

OWL'S EYES Page 4

# Veterinary Viewpoints

Winter 1982

Number Fifteen

The New York State College of Veterinary Medicine  
at Cornell University

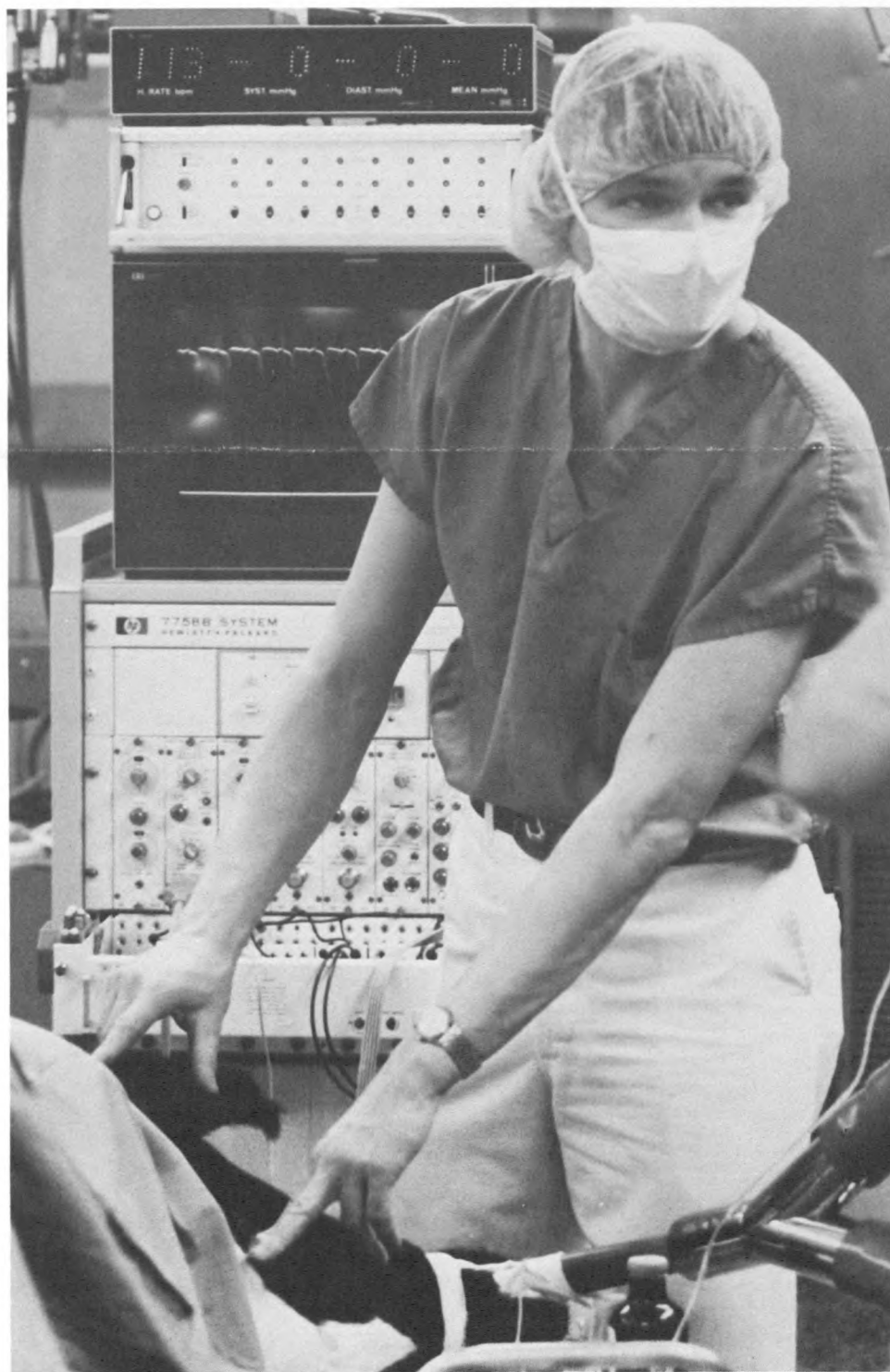
## The Cutting Edge

"The announcement of the opening was of necessity late. The equipment was at first incomplete, so that the work had to be begun under difficulties. The earnestness and devotion of both professors and students, however, very effectually counter-balanced these temporary drawbacks and an amount of work has been accomplished which is highly gratifying."

The quote is from Dr. James Law's first annual report on the opening of the College in 1896, but the remarks could have been made on the opening of the new Large Animal Sterile Surgical Suite, more than 100 years later. The need for a new facility was recognized some time ago, and planning for the Suite commenced with New York State funding. Completed at a cost of \$995,000, the Sterile Surgical Suite is now in use on a regular basis. An invaluable addition to the College, it is one of the most modern and complete surgical facilities in any veterinary college or clinic.

Physically, the Sterile Surgical Suite required a major re-construction of the north wing in the Large Animal Clinic. From a lecture room and offices, architects shaped a highly sophisticated suite of interconnecting rooms. An efficient floor plan allows for surgeon's preparation and locker areas, separate instrument preparation rooms for both clean and soiled materials and a 28'x18' Animal Preparation Room, communicating via an Animal Induction Chamber with a 30'x32' Animal Surgery. Two Recovery Rooms open off the east side of the surgery with direct access to the Large Animal Barns. Patients move in a circular pattern through the Suite, beginning in Animal Prep and moving through Induction to the Surgery and subsequently out to a Recovery Room. A unique arrangement of surgical tables permits the utilization of a single table throughout preparation, surgery and recovery.

The Surgery room and, as far as is practical, the rooms peripheral to the formal surgery, are maintained as "clean" areas, where living pathogenic organisms are minimized. Special flooring and materials throughout the Suite are designed to resist soiling and are easily hosed clean. Large industrial vacuums are used to remove debris and water. Stainless steel stocks, cabinets and



Anesthesiology resident, David Bristol, watches both patient and machine throughout preparation and surgery in the Large Animal Sterile Surgical Suite. The multi-channel physiologic function monitor behind him will provide precise and continual information on the patient's condition during the procedure.

other equipment are provided that are sturdy and corrosion-resistant. Air is regulated to flow out of the suite, carrying air-borne organisms away from the surgery.

Surgeons and staff routinely don surgical scrubsuits, along with masks, caps, hoods and shoe covers before entering the Surgery Room. Within the Animal Surgery the aseptic surgery practiced is comparable to that of any operation in human medicine. With the decreased risk of contamination, the success rate of complicated or delicate procedures in orthopedics, ophthalmics, cardio-vascular and thoracic surgery increases significantly.

The technology contained within the Surgical Suite is impressive. The surgical tables are set below floor level for easy access and hydraulically operated for ease of use. Portable equipment includes an ECG, a non-invasive blood pressure monitor, an 8-channel Physiologic Function Monitor & Recorder, Impedance Cardiac Function Monitor and Computer, Transcutaneous O<sub>2</sub> Monitor and Recorder, and a cardio-pulmonary resuscitation unit with defibrillator. Cardiac telemetry is also available for remote monitoring of the patient's condition. Because many financially and emotionally valued animals will pass through the Surgical Suite, the precise and continual monitoring this equipment provides is vital to assure their return to normal productive capabilities.

Support services are an integral part of the patient's care. The Section of Radiology and Physical Diagnostics offers radiography, fluoroscopy and teletherapy in support of the Large & Small Animal Clinics. The Comparative Ophthalmology Service, staffed by three board-certified ophthalmologists, evaluates isolated ocular problems as well as ophthalmic manifestations of systemic disease. The Department of Pathology maintains a Surgical Pathology Service in support of the Surgical Section. Biopsy specimens obtained during surgical procedures are submitted for pathologic examination and diagnosis.

Although the new Large Animal Sterile Surgical Suite has yet to be officially dedicated, its facilities are now in full use. Patients requiring the Suite's special services will be routinely admitted through the Large Animal Clinic at the Teaching Hospital of the New York State College of Veterinary Medicine.

## A SPECIAL GIFT

In recent years, the College has been fortunate to receive a special type of gift in support of its programs. Individuals, companies and hospitals have given a variety of useful items which help the Flower Veterinary Library, the clinics and classroom courses.

The Library received collections of books and fine engravings from alumni and friends of the College. Nikon gave a dozen precision binocular microscopes for a course in photomicroscopy. Individuals donated a surgical table, another Nikon microscope and Thoroughbred and Standardbred horses for the broodmare herd at Equine Research Park. Human hospitals have provided x-ray equipment and surgical lights which were outdated for their use but very adequate for our needs.

Alumni and friends of the College are encouraged to think of where such gifts might exist in their communities and to explore the possibility of donation to this College. Perhaps veterinarians might have unused equipment or know of hospitals or physicians in their areas who do. If an outright gift cannot be made, perhaps the potential donor might provide it at a fraction of its present value.

Real estate is another type of gift-in-kind. Probably most of these gifts would be sold and the proceeds used to help an area in the College selected by the donor. There are substantial tax benefits, immediate and long range, to the donor and numerous ways to vary the amount of the gift from full to partial value of the land's eventual sale price.

Gifts-in-kind are of great value to the College. Anyone interested in making such a gift, or knowing someone who would, is invited to contact the Office of Public Affairs.

*Edward J. Trethaway*

—Edward J. Trethaway



## An Open Letter to the Alumni

When I was first confronted with a prolapsed uterus in a dairy cow, I could not believe it would be possible to put such a huge and enlarging organ through the opening provided. I have much the same sense of awe when I contemplate veterinary medical education: How can we fit an immense and enlarging body of knowledge into the same four years available to Dr. James Law?

Clearly, there are no simple solutions. Present licensing procedures require that all students be proficient in the treatment of all species. But mastery of current clinical practices is not enough; students must be prepared for the changes in medicine that are likely to occur during their practice lives—careers that will extend well into the 21st century.

Equally clearly, however, the curriculum cannot remain static. We continually must assess our progress and revise the teaching program as new knowledge and methods become available. Recognizing this, the College has embarked upon an ambitious project to critically review our present curriculum. As you know, I have accepted responsibility to coordinate this effort. But the initiative, input and momentum must come from the faculty, students and alumni.

We already have begun a series of faculty workshops and discussions about the teaching program. Every faculty member with whom I have spoken has been deeply and genuinely concerned about maintaining the tradition of excellence here. I am encouraged, therefore, that we will see continued strengthening of the teaching program of this College over the next few years.

Our alumni are an invaluable source of practical experience and knowledge. We need your help. Comments about the

teaching program from alumni, especially from recent graduates and the employers of recent graduates, will help us identify areas of concern.

What do you feel are the strengths and weaknesses of the present curriculum? What educational experiences were especially meaningful in preparation for your present career? Were there important subjects that were not adequately covered? Were some topics overemphasized? What changes would have been helpful to you?

Please write. Each letter will be carefully considered and each will receive a reply. I look forward to hearing from you.

Sincerely

*Roy V.H. Pollock*

Roy V.H. Pollock  
Assistant Dean for  
Curriculum

Letters should be addressed to:

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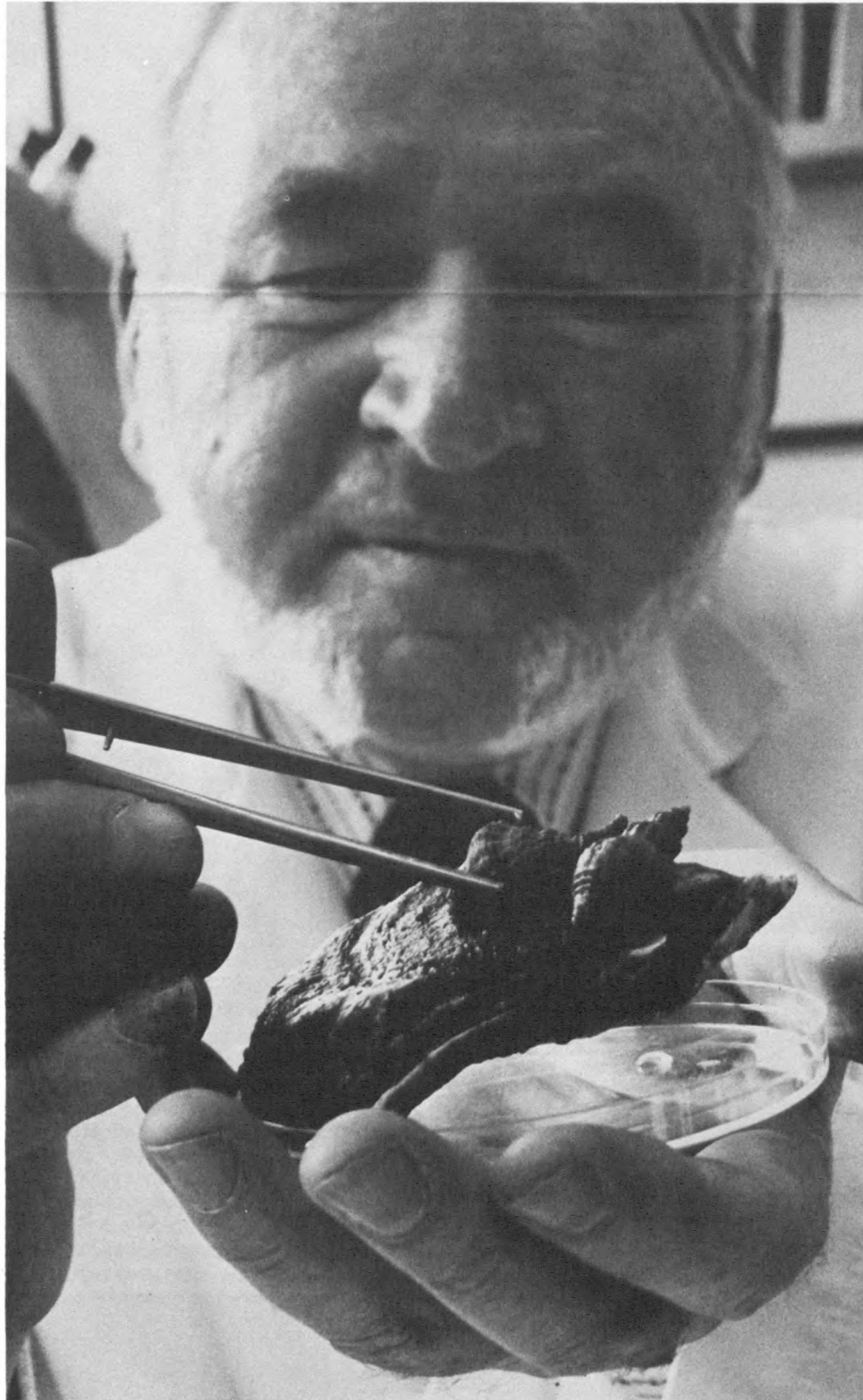
### VETERINARY VIEWPOINTS

Veterinary Viewpoints is published four times a year for friends and alumni of the New York State College of Veterinary Medicine, a Statutory College of the State University of New York. Correspondence may be addressed to Karen Redmond, Editor, Schurman Hall, New York State College of Veterinary Medicine, Cornell University, Ithaca, New York 14853. Telephone: 607/256-7699.

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*Large Animal Isolation Building*



*Louis Leibovitz, DVM*

## Isolation Facilities

A single-story concrete building not far from the Large Animal Clinic offers patients special protection from, and treatment for, such highly infectious diseases as Salmonellosis, Bovine Virus Diarrhea, Equine Infectious Anemia and Influenza. The new Large Animal Isolation Building can house and treat cattle and horses with these and other infectious enteric or respiratory diseases without risk of contaminating the hospital population. William C. Rebhun, Assistant Professor of Medicine in the Large Animal Clinic and coordinator of the facility's development says, "The Isolation Building will have an immediate impact on the quality of hospital care. We will be able to provide an unusually high degree of protection from infectious disease for patients as well as personnel. In essence, it's a totally separate hospital and as far as I know, the only facility of its type in the Northeast United States."

Located in the southeastern quadrant of the Veterinary College campus, the Large Animal Isolation Building's floor plan includes a central service corridor, five laboratory support rooms or anterooms, five large animal isolation rooms each measuring 16'x16', and three smaller medical supply rooms where medications and instruments are available for patient treatment. Each supply room is shared by two isolation units, but separated physically from the contaminated areas. Each anteroom contains space for laboratory support and a shower/dressing area that also has access to the central corridor and other units within the building.

The facility is designed to safeguard non-contaminated areas and, by extension, other animal patients throughout the hospital from infection. Staff entering the isolation room through the shower/dressing area change streetwear for protective hospital garments. After treating the infected animal, staff members reverse the procedure, re-entering the anteroom, discarding the contaminated clothing, showering and changing back to street clothes on the non-contaminated corridor side. In this way, infectious diseases cannot be carried on clothing or skin surfaces. Even the room air pressure is regulated to prevent contaminated air from flowing to outside areas. After a patient is discharged, the entire isolation room is completely and thoroughly disinfected over a two-day period.

Eventually, television monitoring equipment will be added to the isolation rooms allowing veterinarians and attendants at the nearby Large Animal Clinic to observe their patients around the clock. Future expansion of the facility from its present five units is also feasible.

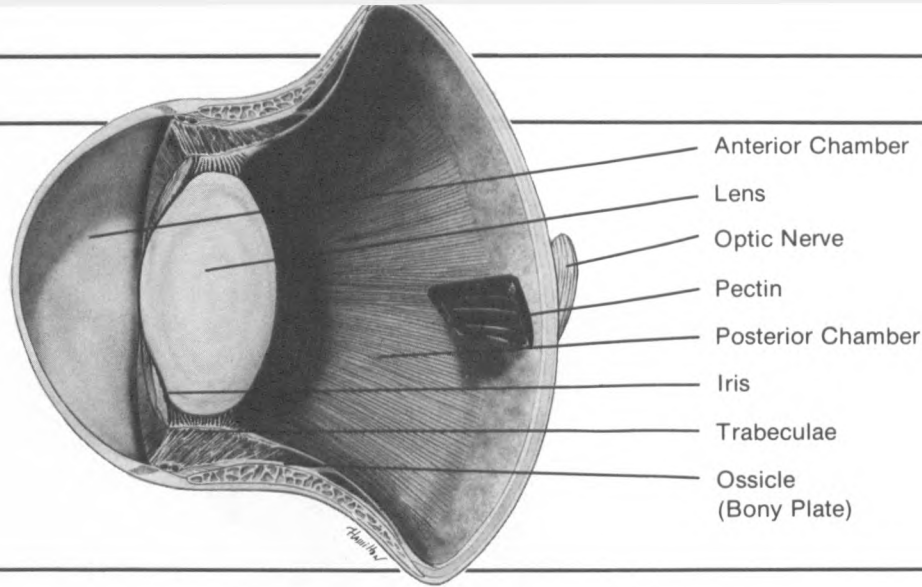
## New Lab for Marine Animal Health

A pilot diagnostic laboratory and investigative program at the Marine Biological Laboratory, Woods Hole, Massachusetts will expand into a marine animal diagnostic facility thanks to a three year \$331,713 grant from the National Institutes of Health. The new Laboratory for Marine Animal Health will be under the direction of Dr. Louis Leibovitz, Associate Professor in Avian and Aquatic Medicine. Dr. Leibovitz initiated the Fish Diagnostic Laboratory at Cornell several years ago, and has worked extensively with the shellfish industry.

The Laboratory for Marine Animal Health will monitor the health of marine animals used in research at the Marine Biological Laboratory and the adjacent scientific community at Woods Hole. According to Dr. Charles G. Rickard, Principal Investigator of the NIH grant and Associate Director of the Veterinary College's AQUAVET program, the laboratory will investigate disease outbreaks, evaluate clinical signs and lesions, and develop diagnostic methods for recognition of infectious, parasitic and toxicologic diseases. Investigators also hope to establish guidelines for the continued maintenance of environmentally controlled and propagated species, and identify geographic areas suitable for the collection of valuable experimental marine animals. A long-range goal is the standardization of stocks of marine species suitable for well-controlled research. Laboratory-bred stocks of marine species with known genetic and environmental backgrounds and at defined stages of development are needed urgently for research in neurobiology and behavior, toxicology and environmental monitoring and for developmental biology.

Activities at the Laboratory will immediately benefit AQUAVET, a training and research program in aquatic veterinary medicine sponsored jointly by the New York State College of Veterinary Medicine and the School of Veterinary Medicine at the University of Pennsylvania as well as other teaching and research activities involving marine animals conducted at three collaborating institutions: the Marine Biological Laboratory, the Northeast Fisheries Center of the National Marine Fisheries Service and the Woods Hole Oceanographic Institution.

The expanded diagnostic Laboratory will be capable of conducting histopathological, bacteriological, mycological, parasitological, virological, and hematological exams of marine vertebrates and invertebrates. It will also be equipped to measure water samples for concentrations of nitrogen, oxygen and undissociated ammonia, pH levels, total salts and chlorine.



## Owls' Eyes



n a winter's evening, a vole ventures away from its nest searching for food while high above the field in an old oak tree, a Great Horned Owl is doing the same. Patiently surveying the area, the predator quickly spots the foraging rodent despite the fading light. A silent flight, a kill, and with the hunt ended, the owl resumes its treetop watch.

The owl and many other birds of prey perform these hunting feats relying on highly developed senses of sight and sound. Chris Murphy, a third year veterinary student at the College who is dually enrolled in the doctoral program, is conducting graduate work on the visual system of birds of prey, particularly focusing on visual accommodation in the owl.

Owls and their ocular systems have fascinated man for centuries. Even Aristotle studied the eye of the owl, and it's not surprising.

Compared to their body size, the bird's eye is absolutely enormous. For example, the Great Horned Owl, weighing only 1½ kilograms, has eyes as big as a man. The eye of an ostrich is bigger than a horse's eye.

Chris' work with the ocular systems of owls began by investigating the ocular anatomy of various owl species under the direction of Dr. H.E. Evans, Professor of Anatomy at the College. Chris then initiated a study of the physiological optics of 15 species of owls in conjunction with Dr. Howard Howland, Associate Professor of Neurobiology and Behavior at the Langmuir Laboratory. Combining the two studies, Chris' graduate research is on the anatomy and physiological optics of the eyes of owls. How well an owl can focus upon an object placed at various distances is largely determined by intraocular musculature. Theoretically, the greater the extent of the intraocular muscles, the greater the range of distances over which the bird can bring an object into sharp focus. In a preliminary survey of 15 species of owls, Chris has found that this intraocular musculature and accommodative ability can vary significantly among species of owls.

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What is an owl's eye view? It can be especially sharp. Owls and man see a single object or image simultaneously with both eyes and have one spot of acute vision, or a FOVEA, in each of their retinas. But most birds see well over their entire retina, while man does not. A bird placed in a room sees the fine details of its surroundings in a flash, while it may take a human several minutes to notice all of the room's contents. A difference in the construction



of the owl's FOVEA also allows rapid alignment as the bird approaches an object in flight, enabling it to keep the object in continuous focus. In a bird of prey, this is an indispensable talent.

The eyes of owls are also beautifully adapted to low-level light vision. They possess essentially the largest eye that a head can accommodate and in this eye a large pupil admits the most light during the night or at dusk. The tubular shape of the owl eye, as illustrated, decreases the weight of the eye and may be viewed as the result of trying to fit a very large eye in a rather small head. Their peculiar shape is main-

tained by a ring of 15 small bones situated within the eye itself. The lens is positioned posteriorly within the tubular eye which shortens the focal length slightly. What are the advantages of these structural adaptations? The brightness of the retinal image can be indexed by the familiar photographer's "f-number", the ratio of the focal length of the optical system to the diameter of the aperture (pupil). The owl with a large pupil, or aperture, and a relatively shortened focal length would possess the equivalent of a very "fast" camera lens with a low f-number. This adapts the owl beautifully for vision under low light levels. It is tradi-

tional to consider animals which are well adapted to the nocturnal environment to be visual cripples during the bright daylight. But owls have excellent daytime vision too. A recent investigation of the FOVEA of the Great Horned Owl revealed that it contained both rods and cones which are utilized for low and high light levels respectively.

Vital for hunting and therefore essential to survival, excellent vision in birds of prey depends on an unimpaired ocular system. Unfortunately, the eye suffers more than its fair share of injuries. With the encouragement of Drs. Kern, Riis and MacCoy in the

Department of Clinical Sciences, Chris investigated ocular disorders in free-living birds of prey. Cases were gathered from the Avian Clinic at the New York State College of Veterinary Medicine and the Owl Rehabilitation Research Foundation (ORRF) in Ontario, Canada which is directed by Kay and Larry McKeever. Of 931 raptors admitted to the Avian Clinic and the ORRF, 15% had some kind of ocular lesion, the majority of which were due to trauma. One-third of these lesions resulted from collisions. Screech owls are often hit by cars perhaps due to this raptor's fondness for roadside hunting. In a curious finding, it was noted that of all the species admitted, only the screech owl and kestrel fell down chimneys, often receiving serious burns. Why this should occur only in these two species of raptors remains a mystery.

In Katherine McKeever's manual on the Care and Rehabilitation of Injured Owls, she writes, "Anyone can release an owl or hawk; there is no special merit in simply opening a cage and allowing the bird to go. The responsibility of the conscientious operator is to see to it that the raptor is released with the best possible chance of survival, in his natural environment. Any other kind of release is irresponsible."

Chris' work on the ocular system of owls not only tells us about a unique group of birds, it may also help to define an injured owl's chances of survival in the wild. It will help determine how important the owl's vision is to hunting, whether or not adequate compensation can be made for a visual handicap, and how successful veterinary medicine can be in treating ocular disease and injury. The ultimate goal of the Avian Clinic, ORRF and other rehabilitators is to treat raptors responsibly both in captivity and in the wild.

## Avian Clinic

The Avian Clinic is a student run, faculty-supervised project dedicated solely to the treatment of wild birds. It was formed approximately 5 years ago by a handful of students under the direction and encouragement of Dr. Douglas MacCoy of the Department of Clinical Sciences. From very modest beginnings it has grown to include ten faculty supervisors, 3 student supervisors and nearly 45 student members. Since its inception, the clinic staff have treated hundreds of birds from throughout New York State. They receive cooperation from the Laboratory of Ornithology, the Peregrine Fund, and several zoos across the state, an affiliation that maximizes a bird's chances for successfully returning to the wild. Injured wild birds are admitted through the Small Animal Clinic on the Veterinary College campus.



## Rabies: The Disease

It's not uncommon for an animal, especially a wild animal, to be brought to the New York State College of Veterinary Medicine's Clinic or Laboratories after displaying unusual behavior. Typically, the animal was found playing with children or the family dog, or in a disoriented state, circling in a barn or shed. It's possible the animal attacked people without provocation. Animals showing such "nervous signs" that are clearly deviations from their normal behavior, are usually submitted with the tentative diagnosis of rabies. While any animal displaying odd behavior may be rabid, fortunately rabies is only one of the possible diagnoses.

The clinical signs of rabies resemble several diseases, and conversely, several diseases give the clinical impression of rabies. Canine distemper, affecting raccoons, skunks, mink, foxes and ferrets as well as dogs, and Pseudorabies may cause animals to exhibit rabid-like mania or depression. Between mid-June and the early fall, woodchucks may develop Cerebral Nematodiasis when infected with aberrant parasites.

All of these diseases affect the central nervous system causing changes in the animal's behavior.

Normally, smaller non-domestic animals encountered by people are wary creatures and although they live in close proximity to man, actual direct contact between people and these animals is rare. Increased tameness, increased viciousness, or decreased wariness are definite deviations from normal behavior. Changes in activity patterns often result in increased human-animal contact with bite wounds or scratches inflicted on the people involved. However, a rabid animal need not be ferocious, and often the term "dumb rabies" is used because the rabid animal is listless, depressed or unaware of normal "danger signs".

To determine whether or not an animal is truly rabid, diagnostic tests must be performed on the brain. For that reason, it's important to handle the animal cautiously, while attempting to kill or restrain it, without severely damaging the brain. Submit the entire animal for tests immediately.

Again, whenever an animal, especially a wild animal displays "nervous signs" or other unusual behavior, it is wise to take precautions and treat each case as possible rabies. Call the SPCA or local conservation officer. If bite wounds or scratches are inflicted by the animal, seek immediate medical assistance.

—Lois Roth, DVM

## Rabies: Protection

According to Dr. A. Dwight Lopes, Assistant Professor of Veterinary Microbiology, James A. Baker Institute for Animal Health, rabies in our dog population has been reduced to a very low level. Mandatory rabies vaccination has been highly effective in the U.S.; in some underdeveloped countries where such programs are not enforced, stray dogs are nearly always suspected of carrying rabies.

However, cases of rabies in wild animals are still common, because there are few successful control methods and no rabies vaccine is approved for use in wild animals. Skunks, foxes, raccoons and bats form a permanent reservoir of the disease. Anyone bitten by an animal should contact their state and local health departments.

Treatment will depend on many circumstances. Unless the wild animal is caught and found to be free of rabies, the victim must be vaccinated. An unprovoked attack by a stray dog necessitates a search for the owner and quarantine of the dog while the vaccination history and the animal's condition is determined. Although every incident of possible rabies exposure must be evaluated individually as to appropriate treatment, immediate and thorough local treatment of all bite wounds and scratches is perhaps the most effective preventive measure. The wound should be thoroughly cleaned and flushed with soap and water. Rabies rarely develops unless there has been an actual penetration of the skin by teeth, saliva or mucous membrane contact. Vaccination can be postponed for one or two days after a bite while a complete investigation of the circumstances is undertaken, but prompt treatment is of critical importance where there have been multiple bites of the head, neck or face.

In the past, rabies vaccination had many drawbacks and was a painful process for the human patient. But a new vaccine, human diploid cell vaccine (HDCV), has been developed by the Wistar Institute of Anatomy and Biology and approved for use in the U.S. in June 1980. This vaccine, administered by intramuscular injection usually in the arm, has not caused any significant neurologic or allergic reactions. Only three injections pre-exposure and five injections post-exposure are needed and 100% of the patients develop antibodies. The rabies vaccine is usually employed after exposure, but veterinarians and others likely to be exposed to rabies should receive pre-exposure vaccination.

Some distinctions are now being seen between different strains of rabies. Monoclonal antibodies, with their fine-tuned specificity, are being used to characterize, or identify, these various strains. Vaccines that can be tailored to a particular strain would, as a result, be increasingly effective.

## Peter Olafson, DVM

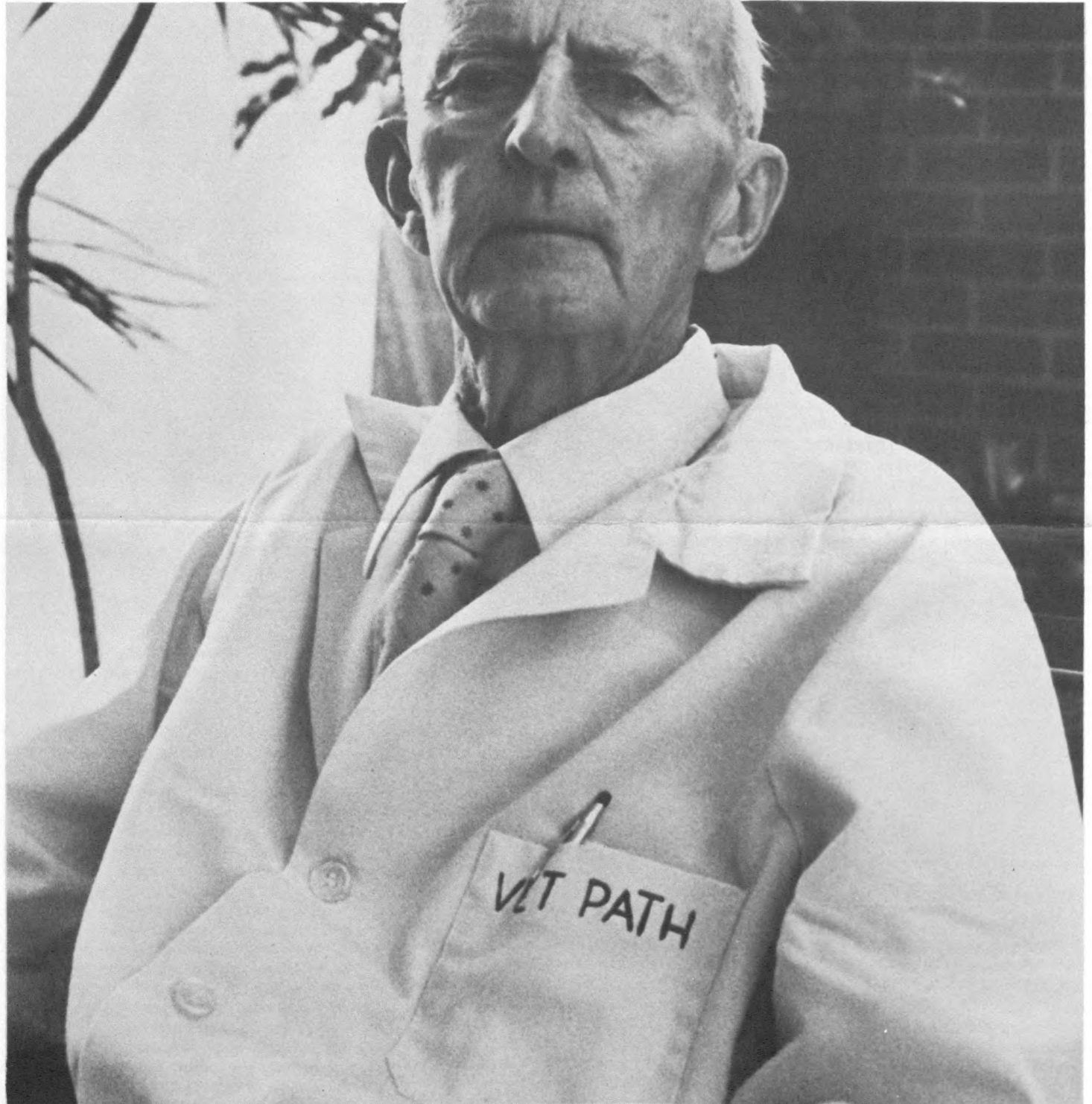
From a boyhood on the family farm in the Red River Valley, North Dakota, Peter Olafson arrived at the New York State College of Veterinary Medicine in 1924 to earn his DVM and begin a career as researcher and teacher in Veterinary Pathology. In the years until his retirement as Professor Emeritus in 1965, he became one of the leading veterinary pathologists in the U.S., defining and developing a science. His contributions included work on pyelonephritis in dogs, pseudoleukemia in calves and brain tumors in small animals, muscular dystrophy of lambs, equine wobbler disease, bovine listeriosis, toxoplasmosis, cardiac anomalies and sterility in bulls. During the '40's, he was one of the first to recognize and describe bovine virus diarrhea and hyperkeratosis of cattle. However, Dr. Olafson's influence on veterinary medicine goes deeper than papers and studies. You see Peter Olafson's finest work in the people he taught.

Dr. Olafson at 85 is still the formidable Dr. Olafson of his teaching days. Former students refer to him with respect, awe, love, and admittedly, some fear. To them he is "the grand old man," "boss" and "the Chief". His forbidding manner, supposedly due to his Icelandic heritage, was not assumed. Taciturn, he never used four words when three would do. One student said Dr. Olafson looked like he was carved from granite, and a casual acquaintance might never get past that appearance. But another warmer side was reserved for people in closer contact with him.

In the days when professors collected graduate students like kids collect baseball cards, Dr. Olafson deliberately chose one Ph.D. student at a time to counsel and teach. His graduate students were few in number, among them Saunders, Jubb, Kennedy, McEntee, King, Monlux, Goss and Panciera, because he felt he owed them something in terms of his time. The "low man" on the graduate student totem pole was always housed next to Dr. Olafson's office, a case of the person knowing the least having access to the most. And no appointments were necessary with Dr. Olafson. If you appeared in his doorway with a slide in your hand, you could count on his help.

Perhaps the hardest thing to draw from another human being is a part of themselves, yet Peter Olafson was there for people. They all liked to drop-in to talk, to discuss their problems, to complain, to comment. And he always listened.

A man who probably did more to shape veterinary pathology than any other individual, he could take the time to ask his students for their opinions and they enjoyed sharpening their wits with him. He set such an example, that a generation of students



Peter Olafson, DVM

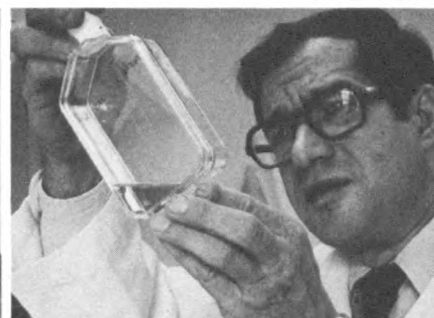
went on to teach their students in the same way, and so on, through successive generations. Directly and indirectly, countless professional and personal lives were shaped by him. Today, he is so loved and admired there is an informal "Olafson Club" of former students and colleagues. The Olafson Short Course in Pathology, held every summer to examine recent developments and present an overall review of pathology,

is named in his honor. This course draws pathologists from Canada, Mexico and the entire U.S., and represents a continuation of Dr. Olafson's methods and practices in teaching. So the influence of Peter Olafson is still felt, shaping the character and quality of veterinary pathology in this country and internationally. A rare individual, Dr. Peter Olafson helped give the specialty the stature it has today.

*Dr. Olafson sat, briefly, for his photograph before lecturing at last summer's Short Course in Pathology. Still active in the profession and academe, Dr. Olafson was the guest of honor on January 25th when members of the faculty gathered to celebrate his 85th birthday.*



Wolfgang O. Sack, DVM, Ph.D.



Bruce W. Calnek, DVM

# Footnotes



## Bloodhounds in the Lab

The James A. Baker Institute is growing bloodhounds in the laboratory. Not your canine variety, but unique hybrid cell lines called hybridomas with unlimited growth potential and a talent for producing uniform and highly specific antibodies. Like bloodhounds, these antibodies track down and attach themselves only to the foreign body, or antigen they recognize. By matching a specific antibody with a particular infectious agent or toxin, it's possible to control or eliminate the offending organism.

A facility to produce these monoclonal antibodies by cell fusion was established at the Baker Institute last year. During the brief period that the unit has been operating, many cell lines have been generated, selected and cloned.

For the treatment of disease, cell lines have been generated that secrete monoclonal antibodies to equine infectious anemia virus, canine parvovirus, several parasite antigens and antigens that are expressed on the surface membranes of horse red blood cells and horse white blood cells. Monoclonal antibodies are also being used in a project to characterize closely related viruses that cause disease in dogs, cats and mink.

In research, monoclonal antibodies have found wide application in the characterization, separation and analysis of living cells. They have provided investigators with reagents that can distinguish individual members of seemingly similar but functionally distinct cell populations. Monoclonal antibodies are rapidly displacing

The James A. Baker Institute for Animal Health

conventional antibodies as diagnostic reagents. The ability to produce monoclonal antibodies cheaply and in large amounts make them ideal for standardization and quality control. The monoclonal antibody's finely-tuned specificity aids development of lab tests for the identification of infectious agents, toxins and cells. Monoclonal antibodies may also find use in the treatment of cancer. Since monoclonal antibodies can be generated that bind only to tumor cells, they can be used as delivery vehicles for cytotoxic agents.

Monoclonal antibodies are being used in the selection of organ donors for transplantation and for progeny testing; and in the purification of proteins.

Researchers at the Baker Institute are deeply involved in monoclonal antibody work, and the existing facility is operating at full capacity with commitments through June 1982. To accommodate the growing need for cell lines, an expansion of the present unit into a Cell Fusion Center at the Baker Institute has been proposed. The Institute already has the professional staff with the skills and commitment to cell fusion, research and a unit dedicated to this technology. With the increased demand for monoclonal antibodies and the increasing uses for which these cellular "bloodhounds" are being found, such a Center would afford new opportunities, available in no other veterinary institution and at few medical institutions.

## NEWS MAKERS

BRUCE W. CALNEK, Chairman & Professor/Avian & Aquatic Medicine, was elected president of the American Association of Avian Pathologists (AAAP) at the 24th annual meeting in St. Louis. The Association also honored Professor Emeritus, STEPHEN B. HITCHNER who received the AAAP Special Service Award for his many distinguished contributions to the field of avian medicine. Dr. Hitchner recently retired as Professor of Avian Medicine, N.Y.S. College of Veterinary Medicine.

WOLFGANG O. SACK, Professor of Veterinary Anatomy, has been installed as the new president of the American Association of Veterinary Anatomists (AAVA).

MARY C. SMITH, Assistant Professor/Ambulatory Clinic, was elected to membership in the American College of Theriogenologists (ACT) following her successful completion of the College's oral examination held in conjunction with the Society's annual meeting in Spokane, Washington.

Several alumni of the College have received their certification from the American College of Veterinary Pathologists. ROBERT M. SHULL (COR '76) Knoxville, TENN, has been certified in veterinary clinical pathology. Veterinarians certified in pathology are HOWARD B. GELBERG (COR '71) Urbana, ILL, DONALD J. MEUTEN (COR '74) Columbus, Ohio, and DONALD H. SCHLAFER (COR '74) Greenport, Long Island, N.Y.

The third annual Horse Symposium was held Nov. 14th & 15th at Cornell University. Sponsored by the Student Horsemen's Association at Cornell, the program featured several faculty members from the New York State College of Veterinary Medicine. Speakers and their topics were:

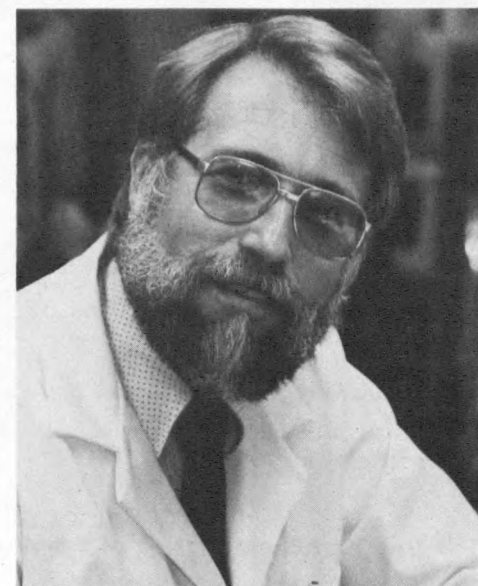
JOHN M. KING, Professor of Veterinary Pathology, on the relevance of pathology to horsemen; WILLIAM C. REBHUN, Assistant Professor of Medicine/Vet. Clinical Services, on vision; WOLFGANG O. SACK, Professor of Veterinary Anatomy, on the anatomy of the horse's foreleg; and MICHAEL ROSS, an intern in Veterinary Medicine, on equine lameness.

Raymond H. Cypess, DVM, PhD, Director of the Diagnostic Laboratory and Chairman of the Department of Preventive Medicine, New York State College of Veterinary Medicine, was recently appointed to the 10-member Scientific Advisory Committee for the Environmental Disease Surveillance Program in New York State. The new program was established by legislative action in order to facilitate the study of environmental and occupational health effects. Dr. Cypess' appointment recognizes his expertise in the use of animals as sentinels of disease.

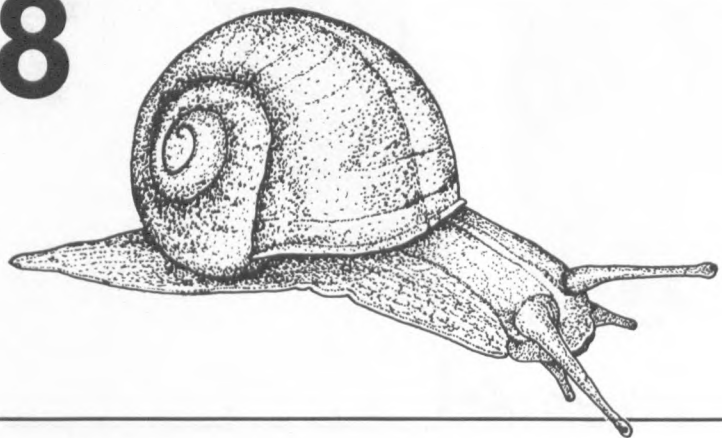
## AWARD WINNERS

The 1980 Journal Scholarship Award, of the Charles Louis Davis, DVM, Foundation for the Advancement of Veterinary Pathology, was recently presented to four members of the New York State College of Veterinary Medicine's faculty, staff, and graduate program. Honored were, DANNY W. SCOTT, DVM, Associate Professor of Medicine; MARILYN J. WOLFE, DVM, Graduate Research Assistant, CHRISTINE A. SMITH, Research Specialist, and ROBERT M. LEWIS, DVM, Professor and Chairman of the Pathology Department. The Journal Scholarship Award is presented annually in recognition of excellence in veterinary pathology literature. The 1980 award was presented for the article entitled, "The Comparative Pathology of Non-Viral Bullous Skin Disease in Domestic Animals" which appeared in Vol. 17 of *Veterinary Pathology*.

The article published the results of a review of non-viral bullous, or blistering, skin diseases of domestic animals and a 4-year study of cases presented to the New York State College of Veterinary Medicine. From the 15 diseases found, a histology classification based on the site of blister formation and other important clinicopathologic, histologic and immunopathologic findings was developed. The study indicates that non-viral bullous disease seem to be rare with bullous disorders other than impetigo accounting for 0.6% of the 8,000 small animal and 700 large animal skin cases seen in four years.



Dr. David L. Graham recently joined the College's Department of Avian and Aquatic Animal Medicine as a Professor of Avian Medicine. He will conduct diagnostic work as well as teach in the area of wild and pet bird medicine.

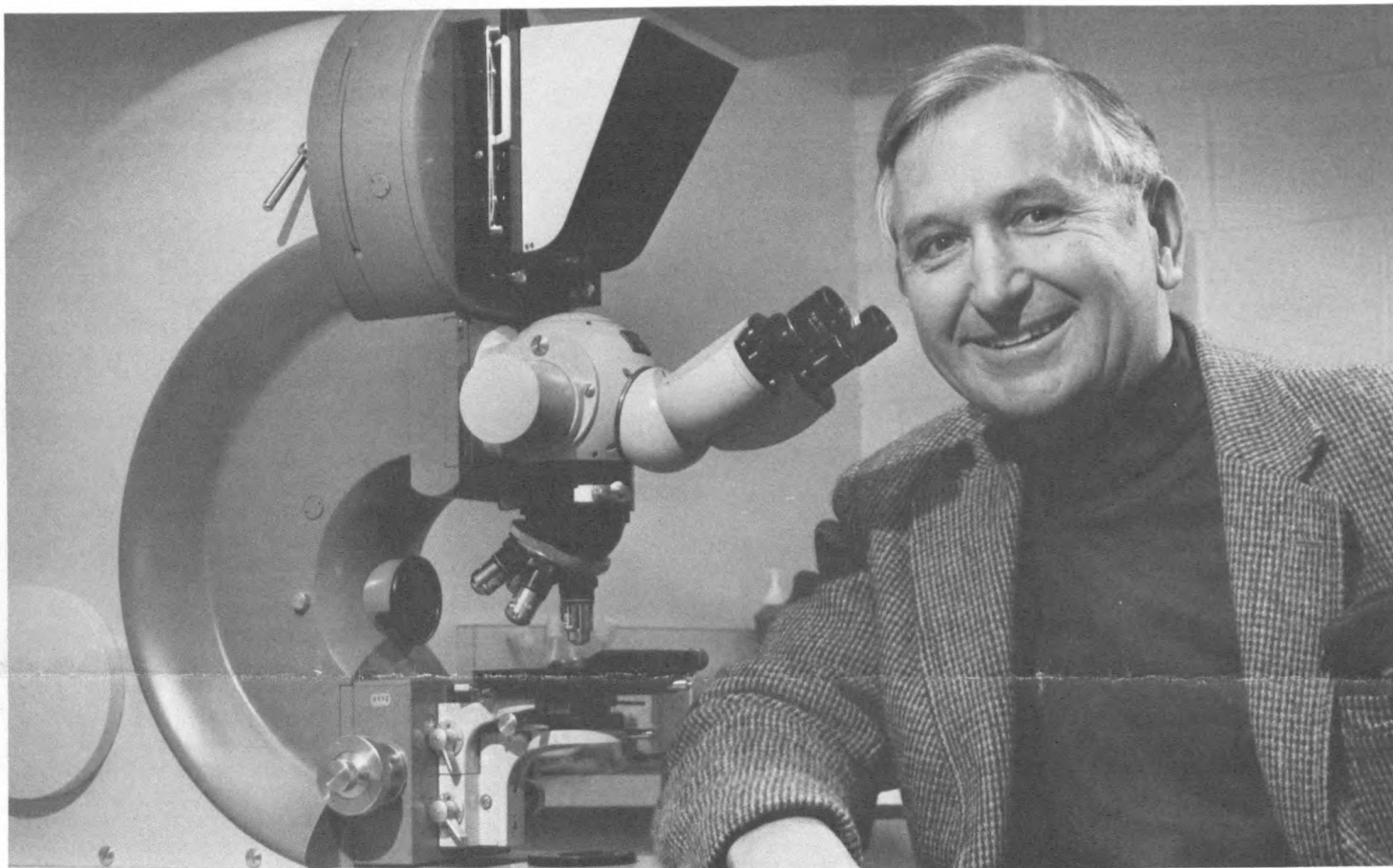


## Tagging the Elusive Cercaria

Traveling from snail to man, *Schistosoma mansoni* spends nearly its entire lifecycle in one or another of these two hosts. The parasite is the cause of schistosomiasis, possibly the most rapidly spreading helminthic infection of man. Worldwide, 150 to 250 million people are infected and a high proportion of these have varying degrees of disability as a result of the infection. *Schistosoma mansoni* develops in specific snails, e.g. *Biomphalaria* spp., to a state, the cercaria, that is infective to man. The cercaria enjoys a brief existence swimming in search of its human host, which it enters by burrowing through the skin. It then migrates through the tissues to arrive in the lungs after five or six days. Larvae begin to arrive in substantial numbers in the liver by two weeks, but do not become adult and start laying eggs in the mesenteric veins until six or seven weeks. Its eggs penetrate the wall of the vein and many become lodged in the wall of the large intestine and the liver, there inducing the granulomatous inflammatory response that is responsible for the manifestations of disease.

In the laboratory, Dr. J.R. Georgi, Professor of Parasitology, New York State College of Veterinary Medicine, is tracing the migration of this parasite through host tissues. Snails infected with the larvae are placed in a small volume of radioactive amino acid that many diverse organisms normally utilize. The snails take up the radioactive amino acid and add radioactive "label" to their own tissues and the cercaria, or larvae, they are carrying. The larvae of *Schistosoma mansoni* are now "tagged" or "labeled" with a small amount of traceable radioactive solution. In theory, it should be relatively easy to follow the parasite; but in practice, the cercaria prove ever elusive. "One of the main difficulties," says Dr. Georgi, "is there's not much radioactive material in each cercaria to begin with and then, in the process of entering the skin, the cercaria loses its tail and discharges glands that contain a lot of label."

To solve the problem, Dr. Georgi exploited autoradiography, a process that is



sensitive to even the cercaria's minute radioactive "tag". The cercaria's own tag leaves a record of its location in the tissue when its radiation exposes x-ray film. Tissues from mice infected with "tagged" *Schistosoma mansoni* are flattened and dried on a piece of cardboard which is then pressed against an x-ray film in a special light-tight press and the radiation exposes the film. Each parasite's image is often no larger than a pin prick but the longer the tissue and film remain in close contact, the clearer it becomes. By the end of a week or longer, laboratory researchers simply count the dots on the film's emulsion to count the parasites present in the tissue.

"Autoradiography's main advantage," says Dr. Georgi, "is that it provides an accurate technique for tracing organisms

through the body. Autoradiography is specific, if there is a spot on the film, there is an organism." Also, unlike current procedures, autoradiography is not dependent on the identifying skills of technicians, or special cultures or techniques.

Presently, Dr. Georgi's experiments involve only laboratory mice and *Schistosoma mansoni*. After exposing the subject to the parasite, the organs of the mice are examined at specific intervals for parasites. The presence, or absence of parasites in the lungs, liver and intestines tell researchers where the parasites migrate and how fast.

Other parasites of domestic animals will be studied in the future, including the migration of *Ascaris* around the body and *Haemonchus* and *Ostertagia* in the abomasum of ruminants. Dr. Georgi is particu-

Jay R. Georgi, DVM

larly interested in the phenomenon of "arrested development" of the parasite in the host organism. Parasites, instead of moving through their various stages of development, remain in the tissues of their host in a lethargic state. Using autoradiography, it will be possible to keep close track of these worms in the body, and study why and how long they remain in the tissues.

Throughout the world, parasites cause five of the six most important diseases of man, and untold loss of food and fiber provided by domestic animals. Further study of their migrations and life cycles may help decrease the occurrence and effects of infection of both man and his animals.

## VETERINARY VIEWPOINTS

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