests, only 0.25 milliliters of the patient's blood is needed, which is especially important when the patient is a bird or neonate. Both units give readouts within a minute. That minimizes the lag between acquiring the data, interpreting them and planning the treatment of the patient.

A large part of the laboratory is taken up by the five-headed microscope, which is used by many of the services in the hospital. "We use the scope," said Center, "to teach students how to interpret samples taken in a routine practice situation. It also helps them determine which samples should be submitted for cultures or cytopathologic consultation." During hospital rounds the five-headed microscope simultaneously gives each student on a rotation a look at the materials being discussed. "This mi-

croscope serves an important role in keeping our diagnostic steps practical, useful, and educational," added Center.

The Critical Care Laboratory is an invaluable asset in the preparation of tomorrow's veterinarians. "Our students have not been adequately challenged," said Center, "in their interpretation of acid-base problems in small animal patients because we haven't previously run this test routinely and because the laboratory results weren't available in time to determine treatment during a nighttime or weekend crisis. We're now developing the students' ability to predict what kinds of acid-base imbalances develop during surgery, during anesthesia, and in association with a variety of different diseases. When our students are in practice, they'll have a better ability to select appropriate therapies because they'll have a better appreciation of what is physiologically occurring. This equipment also opens the door to more clinical research projects for house staff."

Alumni Profile (Continued) ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦

more veterinarians as well as create some opportunities for individuals who might be interested in policy.

Incidentally, everyone talks about how underpaid public servants are, and they are. But they're no more underpaid than veterinarians. You might as well work in government if it interests you.

Was the experience worthwhile?

Absolutely. Not only did I have a very different work experience than clinical practice, but I was able to research and write on science areas that had interested me before I decided to pursue a career in veterinary medicine. It was both stimulating and satisfying to apply my knowledge of entomology, ecology, and conservation and to work with scientists in those fields. I would recommend this experience to anyone.

Do you plan to enter politics?

I seriously considered staying in Washington, particularly to work on the 1990 reauthorization of the farm bill. But I decided that one year had actually given me a good grounding in the legislative process, and that I am more interested in writing opportunities, public education, and issues analysis than I am in representing any specific interest.

I also want to see policy at the local and regional level. Local issues are just as complex as national ones, and I have joined a local agricultural policy working group as a first step in working on land use and development in the state.

Finally, I did miss the tangibility of clinical medicine as well as the personal rewards of practice. I am working on a part-time and relief basis in the mid-Hudson Valley.

Politics, for me, is as a constituent—hopefully a more informed one! I would like to see more veterinarians utilized as technical advisors by legislators, since I know that these policymakers are receptive to our knowledge and analytical expertise. As a new member of the AVMA PAC Board, as well as my other involvement with the AVMA and our state society, I hope to encourage other veterinarians in this area.

"Ceremony": continued from pg. 1

evaluation of levels of fitness in horses in training and the assessment of performance potential of young, untrained horses. Many people and organizations made the Equine Performance Testing Clinic possible, including the alumni of the College of Veterinary Medicine at Cornell, the Mrs. Cheever Porter Foundation, the Harry M. Zweig Memorial Fund, and the Finger Lakes Division of the Horsemen's Benevolent and Protective Association. The New York Division of the Horsemen's Benevolent and Protective Association has provided generous support to staff and equip the Respiratory Function Testing Unit.

New Culturing Technique Improves Diagnosis of Johne's Disease



In the Johnes's Laboratory, cultures are checked for the *M. paratuberculosis* bacterium.

Dr. Sang Shin, associate professor of microbiology and director of the microbiology laboratory, has developed a new method that is revolutionizing the Diagnostic Laboratory's ability to isolate *M. paratuberculosis*, the bacterium that causes Johne's disease in cattle, sheep, goats and other ruminants. The new method reduces the bacterial contamination rate in fecal samples but allows the *M. paratuberculosis* organism to grow. In the past a large percentage of the cultures were overgrown with fungi and other contaminants, making it impossible to determine if the organism causing Johne's disease was present. The new method eliminates that problem.

Johne's disease (paratuberculosis) is a bacterial infection of the intestinal tract that causes chronic diarrhea in cattle, sheep, goats, and other ruminants. The Diagnostic Laboratory, with the Department of Agriculture and Markets, offers the 3-Disease Program which helps farmers identify animals in their herds infected not only with paratuberculosis but also with bovine leukosis and bluetongue. A testing program is designed

to certify a herd free of one or all three of these diseases.

Since the beginning of the New York Paratuberculosis Program, in 1985, many of the whole herd fecal samples submitted to the laboratory for testing have been contaminated—a problem that seems to be related to the use of ensilaged feed, which normally contains a large number of spores. When the fecal samples from cattle fed ensilaged feed are cultured, the spores, especially the spores of *Bacillus spp.*, and fungi, overgrow the medium, and the cultures are useless within two to four weeks of incubation.

Shin approached the problem by looking at ways to decrease contamination. Since the problem seemed to be predominantly due to *Bacillus spp.* and fungi, his method was aimed at preventing those particular bacterial and fungal overgrowths. As a result, a new culturing procedure and medium were developed. Spores are eliminated from the culture by allowing

them to germinate on a medium enriched with glucose, alanine, and adenosine. Decontaminating the culture inactivates the spores that have germinated. Any remaining contaminating organisms are killed in a second germination on a medium containing specially selected antibiotics.

The new two-stage method effectively reduces bacterial contamination of samples without detrimental effects on the slower-growing *M. paratuberculosis*. According to Shin, of twenty-nine culture-positive samples, the contamination rate was 1.2 percent with the new method, versus 78 percent with the conventional method. The recovery rate of *M. paratuberculosis* was 96 percent versus 31 percent respectively. The procedure also shortens diagnostic time; all culturing is completed by twelve weeks rather than twenty-one weeks, and now cattle that are heavily infected with the organism can be detected after three to four weeks.

The Veterinary Student Summer Fellowship Program

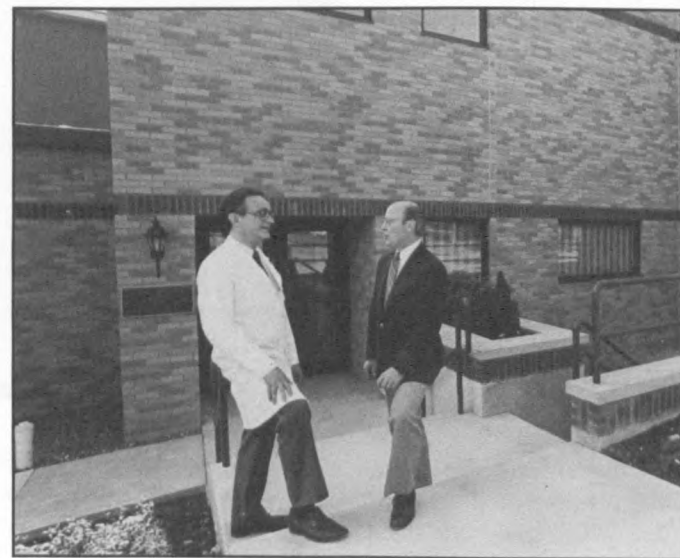
The James A. Baker Institute for Animal Health, a division of the College of Veterinary Medicine at Cornell is offering a summer fellowship program for veterinary students during the summer of 1990. Sponsored by the Geraldine R. Dodge Foundation, the program is for gifted students who want to pursue academic careers in veterinary medicine.

According to Dr. Douglas McGregor, director of the Baker Institute, students who have completed at least one year in the Doctor of Veterinary Medicine program in an accredited insti-

tution are eligible. Eight students will be accepted in the first year of the program, which runs from June 10 to August 17, 1990. The ten weeks Fellows spend at the Baker Institute will offer opportunities to engage in animal health research, and it is hoped the academic environment will encourage them to pursue graduate research training that would position them for leadership roles.

The opportunities available to fellows in the program run the gamut from a \$2,500 honorarium and a \$500 research allowance with free in-residence housing to daily interaction with top scientists in veterinary medicine. Fellows will also meet leaders in academic veterinary medicine who will visit the institute to discuss the students' research and their career objectives.

The Baker Institute has a long-standing interest in the health and well-being of companion animals. Its principal mission is to conduct research on infectious diseases, arthritis, and reproductive disorders, par-



Dr. Douglas McGregor and Dean Robert Phemister stand in front of the James A. Baker Institute for Animal Health.

ticularly in dogs and horses. The institute also offers comprehensive training for health professionals who aspire to careers in academic veterinary medicine or to leadership positions in government and industry. Under the guidance of institute faculty each fellow will be assigned a research project that can be completed during the ten-week program. The projects are designed to give fellows insight into the planning and conduct of research, the evaluation of data, and the efficient use of the human and physical resources of a research laboratory. Fellows will also take part in weekly Baker Institute meetings in which ongoing investigations and planned research are discussed. Participants are encouraged to attend relevant seminars and lectures in the College of Veterinary Medicine and elsewhere at Cornell.

The deadline for applications is January 12, 1990. Applications will be reviewed by a training committee consisting of the participating faculty members, and awards will be made on a competitive basis. The criteria considered will be the individual's academic record, work experience, career aspirations, and leadership potential. Applications kits can be obtained by writing to:
Office of the Director
James A. Baker Institute for Animal Health
College of Veterinary Medicine
Cornell University
Ithaca, New York
14853-6401

Program for Minorities Opens Doors to a Career

The amalgam of the College of Veterinary Medicine's Minority Employment Opportunity Program with Cornell's Collegiate Science and Technology Entry Program has produced an unusual and interesting offspring—the Veterinary Summer Placement Project for minority students in pre-veterinary studies.

Shenetta Selden, admissions officer at the college, coordinates the program for pre-vet students. "This program is an opportunity for an individual who feels that veterinary medicine may be the field for him or her," said Selden. "The assignments expose students to the diverse opportunities in veterinary medicine." Last summer she placed eight undergraduate students in summer positions connected with veterinary medicine. Students earned a \$200 a week stipend, provided by the College of Veterinary Medicine, New York State, and the employer.

"Before last summer," said Selden, "students in our Minority Employment Opportunity Program just found jobs on campus. I wanted to see how it would work if I placed students off campus. As it turned out,



Shenetta Selden



the different jobs allowed various kinds of experiences and exposures."

Two opportunities related to veterinary medicine were found with the Department of the Interior and the American Museum of Natural History, in its department of ornithology. The latter experience involved a project involving a species of crane and Selden recounts the experience of the undergraduate who participated. "She was on Great Gull Island, off the coast of Connecticut, and she had to go out there on a shrimp boat. There was no electricity. Food came in once a week by boat. This was a person from Long Island who had never been away from home except to go to Cornell. As it turned out, she loved the experience. I had made arrangements for her to spend up to four weeks, but at the end of four weeks with the researchers she didn't want to come back."

An assignment can also give direction to a career. One freshman student expressed a strong interest in birds

and he was assigned to a position with the Department of the Interior. Said Selden, "We placed him at the Pantuxet Wildlife Research Center in Laurel, Maryland, for the summer. He was there for eight weeks, and although he enjoyed the experience, he came back feeling he shouldn't focus only on birds. He wants to leave the field open for a while. So the summer's experience helped him."

Students were also placed in summer positions in the college's teaching hospital and in various academic departments, and those experiences were also valuable. Overall, the summer's employment gave the students an insight into the veterinary medicine.

"Veterinary medicine is not viewed as an accessible profession," said Selden. "We are much more familiar with the practitioners of human medicine. Veterinary medicine is not as visible, and we tend not to search for the professions that aren't visible. I think inaccessibility and a lack of

role models have kept a lot of people, including minority members, from going into veterinary medicine."

Next summer Shenetta Selden would like to expand the Veterinary Summer Placement Project and place additional students: "We are looking for students who have an interest in veterinary medicine and the potential for being successful in veterinary school. Those are the main criteria. They must be highly motivated and show initiative and responsibility." In return, students have the opportunity to view their career options in veterinary medicine. "That's the main thing this program does," said Selden. "It places a strong emphasis on careers in veterinary medicine."



Avian Drug Formulary Available

The drug formulary for use with poultry has been mailed to all people who receive the "Poultry Pointers." This formulary lists in table form all the drugs that can be used in poultry, their levels, indications, and any warnings. Anyone who is not on the list of "Poultry Pointers" and is interested in receiving a copy of this formulary may call or write to: Dr. A. Motalib, Department of Avian and Aquatic Animal Medicine, College of Veterinary Medicine, Cornell University, Ithaca, New York, 14853. 607/253-3365

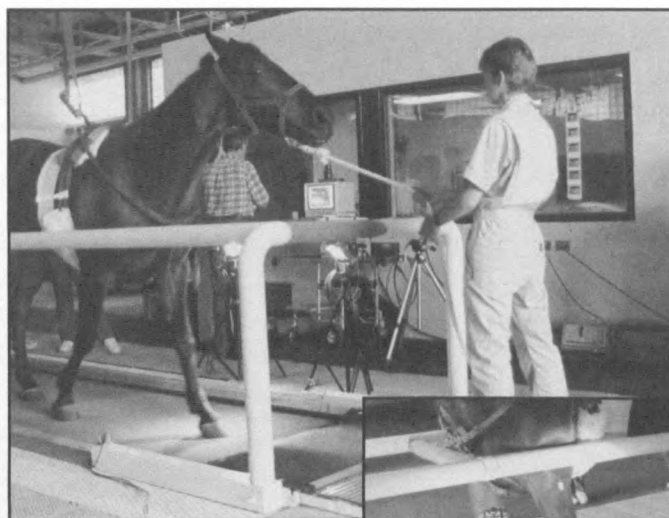
Gait Analysis System Added in Equine Performance Testing Clinic

A computerized, automated, three-dimensional video gait-analysis system has been added to the extensive facilities in the Equine Performance Testing Clinic. The system is designed to work with the clinic's high-speed treadmill in the study of motion in horses. College alumni and the Harry M. Zweig Memorial Fund for Equine Research contributed substantially toward the purchase of the \$135,000 system.

According to Dr. Alan Nixon, a large-animal surgeon in the veterinary medical teaching hospital, the video system can automatically and simultaneously track thirty points on a horse in three-dimensional space. The system's ability to provide data on a horse's movement in three dimensions means that information on foot and joint displacements, angles, velocities, and accelerations is now

available. "With two-dimensional viewing," said Nixon, "you'd just be able to see the leg moving forwards and backwards. This system uses four video cameras and up to thirty reflective markers on the horse's feet, fetlocks, carpi, elbows, and shoulders to plot the movement in space of individual joints. Also, by comparing the movement of three markers—say, for example, the elbow, the carpus and the fetlock—you can determine the range, velocity, and acceleration of the carpus flexing in space."

The computerized gait-analysis system will be used extensively for lameness workups, comparing movement of the good leg with that of the lame leg. If both legs are lame, the gait can be compared with a pool of data on normal horses that the clinicians have begun to accumulate. Determining the cause of a lameness with the help of this system frees the clinician from a dependence on diagnostic nerve blocks and joint blocks for answers. The computer is particularly helpful in spotting the cause of subtle lamenesses. "The video analysis system," said Nixon, "will be able to determine if the horse's movement is statistically outside the range of normal. Now we can document changes that you only suspected during the lameness examination."



(Above) High-speed cameras record limb movement of a horse on the treadmill. (Right) Markers on the horse's limbs aid researchers in tracking limb movement



Plans are already being made to incorporate another electronic system into the gait-analysis system that will allow clinicians to take EMG (electromyography) data from the horse. All the information can be fed into the same computer, integrating the motion data with EMG data on the muscle in a horse's forelimb or hock. The result will be information on how that particular muscle causes movement of the joint or the limb and exactly what portion of the limb is not functioning properly.

Other functions can eventually be added, because the same electronic system that is collecting EMG data also can handle thirty-two input channels or the same number of simultaneous signals. "We can use those channels," said Nixon, "to collect electronic signals for respiratory movement, oxygen consumption, heart activity, and other related functions." There are plans to add a force plate system to the treadmill. The force plate data—information on how hard the horse's foot strikes the ground—are an

excellent lameness indicator, since less pressure is placed on the lame leg as the foot lands. The force plate data will be correlated with the video images to integrate both spatial relationships and the foot-strike forces.

A high-powered mini-computer will integrate all the data clinicians hope to collect. The magnitude of data can be appreciated when it's remembered that each of the gait-analysis system's four high-speed video cameras clicks-off two hundred

frames per second, for a total of 1,500 frames. Add to that the data carried by thirty markers and an additional thirty-two channels in each frame. An accessory memory system to store data will be added in the future.

The system will be used to analyze normal motion first. In the beginning it won't be used for routine lameness cases in the teaching hospital. "It's complex and costly," Nixon said. "When we get it to an acceptable confidence level, we'll start using it primarily for difficult lamenesses."

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