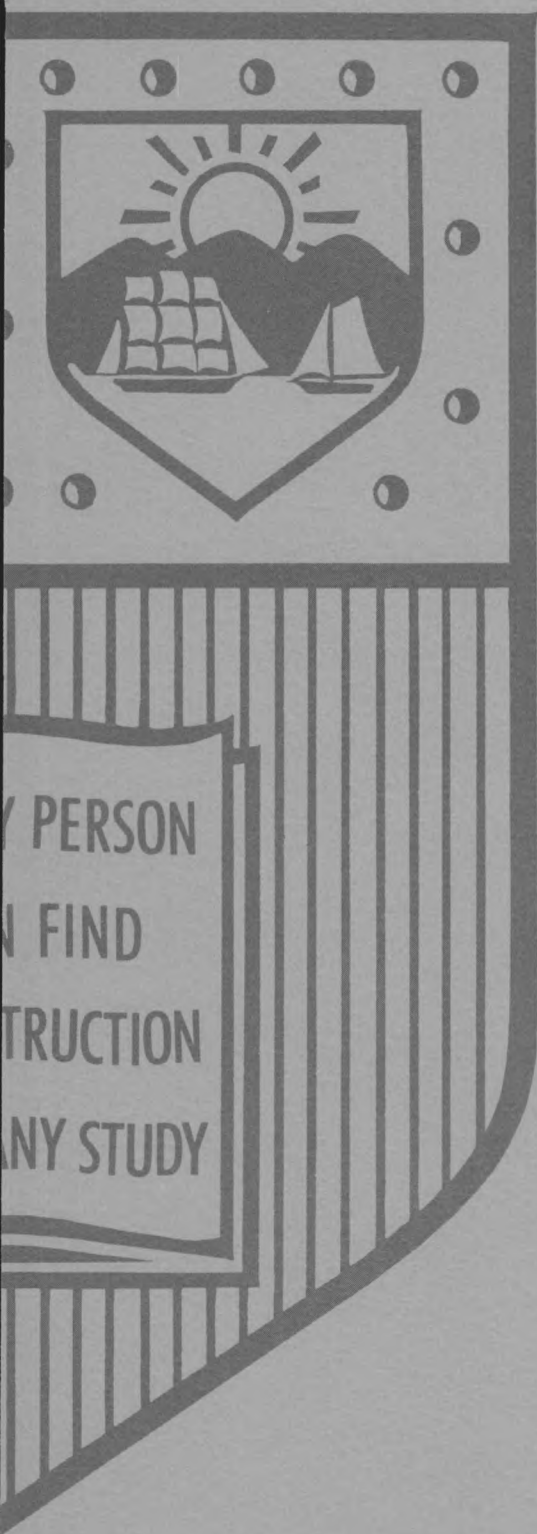
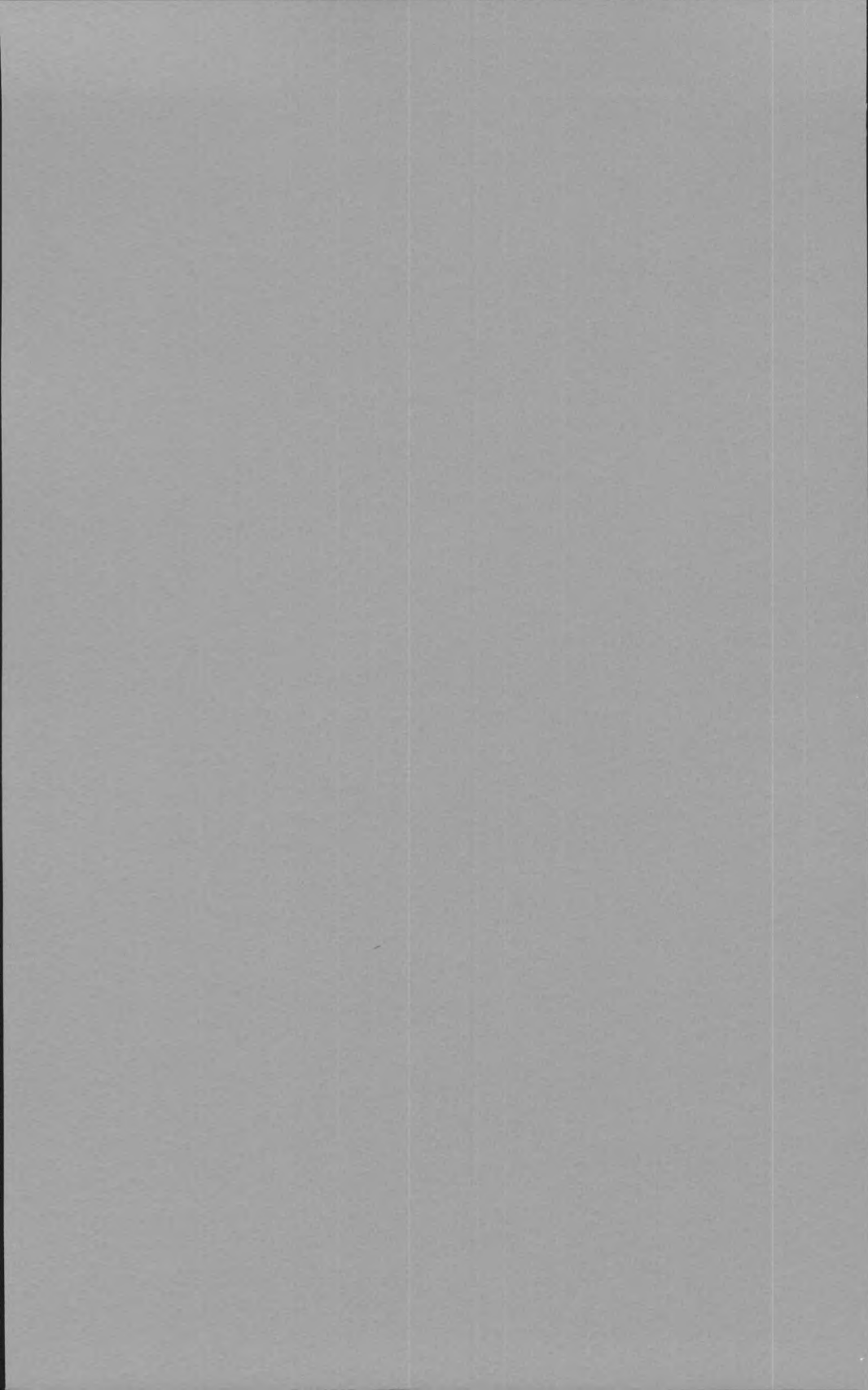


ell University Announcements



New York State College of Veterinary Medicine

A Statutory College
of the State University
at Cornell University
Ithaca, New York



Cornell University

New York State College of Veterinary Medicine

1976-77

A Statutory College of the State University
at Cornell University, Ithaca, New York

Cornell University Announcements

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Cornell Academic Calendar

1976-77

Registration, new students	Thursday, September 2
Registration, continuing and rejoining students	Friday, September 3
Fall term instruction begins	Monday, September 6
Thanksgiving recess:	
Instruction suspended 1:10 p.m.	Wednesday, November 24
Instruction resumed	Monday, November 29
Fall term instruction ends, 1:10 p.m.	Saturday, December 11
Final examinations begin	Wednesday, December 15
Final examinations end	Thursday, December 23
Registration, new and rejoining students	Thursday, January 20
Registration, continuing students	Friday, January 21
Spring term instruction begins	Monday, January 24
Spring recess:	
Instruction suspended, 1:10 p.m.	Saturday, April 2
Instruction resumed	Monday, April 11
Spring term instruction ends, 1:10 p.m.	Saturday, May 7
Final examinations begin	Monday, May 16
Final examinations end	Tuesday, May 24
Commencement Day	Monday, May 30

The dates shown in the Academic Calendar are subject to change at any time by official action of Cornell University.

In enacting this calendar, the University Senate has scheduled classes on religious holidays. It is the intent of Senate legislation that students missing classes due to the observance of religious holidays be given ample opportunity to make up work.

Announcement

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The courses and curricula described in this Announcement, and the teaching personnel listed herein, are subject to change at any time by official action of Cornell University.



The College of Veterinary Medicine

History of the College

From the very beginning of the University with the issuance of a charter in 1865, the founder, Ezra Cornell, insisted that a chair of veterinary medicine be established. His experience as an owner of purebred livestock had taught him the importance of animal health and he instructed Andrew D. White, the first president, to seek out the best qualified man to teach courses in veterinary medicine and surgery. It was the first time that veterinary science had been granted equal rank with other sciences in an American university.

President White secured the services of James Law and the appointment was confirmed on August 4, 1868 by the Board of Trustees. A young, well-educated Scotsman, Law had graduated from the Edinburgh Veterinary College, studied under the great medical teachers of the day (William Turner in human anatomy and Joseph Lister in the principles and practice of surgery), and attended veterinary schools on the Continent. He had also taught at the New Veterinary College in Edinburgh and the Albert Veterinary College in London.

When classes began on October 7, 1868, Dr. Law's office was on the second floor of Morrill Hall, the first University building to be completed. A small museum and pharmacy were located in the basement. In Law's words, "Our clinical building was furnished by the campus grass, walled in by the great dome of God's blue sky, and watered and disinfected by the life giving rays of the sun, and the ozone from hill and dale, lake and forest. We had the common privileges that many a veterinarian has to avail himself of in his daily rural practice."

During the academic year 1869-70 a fairly complete course in veterinary medicine was taught by Professor Law to a class of about twenty. Of this group, four were graduated after four years of study with the Cornell degree of Bachelor of Veterinary Science. Three of

these continued in the profession and became distinguished on a national level through their accomplishments in disease control.

It was not until March 21, 1894 that the New York State Veterinary College was established at Cornell. It was the first contract college (later to be known as a statutory college) at Cornell, thereby setting the stage for a long and effective arrangement between the state and the University. A veterinary building (named James Law Hall some years later) was provided by the state and the doors were opened for classes in the autumn of 1896. The school was composed of six faculty of professorial rank, two instructors, and eleven students. Scholastic requirement for entrance was a high school diploma or its equivalent, a rather high standard for those days.

The early faculty recognized the importance of a good library and set this goal as one of their priorities. Governor Roswell P. Flower made a personal donation in 1897 to the library which now bears his name and houses an impressive collection of veterinary resource materials.

The College remained at the original site (at the southeast corner of East Avenue and Tower Road) until the summer of 1957. During that time it had expanded with the construction of a clinical complex along Garden Avenue and a large laboratory building (Moore Laboratory) to house the Department of Bacteriology and Pathology. In addition, the University had provided a large tract of land on Snyder Hill to be used as a research farm.

The present site of the College was occupied in July 1957 and the College has continued to expand in its teaching, research, and service to the people of the state. The present on-campus facilities occupy about twenty acres, with ancillary facilities on Snyder Hill and elsewhere. The latest addition is the eight-story Research Tower, dedicated June 27, 1974.

6 Research Facilities

Expansion is a continuing process at the New York State College of Veterinary Medicine as it seeks to provide practitioners, scientists, and teachers for the future welfare of animals and man.

The New York State College of Veterinary Medicine is located along Route 366 at the eastern edge of the campus of Cornell University at Ithaca, a city of approximately 30,000 permanent residents, situated in the famous Finger Lakes Region of New York at the head of Cayuga Lake. The city is in the south-central part of the state about 260 miles northwest of New York City and 50 miles south of Syracuse.

The Veterinary College Library

The library, endowed by a gift from Roswell P. Flower, governor of New York when the College was founded, is named the Flower Veterinary Library in his honor. It is maintained partly by endowment funds and partly by appropriations from the state. It is on the second floor of Schurman Hall. The large reading room, seating seventy, features display shelves of current journals and areas for indexes, abstracts, and other reference books. The adjoining stacks of journals and monographs, on three levels, are open for use, and individual study carrels are also available.

The library contains over 60,000 volumes and regularly receives 1,128 periodicals and series titles. This represents a worldwide selection of veterinary titles plus titles in the biomedical sciences designed to support undergraduate, graduate, and research programs. Through the various libraries on the campus more than 4 million volumes and 50,000 journals and serials are made available to students. These collections, interlibrary loans, and photo-duplication of materials supplement the research potential of the veterinary library which is rich in historical and basic research resources as well as recent monographic works and especially selected government publications. A monthly newsletter is issued listing recent acquisitions.

Information on regulations and suggestions for the use of the library are provided to new students. Additional instruction in bibliographic research is available for advanced problems.

The SUNY Biomedical Communications Network terminal located in Mann Library provides ready access to an extensive computerized medical and biomedical bibliographical data base.

Research Facilities

Facilities for research are constantly expanding. In addition to on-campus facilities,

laboratories for research on infectious, parasitic, and metabolic diseases have been constructed on Snyder Hill, about three miles from the campus, on a tract of 133 acres. In this same area, for the study of reproductive diseases of dairy cattle, one hundred heifers and thirty bulls are housed in available facilities.

Besides the many buildings for housing animals, most of which have small pastures, exercise lots, or paddocks, a number of laboratory buildings have been built for professional staff members stationed there for research. Most recent additions include a laboratory for the study of leukemia, financed by the National Cancer Institute, a large animal isolation facility, and a dog quarantine building.

Feline Research Laboratory

On February 12, 1974, the Board of Trustees of Cornell University approved the formation of the Cornell Feline Research Laboratory as a unit of the New York State College of Veterinary Medicine. This formalized a program started in 1964 to study the infectious diseases of the cat, and expanded this program to study not only infectious diseases, but all diseases that pose a significant threat to the health of cats.

The purposes of the Cornell Feline Research Laboratory are: (1) to promote and conduct research on diseases of the domestic cat in order to prevent or cure these diseases, (2) to provide continuing education on feline diseases to feline practitioners and cat owners, and (3) to aid feline practitioners when new or unknown diseases occur.

The Cornell Feline Research Laboratory is composed of a director and a group of faculty, graduate research assistants, and staff from several departments within the New York State College of Veterinary Medicine who have a keen interest in understanding, preventing, and curing diseases of the cat. Each investigator conducts independent research in his or her area of expertise, with collaborative help from investigators in whatever other area of expertise is needed. This multidisciplinary research may involve investigators from clinical medicine to the most basic sciences in order to solve a particular disease problem.

Poultry Disease and Aquatic Animal Disease Research

Poultry disease research is done on the campus in conjunction with the diagnostic and teaching laboratory and at the P. Philip Levine Laboratory on Snyder Hill about three miles from the campus. A forty-one unit disease isolation building forms part of the facilities on the campus.

The facilities at Levine Laboratory consist of a two-story building, well equipped for research

in the bacterial, viral, and parasitic diseases of chickens and turkeys. Facilities are being developed for maintaining shellfish in connection with the study of shellfish diseases. A disease-free flock of chickens is maintained for the production of chicks and embryos. There are twenty-eight separate pens for holding experimental birds on a tract of land of several acres.

A duck disease research laboratory with excellent equipment is maintained at Eastport, Long Island, with the cooperation of the Long Island Duck Research Cooperative.

Diagnosis

The College of Veterinary Medicine maintains and staffs regional veterinary laboratories for poultry disease diagnosis at Ithaca, Kingston, and Eastport. The latter is combined with the Duck Research Laboratory. These diagnostic facilities serve the poultry industry needs in the surrounding area. Their staffs provide extension services and assist in the collection of materials and cases required for research in Ithaca.

A laboratory for diagnosis of aquatic animal diseases is also maintained at the College itself. It serves the fin-fish and shellfish industries and provides a source of materials required for teaching and research.

New York State Mastitis Control Program

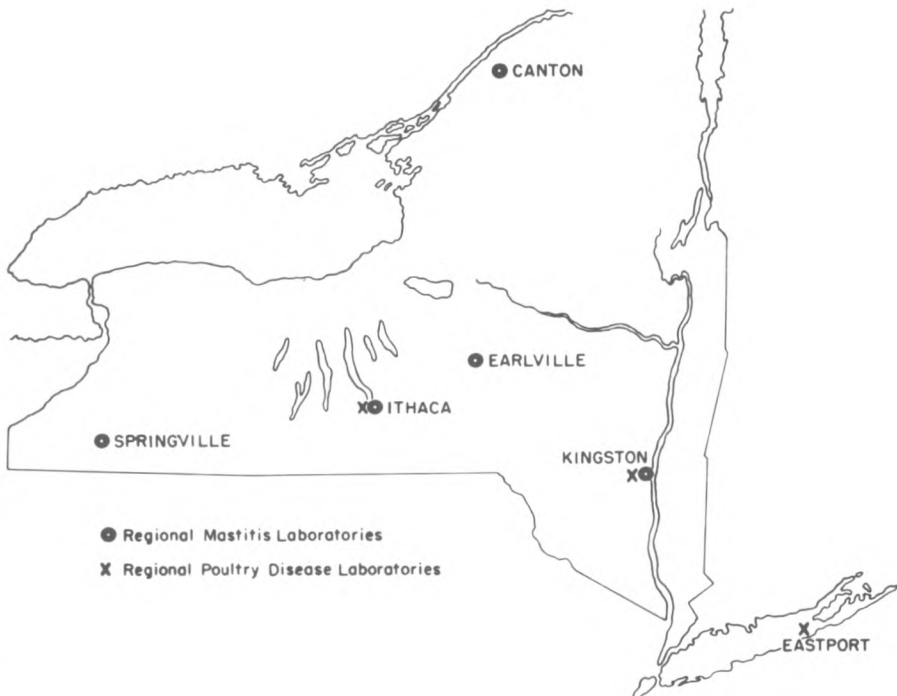
This program is a part of the Department of Large Animal Medicine, Obstetrics, and Surgery, and has three primary concerns: (1) teaching, (2) offering consultation and diagnostic service to the practitioner, and (3) field research on mastitis control. Five diagnostic laboratories, located in dairy areas of the state, are operated within the program.

The laboratory at Canton is directed by Dr. L. A. Wager, and serves veterinarians and dairymen in eight northern New York counties with a cow population of approximately 180,000.

Dr. G. L. Hayes directs the laboratory at Earlville, which offers service in ten counties with a cow population of approximately 257,000.

The laboratory located at Kingston offers service in nineteen counties with a cow population of approximately 134,000. Until a field veterinarian is hired, the laboratory is under the direction of the supervising veterinarian.

The Springville laboratory, opened in July 1976, serves eleven counties in western New York with a cow population approximating 192,000. Until a field veterinarian is hired, the laboratory will be supervised by Joseph P. Scolaro under the direction of the supervising veterinarian.



The central laboratory is located in the New York State College of Veterinary Medicine at Ithaca, where student training, research programs, and diagnostic services are offered. Cooperative research with the Mastitis Research Section is carried out on basic and practical aspects of mastitis prevention. The laboratory serves eleven counties of central New York which includes a cow population of approximately 134,000.

Dr. W. E. Linquist, the supervising veterinarian, and Dr. D. S. Postle, director of the program are located at the central laboratory.

James A. Baker Institute for Animal Health

In September 1950 the Board of Trustees of Cornell University established a new unit in New York State College of Veterinary Medicine: the Veterinary Virus Research Institute. Formation of the Cornell Research Laboratory for Diseases of Dogs was approved as a section of the Institute. In September 1975, the name of the institute was changed to the James A. Baker Institute for Animal Health.

The primary objective of the institute is to prevent loss from infectious diseases in animals. Toward this end, basic research is conducted upon organisms that cause disease in order to increase knowledge of their nature, means of spread, and methods whereby their spread can be controlled. Another objective of the institute is advanced training of workers in the field of virology. Determined by the amount of laboratory space available, a limited number of graduate students and postgraduate visiting investigators are accepted.

After consideration of the many technical difficulties involved in work with viruses and other living organisms that may be airborne or transferred accidentally in other ways, a building complex was begun in 1950 and has been expanded from time to time. In this complex are twelve modern and fully equipped laboratories designed specifically for research and graduate teaching of virology, nutrition, biochemistry, and electron microscopy as well as a library, offices, and a tissue culture laboratory. There are twenty-six animal isolation units constructed to avoid unplanned infections. Specific pathogen-free animals are produced in separate animal buildings.

Research on Sheep and Cattle Disease

A tract of seventy-five acres of land on Turkey Hill, particularly suitable for research on internal parasites of sheep, has been equipped for maintaining these animals. A sheep barn is available which includes facilities for raising experimental animals under helminthologically sterile conditions. On an adjacent fifty acres,

facilities are available for the study of reproductive diseases of dairy cattle.

Radiation Biology

A field laboratory including a radiation exposure facility, a whole-body counter and associated barns, holding areas, laboratories, and offices, is maintained on a forty-two acre tract of University land. The laboratory is ideally suited for metabolic and physiological studies utilizing radioactive materials and radiobiological studies with large and small animals. The facility is an integral part of the Department of Physical Biology, and work at the field laboratory is coordinated with other departmental activities carried out in the veterinary Research Tower.

Muenschner Poisonous Plants Garden

Located north of the James Law Auditorium, this living collection of poisonous plants includes most of those found in the Northeast, and some from other parts of North America. It is maintained by the College of Veterinary Medicine in cooperation with the New York State College of Agriculture and Life Sciences and Cornell Plantations. Each specimen is labeled with its scientific name, its common name, and the name of the plant family to which it belongs. The garden is open to visitors year-round.

Biology Computing Facility

The facility, operated by the Department of Physical Biology in the research wing of the College of Veterinary Medicine, serves a variety of computing needs of the College. Hardware includes a PDP-15, PDP-11/45, GT-40, and several minicomputers. Computer time is available to anyone at Cornell who needs the specialized capabilities of real-time data acquisition, graphics, and interactive computing.

The major activity of this facility is development and operation of a medical information system for the veterinary clinics and laboratories. The hospital information computer system is dedicated to the management of clinical records in the Small- and Large-Animal Hospitals. A PDP-11/45 computer contains the data base, which is accessed on-line from display terminals located throughout the College. The system is available to students, faculty, and staff of the College for clinical studies and research involving the management of medical data bases.

Clinical Facilities

A teaching hospital consisting of clinical facilities for both large and small animals is located adjacent to the research and preclinical teach-

ing facilities. The hospital comprises, in addition to the clinical facilities, the ambulatory (out-patient) service and numerous clinical services that draw upon the experience and skill of the clinical faculty and the proficiency of research specialists in their specific areas of competence. Specialty sections within the clinical services move freely throughout the hospital to extend the best standard of care available to patients while exposing students to the combined appraisal of the teaching staff.

Clinical Nutrition Program

In 1972 an agreement was signed between Cornell University and the Mark L. Morris family for the establishment of (1) a position entitled the Mark L. Morris Professorship of Clinical Nutrition and (2) a teaching and research program in veterinary clinical nutrition, to be located in the New York State College of Veterinary Medicine. The Clinical Nutrition Program is currently composed of the Mark L. Morris Professor of Clinical Nutrition, other collaborative faculty members, one laboratory technician, and two graduate research assistants. A two semester hour course in clinical nutrition for veterinary students has been established and research activities in both large and small animal clinical nutrition have been instituted. Continuing education and extension programs have been initiated and a consulting service for nutritional problems is available.

Admissions

Admission Policy

It is the policy of Cornell University actively to support equality of educational opportunities. No student shall be denied admission to the University or be discriminated against otherwise because of race, color, creed, religion, national or ethnic origin, or sex.

The Committee on Admissions endeavors to select those well-qualified applicants who, in their judgement, are best able to successfully complete the veterinary medical curriculum. They must also have the potential for becoming competent, responsible veterinarians dedicated to a lifetime of productive public service and continued learning. Although the largest percentage of students admitted are residents of New York State, well-qualified nonresident applicants are also accepted. Candidates who feel their academic and other qualifications are outstanding are urged to apply, regardless of residency.

Preparation for the Study of Veterinary Medicine

Admission to the New York State College of Veterinary Medicine requires a minimum of

three years preparation in an accredited college or university. This preparation does not have to be completed in a specialized college or in a designated "preveterinary" program.

It is recommended that potential candidates seek an institution that offers the prerequisite courses as part of a baccalaureate program, has rigorous entrance requirements, and a reputation for academic excellence. Because of limitations in class size, competition for admission is keen. Therefore, every candidate should have secondary career objectives. The best preparation for the study of veterinary medicine is to fulfill all entrance requirements while attaining excellence in the preparation for an alternative career.

Admission Requirements

Successful completion of a minimum of three years of study in a college or university, approved by its regional accrediting association, is a requirement for admission to the New York State College of Veterinary Medicine. In exceptional cases, outstanding students who have completed all of the prerequisites in two years of undergraduate education may be considered for admission.

The minimum course requirements for admission are as follows:

	Semester Credits	Quarter Credits
English	6	9
Biology or zoology (w/laboratory)	6	9
Physics (w/laboratory)	6	9
Inorganic chemistry (w/laboratory)	6	9
Organic chemistry (w/laboratory)	6	9
Biochemistry	4	6
General microbiology (w/laboratory)	3	4.5

Transcripts must document passing grades (C- or better) in all prerequisite courses. In certain cases arising from specific scheduling difficulties, outstanding applicants may be approved for admission before courses in microbiology or biochemistry are completed but acceptance is contingent upon satisfactory completion before matriculation.

Applicants should be proficient in college-level mathematics and in written and spoken English. Deficiencies in these fundamental skills hamper professional development in a rigorous scientifically-based discipline.

The biology and zoology, physics, and microbiology courses must have associated laboratory instruction.

The chemistry requirement must include at least one course in organic chemistry with laboratory instruction and a four-semester-hour course in biochemistry. Laboratory instruction is not required in biochemistry. However, if a four-hour biochemistry course is not offered,

10 Admissions

a three-hour course, plus a course in laboratory instruction should be taken. If the total chemistry credits do not equal the above minimum requirement, another chemistry course must be taken, e.g., quantitative or qualitative analysis or physical chemistry. If the college does not offer a substantial introductory biochemistry course, courses in related disciplines (molecular or cell biology, physiologic chemistry) that provide a sound background in the structure, properties, and metabolism of protein enzymes, vitamins, lipids, carbohydrates, and nucleic acids will be accepted in fulfillment of the biochemistry requirement at the discretion of the admissions office.

Courses that do not require a laboratory and have been taken through the United States Armed Forces Institutes are acceptable.

Although grades are not the sole criteria for admission, it is desirable that an applicant have at least a 3.0 (4.0 scale) cumulative grade point average, at least a 3.0 average in prerequisite courses, and a Graduate Record Aptitude Test score (combined verbal and quantitative scores) above 1200.

A prerequisite will not be regarded as fulfilled for any course in which the final grade is less than C-. In computing the grade point average, a grade of D or F will be computed with the grade received in the repeated course.

Since it is impossible to evaluate honors, pass-fail, and S-U grading systems, it is necessary to obtain a letter grade for all of the prerequisite courses and have these grades certified by the registrar at the applicant's undergraduate institution. These prerequisite courses are required for admission, but credits are not transferred to the College of Veterinary Medicine.

Animal Practice Requirements

By January 1st of the year in which the applicant seeks admission, he or she must have fulfilled one of the two animal practice requirements. These are the small animal practice requirement and the large animal practice requirement. It is suggested that applicants who are admitted fulfill both requirements before matriculating. Both requirements must be completed before registration of the third year in the College of Veterinary Medicine.

The Large Animal Practice Requirement

At least one summer, ten weeks must be spent working with large animals. This requirement can be met by working on a farm with at least one of the large domesticated animal species, preferably dairy cattle. However, if for some reason it is not possible to work on a dairy farm, working at one of the following will be acceptable: racetracks, horse stable or farm,

cattle ranch, sheep farm, or swine farm. This work must include the responsibility for the care, handling, and feeding of the animals. Working with a few personally owned pleasure horses or university or college animals as part of a course or research project will usually not suffice.

The Small Animal Practice Requirement

At least one summer, ten weeks must be spent working in some phase of small animal work. This requirement may be met by working with a veterinarian serving as a small animal practitioner or through zoo, laboratory animal, poultry, or similar types of animal work. This requirement cannot be satisfied by working with one's own pets. It may be fulfilled by working at home, providing such work is part of a bona fide commercial animal rearing operation such as a kennel, mink ranch, or poultry farm.

Documentation of Animal Practice

An *Animal Practice Essay* is required of every applicant. This is a brief, one- or two-page report describing the animal practice experience, i.e. kind of work done, amount of time spent, and thoughts regarding the experience. Only animal experience obtained after the age of fifteen will be acceptable in fulfilling the animal practice requirements. These requirements are applicable to both sexes. It is not possible for the College to find positions or to furnish a list of names of potential employers; the applicant must assume this responsibility.

Employer evaluation forms will be sent with the application material. These must be returned by the employer with whom the applicant worked to fulfill the animal practice requirement. It is the applicant's responsibility to see that this is done. The application is incomplete without it.

Other Requirements

Essay on Aspirations for Veterinary Medicine

Also required is a 1500-word, typewritten essay describing the applicant's outlook on life, and those factors that have motivated the applicant toward veterinary medicine as a career.

Graduate Record Examination

The Graduate Record Examination Aptitude Test (GRE) administered by the Educational Testing Service, Box 955, Princeton, New Jersey 08540 is required. Arrangements should be made to take the GRE no later than October of the year in which application is made to allow sufficient time for the results to be received by the College. In item 11 of the GRE application form, applicants should enter the following informa-

tion: Institution Code R 2549-4, New York State College of Veterinary Medicine. (The Advanced Biology Test is not required but may be included.)

Evaluation from Faculty Adviser

A form is provided for completion by your faculty adviser at the institution where the studies for preparation for veterinary medicine were carried out. It is the applicant's responsibility to deliver this form to the faculty adviser.

Letters of Recommendation

It is the applicant's responsibility to see that two letters of recommendation reach the Office of Admissions at the College of Veterinary Medicine by December 1 of the year in which application is made. These letters should be written by someone who has known the applicant personally and can testify to his or her character and suitability for a vigorous, demanding profession.

Application Procedure

Interested persons should write to the Office of Admissions, New York State College of Veterinary Medicine, C 107, Cornell University, Ithaca, New York 14853, requesting application forms in the summer of the year prior to the year admission is sought. The application form and the application fee of \$25 should be sent to the Office of Admissions. The application fee, together with certain information (a card sent with application) needed by the University Registrar's Office, must be sent in by October 1.

The completed application form must be returned no later than November 1 and all supporting data such as employer's evaluation forms, letters of recommendation, college adviser's report, and official college transcripts must be received no later than December 1. The candidate should send a copy of fall term grades as soon as they are available and no later than February 1.

Reapplication

If an applicant is not accepted and wishes to reapply, he or she should write to the Office of Admissions, New York State College of Veterinary Medicine, C 107, Cornell University, Ithaca, New York 14853, stating the year in which the applicant last applied and requesting reactivation of the admissions folder. The \$25 application fee is requested again, and additional forms must be completed to have the application reactivated.

An updated essay is required with each subsequent application. It should explain developments which you feel strengthen your candidacy.

If reapplying, it is not necessary to retake the GRE Aptitude Test unless you feel the earlier test was not representative of your capabilities. If you retake the GRE, the committee will examine both scores.

Applicants reapplying after a three year lapse must complete the entire procedure anew.

Selection Criteria

The criteria upon which the Admissions Committee bases its selection are as follows:

I. *Academic achievement and aptitude.* In view of the need for quickly learning large amounts of factual material and an ability to solve problems, successful applicants must have demonstrated achievement and potential for comprehension of scientific materials. This ability is evaluated by examination of the candidates' grades in prerequisite courses (particularly the sciences), by examination of the overall average of all college-level courses taken, and by consideration of scores on the Graduate Record Examination.

II. *The quality of the program presented as preparation for the study of veterinary medicine.* Because the veterinary curriculum and the veterinary profession are rigorous and demanding lifestyles, the committee usually regards the quality of the academic program presented for admission as an important criterion. Such things as the variety and balance of courses taken, the difficulty of courses selected, and the ability to carry a heavy academic course at a demanding institution are considered. Ideally, the applicant should have achieved excellence in a broad selection of physical and biological sciences, social sciences, and humanities. The choice of the major should be determined by the applicant's alternate career goals. No preference is given to applicants majoring in any particular field.

III. *Experience, knowledge, and achievement in matters relating to animals and the veterinary profession.* Veterinary medicine is an animal-oriented profession. Thus it is important that candidates present evidence of experience, knowledge, and achievement with animals beyond the "love of animals." Such achievement can revolve around jobs and experience with breeding, rearing, feeding, and showing various kinds of animals including pets, zoo animals, farm animals, and wildlife. It can also involve experience in teaching or research in basic sciences or the areas indirectly related to medicine or veterinary medicine. Candidates should experience sufficient contact with veterinarians so that they are thoroughly appraised of the duties, responsibilities, and scope of veterinary medicine.

IV. *Experience, knowledge, and achievement in extracurricular activities and matters unrelated to veterinary medicine.* Ideally, the well-rounded

12 Admission to the Graduate School

person has accomplishments outside of the professional realm. Therefore, the committee evaluates the depth and breadth of achievement in extracurricular activities, community service, hobbies, and nonacademic interests of all varieties.

V. Personal characteristics. Aside from the above criteria, the committee endeavors to select candidates of high integrity, reliability, maturity, and determination. It is important that professional people have excellent oral and written communicative skills, poise and leadership abilities, and have a talent for getting along with people.

At the Admissions Committee's discretion, a limited number of successful applicants may be permitted to postpone matriculation one year, with assurance of placement in the next class.

Further Information

Additional questions can be answered by writing or calling the Office of Admissions at 607/256-2003.

Informational Sessions and Tours of the College

Because of the large number of aspiring students, individual preapplication interviews cannot be granted. However, prospective applicants and their parents may arrange for an appointment to attend group information sessions and College tours. These are given at 9:00 a.m. on the first Saturday of each month. For an appointment please call 607/256-2003.

Advanced Standing

Applicants for admission to advanced standing as members of the second-, third-, or fourth-year class must present educational qualifications similar to those expected of students who have completed the prior year's courses here. They should be attending one of the veterinary colleges accredited by the American Veterinary Medical Association. Otherwise they must pass satisfactory examinations in all of the work for which they desire advanced credit. No person will be admitted to any advanced class except at the beginning of the college year in September. The applicant must file a formal application as directed above and must be interviewed by the Admissions Committee. In addition, there must be a vacancy in the class.

University Requirements

Applicants for admission must not only satisfy the entrance requirements but must also comply with the following rules of the University. Every candidate for admission who receives a notice of approval of his or her application

must pay a \$50 registration fee. Candidates will be advised of the due date of this fee at the time an acceptance for admission is sent. Candidates are warned not to send cash through the mails. A check, draft, or money order should be made payable to New York State College of Veterinary Medicine and should be sent to the Office of Admissions, C 107, New York State College of Veterinary Medicine, Cornell University, Ithaca, New York 14853.

If the candidate withdraws before the due date of this registration fee, the fee will be refunded. No refund will be made to an applicant who withdraws after the due date of the fee; in that case the whole fee will be retained by the University in payment of its costs and intangible losses resulting from such withdrawal.

Each entering student is expected to assume personal responsibility for fulfilling the health requirements adopted by the Board of Trustees of Cornell University. Permission to register for a new semester will not be granted unless all health requirements pertaining to the previous semester have been fulfilled.

Combined Courses

By judicious planning, students who do their preveterinary work in the College of Agriculture and Life Sciences at Cornell, may be able to qualify for both B.S. and D.V.M. degrees in less time than would be required if the courses were taken consecutively. This can be done by double registration. Students interested in this program should consult with their undergraduate faculty advisers.

Registration

Every student must register at the Office of Student Administration, C 107, Veterinary College (Schurman Hall). This *must* be done before the close of the regular registration period unless the student has received special permission from the director.

Admission to the Graduate School

Graduates of the veterinary college or other colleges may enter the Graduate School of Cornell University and pursue work for the degree of M.S., Ph.D., or D.Sc. in Veterinary Medicine in the College of Veterinary Medicine and allied departments of the University.

Students in the professional curriculum also have the opportunity to apply for combined degree programs. The D.V.M./M.S. program enables a veterinary student, through summer registration in the Graduate School, to obtain an M.S. at the end of the summer following his senior year. Summer stipends are paid and summer tuition is waived in this program.

The D.V.M./Ph.D. program is designed for students with excellent academic records who have shown an interest in and commitment to research and teaching. This integrated program enables an incoming veterinary student to obtain both the D.V.M. and Ph.D. degrees in six years. Annual stipends are paid in addition to tuition waivers.

Further information on all of these programs may be obtained by writing to Dr. John F. Cummings, Graduate Faculty Representative, New York State College of Veterinary Medicine, Ithaca, New York 14853.

All applicants from North America should submit results of the Graduate Record Examinations Aptitude Test taken during the past four years. Scores of an advanced test are also desirable. This requirement may be waived in some circumstances.

The College of Veterinary Medicine, alone or in combination with other departments of the University, offers advanced students excellent opportunities for study and investigation. Its situation gives it abundant and varied material for research, and it has ample research facilities. It encourages graduate and advanced students to carry on independent investigations. Courses of study especially adapted to advanced work and research will be found among those listed in pp. 25-43 of this *Announcement*.

A student who holds the degree of Doctor of Veterinary Medicine from a recognized college or school in the United States or Canada may transfer one year's residence credit for that work toward the Doctor of Philosophy degree whenever the student's Special Committee certifies that the work done in the years of professional study formed an integral part of the work required for the doctorate and was of equivalent quality.

The Degree of Doctor of Science in Veterinary Medicine

Admission to candidacy for the degree of Doctor of Science in Veterinary Medicine (D.Sc. in V.M.) is a function of the Field of Veterinary Medicine of the Graduate School. The following requirements must be met before admission to candidacy:

1. The candidate must have been graduated for at least five years from an approved school of veterinary medicine.
2. The candidate must have demonstrated by published papers the ability to do independent meritorious research.
3. The candidate must have offered to the Field of Veterinary Medicine satisfactory evidence of the ability to read accurately the French and German literature in his or her field.

Candidates who have no graduate credit beyond their D.V.M. degree must complete not less than four residence units to qualify for the

degree. It is considered that at least two units of work leading to the degree of Doctor of Veterinary Medicine are an integral part of this professional degree. Those who have a Master of Science degree or its equivalent from an approved college or university may complete the minimum residence credit by acquiring at least two additional units.

After a candidate has been admitted, he or she will select a member of the faculty in veterinary medicine to serve as chairperson of the Special Committee. The faculty of the field will then select two other members of the committee. These three individuals will have charge of the candidate's program and will be responsible to the faculty of the field for supervising the candidate's work, which must fall in the following categories:

1. Advanced courses in any of the sciences that have a relation to medicine. Selected courses that are part of the regular curriculum of the Cornell University Medical College may be accepted for not more than half of the total credit in this category. In no case will credit be granted for courses that are part of the regular curriculum in veterinary medicine or for similar courses in the Medical College curriculum.
2. Regular attendance and study in any of the clinics of the College of Veterinary Medicine or of the Medical College.

All candidates must take at least two-thirds of their work in courses that can properly be included under category 1. If desired, they may take all their work in category 1. Not more than one-third of their work may be taken in category 2.

Courses will be deemed satisfactorily completed only upon receipt of a regular transcript of credits. Following completion of course work, each candidate for this degree must present an acceptable monograph or thesis in the area of special interest and must submit to a general examination covering the subject matter of his or her work. The Special Committee will set the time and place of the examination and invite all members of the field and the graduate faculty of other fields who have participated in the student's training to attend. They have the right to examine the candidate and express to the Special Committee their opinions of the candidate's competence, but only the Special Committee has the responsibility for recommending the student for the degree. The recommendation is addressed to the faculty of the Field of Veterinary Medicine of the Graduate School, which then makes recommendations to the Graduate School.

Finances

Tuition and fees for Doctor of Veterinary Medicine degree candidates are \$2,600 a year

for entering and continuing New York State residents, \$3,400 a year for continuing non-residents, and \$4,500 a year for entering nonresidents. Most students in this college do not live in University housing. Living costs can not be stated with the same degree of certainty as regular University charges, since they depend to a great extent upon the individual's standard of living. The cost of room and board in Ithaca is estimated at \$1,900. Books, instruments, and supplies will cost \$200 to \$250 a term. An additional allowance of \$500 must be made for clothing, laundry, travel, entertainment, and incidentals.

Tuition or other fees may be changed by the Board of Trustees at any time without previous notice.

Financial Aids

Loan Funds

Sources of support available for loans to veterinary students are as follows: the Cornell Veterinary Alumni Association; the New York State Veterinary Medical Society; the family of David E. Wright, '12; the Dean W. A. Hagan Fund; the Health Professions Loan and Scholarship Program; the Munderback Veterinary Fund; the Sunderville Veterinary Fund; National Association of Federal Veterinarians Emergency Loan Fund; Student Emergency Loan Fund of the Women's Auxiliary to the New York State Veterinary Medical Society; the Charles H. Webster Veterinary Fund; and the Joseph Brender Student Loan Fund. There are two emergency loan funds available through the director of scholarships and financial aids. One is funded by the Women's Auxiliary to the New York State Veterinary Medical Society and the other by Omega Tau Sigma fraternity. Veterinary students are also eligible to apply for loans from other funds held by the University. Most of these are administered through the Office of Financial Aid, 203 Day Hall. Students who are in real need should not hesitate to apply for assistance. It is suggested that students discuss their needs with the director of scholarships and financial aids before applying.

Special Opportunity Programs

Cornell University administers a variety of special opportunity programs designed to provide financial assistance and other forms of assistance to (1) minority students and (2) low-income students meeting program guidelines. The emphasis of these special programs is to aid in increasing representation of students from minority groups present in New York State who historically have been underrepresented in higher education. However, participation is also available to those residing

outside New York State. For details, prospective students should consult the *Guide for Candidates* which accompanies each undergraduate application or will be sent upon request by the Office of Admissions, 410 Thurston Avenue, Ithaca, New York 14853.

Undergraduate Scholarships

Undergraduate students may receive help from various scholarship funds throughout the four-year course of study. The nature and extent of such assistance is dependent upon scholastic achievements, specific criteria established by each benefactor, and recommendations of the appropriate college committees. Students are briefed on the scholarship program in the fall semester and application procedures are outlined in posted announcements. Committee evaluations, selections, and faculty action are completed by early April. Scholarship stipends are handled by the University Treasurer and credited to the students' academic charges during the following year.

Other forms of financial assistance are handled by the University Office of Financial Aid. Students interested in securing such aid should contact the college director of scholarships and financial aids.

Numerous prizes are also available for veterinary students and are subject to conditions listed under each award. Many of the prizes, awards, and scholarships were established with endowments, so that the income distributed and number of awards may vary from year to year.

Allien Products Company Scholarships Four scholarships of \$4,000 each (\$1,000 per year) are available. The scholarships are awarded to incoming veterinary students on the basis of financial need, scholastic potential, and overall excellence of character. Continuation of the awards beyond the first year is contingent upon maintenance of scholastic performance and continued financial need, as determined by the Committee on Scholarships. Recipients must apply for continuation of the award on an annual basis.

Eastern Milk Producers Cooperative Scholarship The purpose of this scholarship is to assist a worthy student in the College of Veterinary Medicine with preference to be given to sons or daughters of members of the Eastern Milk Producers Cooperative Association. The student must have an established need for financial assistance and show evidence of outstanding character and leadership ability.

Irene Heinz Given and John LaPorte Given Veterinary Scholarship The award is administered by the Committee on Admissions in

accordance with the intent of the trustees of the Given Foundation to help qualified students applying for admission who might otherwise be financially unable to attend this college.

Arthur G. Hall Scholarship Established in 1975 as an endowed scholarship for needy and worthy students who maintain the moral standards required by the rules and regulations of the College.

Bertha Hamilton Scholarships Since 1972 a portion of the annual income of the Bertha Hamilton Trust has been donated to the College of Veterinary Medicine for scholarships to be awarded by the faculty on the basis of academic performance and financial need. Ten to fifteen scholarships are available each year.

David Kennedy Johnston Scholarships Under the will of Nettie J. Huey, funds were set aside to provide scholarships to students in the College of Agriculture and Life Sciences and the College of Veterinary Medicine. Five to ten scholarships are available each year.

Valentine Mott Knapp Scholarship This annual scholarship was established through the will of David V. Knapp as a memorial to his brother, Dr. Valentine Mott Knapp, '04. The award is made at the end of the third year. In awarding the scholarship, the faculty will take into consideration the ability of the applicant to do creditable academic work, the personal characteristics of the applicant with respect to professional attitude, and his or her financial need.

Miles C. Markham Scholarship This endowed scholarship was established in 1976 in honor of Dr. Miles C. Markham by his wife, Hedwig, for worthy, needy students in the College. It is awarded on the basis of general worthiness of applicants taking into consideration their overall character, academic ability, and financial needs.

Merrimack Valley Kennel Club Scholarship The Club, of Derry, New Hampshire sponsors an annual award of \$200 for a student-resident from one of the New England states. The student is selected on the basis of financial need and creditable academic standing.

Pfizer Scholarship This scholarship is awarded to a student at the end of the third year whose academic achievement is adequate, whose need for the award is clear, and who shows good potential.

Charles River Fellowship Award Funded by the Charles River Breeding Laboratories, Inc., it provides a fellowship to support a D.V.M.-Ph.D. candidate pursuing a research project in the field of laboratory animal medicine. Funds

will be awarded on a competitive basis and provide a stipend, tuition, and support for certain research costs.

Maurice H. Skyer Memorial Scholarship Provided by the Monticello-Goshen Chapter of the United States Harness Writers Association, this scholarship of \$300 is to be awarded to a student from Orange, Sullivan, Ulster, Delaware, or Dutchess County in New York, or from Pike, Wayne, Lackawanna, or Luzerne County in Pennsylvania. The student must be interested in working with horses. The scholarship is awarded for use in the fourth year.

The Jim Dale Thomas Memorial Scholarship This award was established as a prize in 1965 and became a scholarship in 1969. The scholarship is awarded, for use in the fourth year, to a third-year veterinary student who has shown an interest in dairy cattle practice and has a high level of capability in this field. The award is made on the judgment of the faculty of the Department of Large Animal Medicine, Obstetrics, and Surgery.

Tuition Scholarships The trustees have authorized a limited number of scholarships, of \$600 each, to be awarded each year by the College of Veterinary Medicine. The scholarships are awarded to undergraduate students who show promise of becoming outstanding veterinarians in the judgment of the faculty and who are not residents of New York State. Each student holding a scholarship must maintain an academic standing that is satisfactory to the faculty.

Veterinary Virus Research Institute Scholarship The Veterinary Virus Research Institute of the New York State College of Veterinary Medicine provides a scholarship to support a veterinary student in the combined D.V.M.-Ph.D. program. Funds will be awarded on a competitive basis and provide a stipend, dependency allowance, waiver of tuition, and support for certain research costs. The recipient of this scholarship is expected to pursue a research project dealing with canine diseases.

Women's Auxiliary to the New York State Veterinary Medical Society Scholarship Two scholarships are awarded each year—one to a student at the end of the sophomore year and the other available to any student. The award of this scholarship will be based on the applicant's financial need and ability to do creditable academic work.

Yonkers Raceway Foundation Scholarship By action of the executive committee of the Yonkers Raceway Foundation, an endowed scholarship of \$500 was established at the College of Veterinary Medicine to be awarded by the Committee on Scholarships of the

College to a needy student who is a resident of New York State. The same criteria will be used in awarding this scholarship as are used in selecting the candidates for the Valentine Mott Knapp scholarship.

Prizes for Veterinary Students

The Alpha Psi Prize is given by Beta (Cornell) chapter of the Alpha Psi Fraternity. It was suggested by the donors that this prize, a \$25 United States savings bond, be "awarded by the faculty to a member of the fourth-year class who has shown by his scholarship, personality, character, the breadth of interest that he is capable of elevating the prestige and expanding the services of veterinary science in practice, in education, and in its relation to community, state, and national welfare."

The American Animal Hospital Association Student Award is given to an affiliate member of the American Animal Hospital Association in recognition of outstanding clinical proficiency in small animal medicine and surgery. Nominations for the award (plaque) are made by the faculty of the Department of Small Animal Medicine and Surgery.

The James Gordon Bennett Prize of \$120 is awarded to a member of the graduating class. The award is based upon the work in the clinics giving evidence of the ability of the recipient to handle diseased animals humanely. Special emphasis is laid upon the ability of the student to apply effectively local and general anesthesia.

The Anne Besse Prize of \$100 is awarded in the principles and practice of veterinary medicine. It is based upon the work in the clinics giving evidence of ability in clinical diagnosis.

The Charles Gross Bondy Prizes consist of two annual prizes awarded to the two fourth-year students who rank highest in proficiency in the courses in practical medicine and surgery of small animals. The total prize is \$100.

Diamond Service Award This award of \$100 is to be presented annually to the senior veterinary student who, in the estimation of the junior and senior classes, has, by his or her activities, contributed to the enhancement of the profession.

The Grant Sherman Hopkins Prize of \$100 in veterinary anatomy was endowed by Mrs. Ann Ottaway Hopkins in 1955 in memory of her husband. Dr. Hopkins served Cornell University for forty-five years (1889-1934). Upon the opening of the Veterinary College in 1896, he became a member of the original faculty as assistant professor of veterinary anatomy and

anatomical methods. He was made a full professor in 1903 and served in that capacity until his retirement in 1934. The prize will be awarded by the College of Veterinary Medicine faculty upon the recommendation of the staff of the Department of Veterinary Anatomy. It will be awarded to a member of the graduating class on the basis of interest, ability, perseverance, and performance in the work in veterinary anatomy. Special consideration will be given to extracurricular work in animal morphology. Although scholarship is an important consideration, the award is not based wholly on that criterion.

The Merck Manual Awards given by Merck and Company, Inc., are presented to members of the graduating class. The recipients of the awards (veterinary manuals embossed with recipients names) are determined by the dean and director of student administration.

The Jane Miller Prize of \$100 in physiology is awarded to the student or students doing the best work in this subject. The amount is usually divided into two prizes which are awarded at the end of the second year.

The Malcolm E. Miller Award was established in 1965 by Mrs. Mary Miller Ewing in memory of her husband. Dr. Malcolm E. Miller '34, a former professor of anatomy and head of that department from 1947 to 1960. The recipient is to be a fourth-year student who, in the judgment of the dean and the director of student administration, has demonstrated perseverance, scholastic diligence, outstanding improvement, and other personal characteristics that will bring credit and distinction to the veterinary profession. The prize is a cash award of \$50.

The Mary Louise Moore Prize in Bacteriology was established by a bequest of Dr. Veranus A. Moore in honor of his wife. Dr. Moore was a member of the original faculty of the Veterinary College. He was professor of pathology, bacteriology, and meat inspector from 1896 to 1926, and dean of the Veterinary College from 1907 to 1929. The income of the endowment (\$120) may be awarded each year, upon recommendation of the head of the Department of Microbiology and with the approval of the dean of the College, either as a prize to students who have done the best work in the department or as a subsidy to encourage individual research work of students by defraying expenses of their experiments.

New York State Veterinary Medical Society Prizes amounting to \$100, were established by the New York State Veterinary Medical Society. They are awarded to members of the fourth-year class who present and have approved the best case reports. The award extends from April 1 to March 15. All case reports to be

considered must be received at the office of the chairman of the Committee of Senior Seminar Course 899, by March 15. Each case report must be reviewed and approved by the head or designated faculty member of the department in which the case was received, studied, and treated.

Philotherian Photographic Prize Dr. and Mrs. Hadley C. Stephenson established this endowment. Photographs of animals, submitted by students or their spouses, are judged by a committee appointed by the dean of the College. The two prizes of \$25 each are awarded on the basis of the individuality of the animal, its enjoyment of its surroundings, and the effect it has on the feelings of the judges.

The Phi Zeta Award is given by the Alpha Chapter of Phi Zeta, the Honor Society of Veterinary Medicine, to the second-year student with the best academic record upon completion of the first three semesters of study. The recipient receives the Cecil-Loeb, *Textbook of Medicine*.

The Poultry Disease Prize was established by Dr. Nathan Wernicoff '31 and Dr. Tevis Goldhaft '35 of Vineland, New Jersey for the purpose of stimulating interest in diseases of poultry. The prize consists of \$50 awarded to the member of the second-year class who shows the greatest interest and proficiency in the subject of avian diseases. The award will be made at the end of the third year.

The Anna Olafson Sussex Pathology Award This award was endowed in 1973 by Peter and Harriette Olafson in memory of Dr. Olafson's sister. The award of \$75 is to be given at the end of the third year to the student judged most worthy by the people actively engaged in teaching pathology.

The Jacob Traum Student Award was established by friends and colleagues at the time of Dr. Traum's retirement as chief scientist of the United States Department of Agriculture Plum Island Animal Disease Laboratory. Dr. Traum was graduated from Cornell University in 1905 and served the veterinary profession in a variety of capacities, particularly in the U.S.D.A. and at the University of California. The award will be given annually to the senior student in the New York State College of Veterinary Medicine who, in the judgment of the dean, has exhibited in his or her scholastic career superior interest and accomplishments in

bacteriology, epizootiology, pathology, and virology, including aptitude for and expressed interest in research on infectious diseases. The prize is a cash award of \$80.

The Upjohn Clinical Awards were established in 1966. The Upjohn Pharmaceutical Company offers prizes for unusual proficiency in the Large Animal Clinic and in the Small Animal Clinic. The winners are selected by the staffs of the respective departments. A cash prize of \$200 is divided between the two clinics.

The Horace K. White Prizes, established by Horace K. White of Syracuse, are awarded annually to meritorious students in the graduating class of the College. They consist of a prize of \$125 to the first in merit and a prize of \$75 to the second in merit.

The Women's Auxiliary A.V.M.A. Prize of \$100 is awarded annually to a senior student for a special contribution which advances the standing of the College of Veterinary Medicine on the campus by special contributions of an extracurricular nature.

Requirements for Graduation

The prescribed four-year curriculum leading to the degree of Doctor of Veterinary Medicine (D.V.M.) is summarized in the section below. To receive this degree, candidates must satisfy all the entrance requirements (pp. 9–12), successfully complete the courses named in the curriculum below, have paid all fees due, and have spent at least one year in residence.

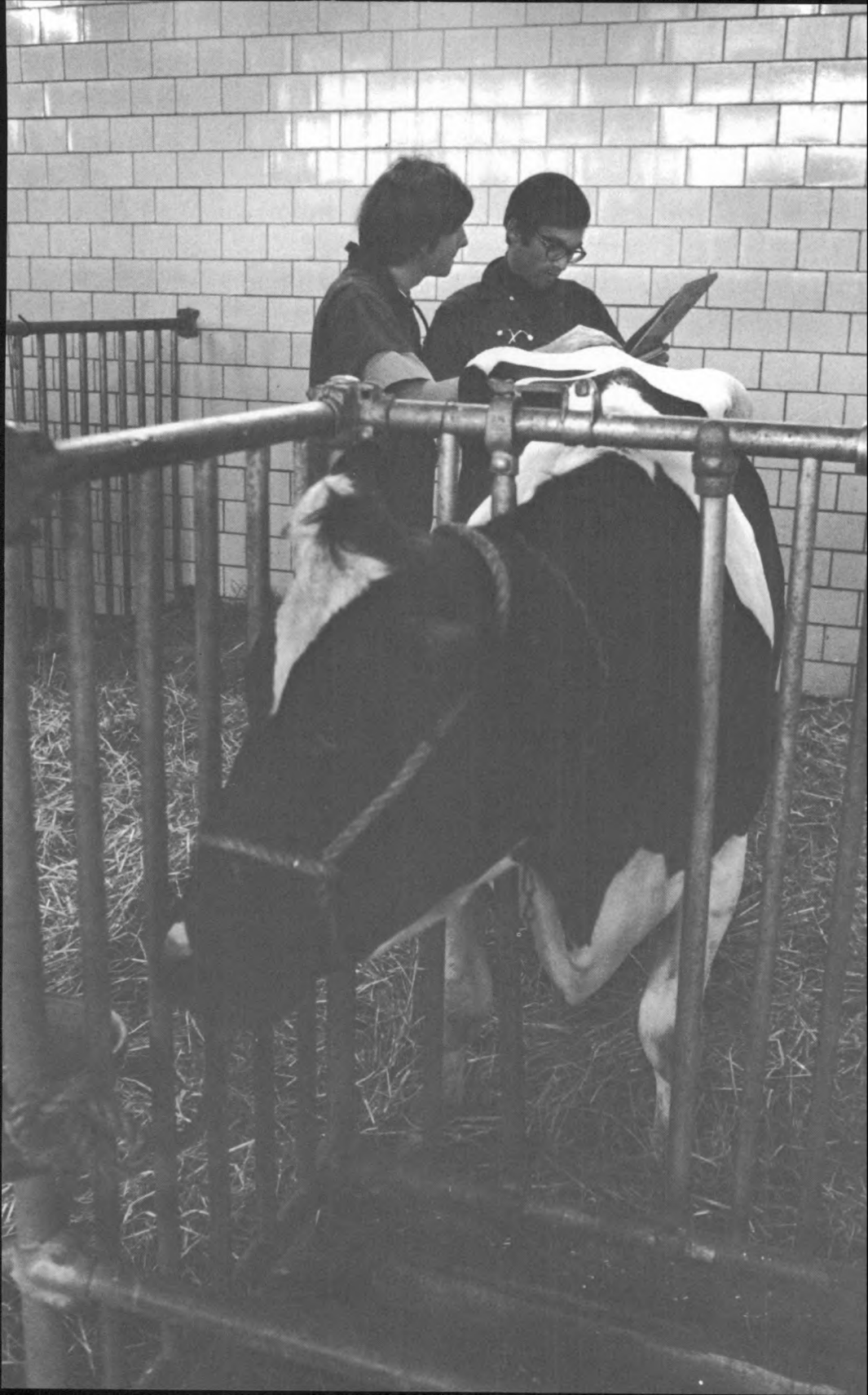
The work of the College is arranged to begin in September and to close in May. The academic year is divided into two terms.

At the conclusion of each term, the College faculty will review the records and conduct of students. Registration of unsatisfactory students will be terminated.

The Curriculum

The College has a core–elective curriculum. A summary of the core curriculum is listed on page 19.

The abbreviation "Req." indicates that a course, or its equivalent, is required for graduation but that no formal credit is given for the course.



First Year

	<i>Credit Hours</i>	<i>Spring Term</i>	<i>Credit Hours</i>
<i>Fall Term</i>			
500 Gross Anatomy	5	506 Applied Anatomy	1
502 Developmental and Microscopic Anatomy	3	564 Large Animal Medicine	4
525 Vertebrate Biochemistry	4	565 Large Animal Surgery	4
568 Veterinary Medical Orientation	2	566 Radiology	2
—	14	567 Clinical Nutrition	2
		584 Small Animal Medicine and Surgery	8
		586 Small Animal Surgical Exercises	1
		—	22

Spring Term

501 Gross Anatomy	5
503 Microscopic Anatomy	3
504 Neuroanatomy	2
526 Physiology for Veterinary Students	4
569 Veterinary Medical Orientation	1
—	15

Second Year

	<i>Credit Hours</i>
<i>Fall Term</i>	
515 Veterinary Immunology	2
516 Veterinary Bacteriology	2
518 Veterinary Mycology and Protozoology	1
527 Physiology for Veterinary Students	4
535 General Pathology	4
537 Veterinary Parasitology	4
560 Clinical Methods	2
—	19

Spring Term

517 Veterinary Virology	2
519 Epidemiology and Infectious Diseases	4
528 Basic Pharmacology	4
536 Special Pathology	4
555 Avian Diseases	2
561 Obstetrics and Reproductive Diseases	3
579 General Medicine	2
—	21

Third Year

	<i>Credit Hours</i>
<i>Fall Term</i>	
505 Applied Anatomy	1
529 Clinical Pharmacology	2
539 Introduction to Laboratory Animal Medicine	1
550 Applied Radiation Biology and Veterinary Nuclear Medicine	1
562 Obstetrics and Reproductive Diseases	3
563 Large Animal Medicine	4
571 Clinical Pathology	3
583 Small Animal Medicine and Surgery	4
587 General Surgery	3
—	22

Fourth Year

	<i>Credit Hours</i>
<i>Fall Term</i>	
572 Senior Seminar	Req.
573 Large Animal Clinic	3
575 Ambulatory Clinic	3
577 Ancillary Clinics	3
589 Small Animal Medical Clinic	3
591 Small Animal Surgical Clinic	3
—	15

Spring Term

520 Applied Microbiology and Preventive Medicine	3
572 Senior Seminar	Req.
Elective blocks	Req. 4
574 Large Animal Surgical Clinic	4
576 Ambulatory Clinic	4
578 Diagnostic Clinic	4
590 Small Animal Medical Clinic	4
592 Small Animal Surgical Clinic	4
593 Ophthalmology, Anesthesiology, Neurology	4
594 Large Animal Medical Clinic	4
595 Rotating Clinic	16

Students must take course 520 and four of the elective blocks for a total of nineteen hours of course work.

Honor Societies

There are three honor societies for which students of the College of Veterinary Medicine are eligible.

Phi Zeta, founded in 1925 by the students of the New York State Veterinary College at Cornell University, strives for the constant advancement of the veterinary profession, higher educational requirements, and superior scholarship. The object of the society is to recognize and promote scholarship and research pertaining to the welfare and diseases of animals.

Sigma Xi. Any student or research staff member is eligible for membership in Sigma Xi, the Scientific Research Society of North

America. It is the responsibility of the Admissions Committee of Sigma Xi to select for membership those individuals whose research aptitude or achievement deserves special recognition.

Phi Kappa Phi. The society of Phi Kappa Phi was founded in 1897 and soon became a national organization. Its primary objective is to recognize and encourage superior scholarship in all fields of study. Good character is an essential supporting attitude for those elected to membership.

Careers for Veterinarians

The function of the College of Veterinary Medicine is to educate young men and women to become practitioners, teachers, and research workers in the science and art of veterinary medicine. The College thus serves to protect the health of livestock, poultry, and companion animals, and to support public health programs.

The veterinary medical profession offers excellent opportunities for those who have an abiding interest in the diagnosis, treatment, and prevention of animal diseases. Like most medical careers, it is a way of life requiring strong vocational motivation and dedication. It is a demanding career. The work is often rigorous. The compensation varies greatly, but intelligent and conscientious service usually is rewarded by an adequate income. Those who are genuinely interested in the work have the satisfaction of serving a useful purpose. Some of the opportunities for veterinary graduates in the United States are described on the following pages.

Private Practice

Veterinary practice is a wide field with excellent opportunities for well-qualified persons. For several years the need for veterinarians in private practice has exceeded the supply. Practice may be general, in which the individual offers service for all species of animals. There is a trend toward restricted practice in which the veterinarian limits practice to small animals, cattle, horses, or poultry, etc. Some veterinarians, by virtue of advanced training and experience, become specialists and limit their work to narrow fields such as ophthalmology, orthopedics, diseases of reproduction, or other specialty areas. There is an accelerating trend toward partnership or group practice. Most graduates, to gain experience, have gone into private practice in the employ of an established veterinarian for at least one year.

Salaried Positions

Salaried positions are available with state and federal governments, pharmaceutical manu-

facturers, research institutions, universities, zoos, and a few large livestock farms. Generally these positions are filled by experienced practitioners or those who have had graduate training. There is expanding involvement in comparative medicine and aquatic animal medicine.

Private Corporations

Many veterinarians are employed by large stock and poultry farms, industrial laboratories that produce biologicals and pharmaceuticals for the prevention and treatment of diseases, and by companies whose products must be tested on animals.

Federal Governmental Agencies

The United States Department of Agriculture employs more veterinarians than any other single agency. The work is concerned for the most part with the prevention, control, and eradication of domestic and foreign infectious and parasitic diseases of milk- and meat-producing animals.

This service is also responsible for assurance of safe, wholesome, and accurately labeled food products of animal origin. Regulatory veterinary medicine, based upon sound veterinary medical knowledge, supported by effective legislation, is planned and carried out in ways that will achieve the desired results while interfering least with the economic life of the community and nation.

Many veterinarians in the United States Department of Agriculture are engaged, in well-equipped laboratories, in full-time research programs on diseases of animals of economic importance.

Veterinarians who are physically qualified and graduates of veterinary colleges acceptable to the surgeon general of the United States Army and United States Air Force and who elect to go on active duty are eligible to make application for appointment. Qualified candidates are appointed in the grades of captain to colonel inclusive, the grade being determined by the age, professional experience, and professional qualifications of the applicant.

The United States Public Health Service employs veterinarians in the development and administration of programs concerned largely with the control of domestic and foreign animal diseases transmissible to man. The service cooperates extensively with international disease control agencies as well as with state governments. In addition to maintaining active programs in research laboratories of its own, the service engages in diversified contractual

research programs with numerous academic institutions.

State Governments

Every state has a state veterinarian or similar officer, usually in the department of agriculture, whose duties are to look after the health of animals by enforcing laws and regulations drawn for this purpose. In many states the state veterinarian has a corps of assistant veterinarians.

Many state health departments have one or more veterinarians on their staffs to advise on animal diseases that have significance in human health and to investigate outbreaks of such diseases.

Almost every agricultural college has a veterinary science department. Some of these employ five or six veterinarians as research workers and teachers. The veterinary colleges of the country have staffs of veterinarians working in a number of specialized disciplines. Teaching opportunities are numerous in every field of veterinary education.

Municipal Governments

Graduate veterinarians are employed as members of health departments by most cities on a full-time basis, and by many towns and villages on a part-time basis. Their duties usually are connected with the sanitary control of meat and milk and with the investigation of epidemics of food of animal origin.

Legal Requirements

Before graduates can practice veterinary medicine in the United States they must obtain a license from the state or states in which they locate their practices. This license generally is issued by the Department of Education or the Department of Agriculture on the basis of an examination set by a veterinary licensing board. Some states issue licenses without examination, based upon reciprocity when the applicant has been licensed in other states.

In New York, the licensing agency is the State Education Department. All inquiries should be addressed to the Secretary of the State Board of Examiners, Room 1841, Twin Towers, 99 Washington Avenue, Albany, New York 12210. Examinations are given twice a year. Applicants are required to furnish evidence of the following: (1) adequate preprofessional as well as professional education, (2) good moral character, and (3) being at least twenty-one years of age. Application for the examination must be filed at least sixty days before the scheduled date and must be accompanied by a fee of \$140.

Health Services and Medical Care

Health services and medical care for students are centered in two Cornell facilities: the Gannett Medical Clinic (outpatient department), 10 Central Avenue, and the Sage Infirmary, on Sage Place. The entrance to the Infirmary is on East Seneca Street between Stewart Avenue and Schuyler Place, about five blocks from the edge of the campus. Students are entitled to unlimited visits at the clinic. Appointments with individual doctors at the clinic should be made by calling 256-4082 or by visits, in person, to the clinic. (An acutely ill student will be seen promptly whether he or she has an appointment or not.) Students are also entitled to most laboratory and x-ray examinations and initial consultation with a specialist when indicated for diagnosis and treatment and ordered by a staff physician. Hospitalization in the Sage Infirmary with medical care for a maximum of fourteen days each term and emergency care is also provided without additional cost. The cost of these services is covered by tuition.

If, in the opinion of the University authorities, the student's health makes it unwise to remain in the University, the student may be required to withdraw.

Student Accident and Sickness Insurance Plan

Cornell has a health insurance plan to supplement the services outlined above. (This plan may be waived if the student has other health insurance or is willing to accept the financial risk of no insurance.) For example, hospitalization in Sage Infirmary in excess of fourteen days a term, and expenses for illness or accidents outside Ithaca during the academic year and vacation periods will be covered by this insurance. Information about this insurance may be obtained at the Gannett Medical Clinic where a representative of the insurance company has an office.

Health Care Plan for Student Spouses

The University Health Services offers a prepaid health care plan for student spouses that is identical in benefits to the student health care. For the payment of a fee each term a student spouse is entitled to unlimited medical visits to Gannett Clinic, up to fourteen days each term for hospitalization in Sage Infirmary and emergency care. In addition, the Health Services will assume the cost of a first visit to a specialist (when referred by a Health Services physician). Other services are available at reduced cost to those who participate in this program.

22 Housing and Dining Facilities

Students may enroll their spouses prior to, or during the first thirty days of any term.

This primary care program is not to be confused with the Student Accident and Sickness Insurance Plan (for Cornell Students and their dependents). The student insurance supplements basic health care by providing twelve-month insurance coverage for students (and dependents) over and above benefits of the Health Services, and by protecting the students when they are away from the Cornell campus (e.g., vacations).

Information and enrollment forms for the Student Spouse Prepaid Health Care Plan may be obtained by writing or coming to the: University Health Services, Gannett Medical Clinic, Cornell University, 10 Central Avenue, Ithaca, New York 14853.

Emergency Service

Students who need medical attention during the hours the clinic is closed may go to Sage Infirmary. If an accident or serious illness occurs, the physician on emergency service may be reached by calling 256-3493 during clinic hours or 272-6962 after clinic hours.

Housing and Dining Facilities

University Housing

Applications for all University housing should be made immediately upon provisional acceptance.

Cornell provides residential facilities on campus for about 5,500 students. These facilities are located in two areas that lie to the north and west of the central campus. Detailed descriptions of various housing accommodations is found in the booklet *Housing for Single Students*, which is mailed to candidates for admission upon notification of their acceptance to Cornell.

Students are not subject to a residence requirement, and should note that acceptance to Cornell University does not guarantee the availability of on-campus accommodations.

An application form for on-campus housing accommodations will be enclosed with the notice of provisional acceptance to each candidate from the Office of Admissions.

Information about available housing and rental rates may be obtained from the Student Housing Office, 223 Day Hall.

Graduate Students

University housing in residence halls is available to single graduate students upon application to the Student Housing Office, 223 Day Hall, Cornell University, Ithaca, New York 14853.

Sage Graduate Center provides housing for approximately 200 men and women. Situated in the center of the campus, it is convenient to all colleges. There is a cafeteria in the building. Cascadilla Hall accommodates approximately 160 graduate men and women. It is conveniently located just inside the southwest entrance to the campus. A third residence is a small apartment building, Thurston Court, housing 26 graduates. It is located just north of the Fall Creek Gorge on Thurston Avenue.

Married Students

The University maintains apartment accommodations for approximately 420 married students and their families. These are Cornell Quarters, Pleasant Grove Apartments, and Hasbrouck Apartments. All accommodations are unfurnished. Requests for further information and application should be directed to the Family Housing Office, Building 40, Hasbrouck Apartments, Ithaca, New York 14850.

Off-Campus Housing

Information on housing that is currently available is posted on a board at the Student Housing Office, 223 Day Hall. Because changes of available accommodations occur daily, it is not practical to prepare lists. If possible, a student should plan to visit Ithaca well in advance of residence in order to obtain suitable quarters off-campus.

Dining Services

Cornell University maintains dining services in ten locations—Willard Straight Hall, North Campus Union, Noyes Student Center, Balch Hall, Sage Hall, Hughes Hall, Noyes Lodge Pancake House, Risley Hall, the Statler Student Cafeteria, and the Dairy Bar. These facilities are open to all students on a cash or credit basis, whether or not they live in University residence halls or subscribe to a specific dining plan. The University has no formal dining requirements, allowing students the flexibility of eating when and where they choose.

For those students wishing to subscribe to a dining plan, the following options are offered: The Co-op Dining Program, prepaid each semester, allows students to eat all they want during specified times at five Co-op Dining centers (Willard Straight Hall, Noyes Student Center, North Campus Union, Sage Hall, and Balch Hall) at a food cost savings. Students participate in any one of eight Co-op plans. Students may choose from a wide selection of daily entrees, fresh fruits, vegetables, and salads and there are unlimited seconds. Co-op 2000 is a program specially designed for those who wish to eat sensibly. Co-op 2000 is administered by a registered dietitian who is

available to counsel individuals on proper dining habits. Additional information may be obtained from Dining Services, 233 Day Hall, Cornell University.

Risley Dining Program, prepaid each semester, is primarily for residents of Risley Hall but is open to all. Additional information is available from the student-member Risley Dining Committee at Risley Hall, and also from Dining Services, 233 Day Hall, Cornell University.

Cornellcard, a credit card for those who do not wish to pay cash for each meal or be on the Co-op Dining Plan, is honored by the Department of Dining Services. The Cornellcard program is administered by the Bursar's Office. Information is available from the Bursar's Office, Cornell University, 260 Day Hall.

The Department of Dining Services also operates two grocery stores on campus, the Pick-Up in Noyes Lodge and the Mini-Pickup in Noyes Center. Also, major vending machine areas in Martha Van Rensselaer and Warren Halls and the Veterinary College offer hot and cold food and drinks. In these areas radar ovens are maintained for convenience in heating food.

Conduct of Students

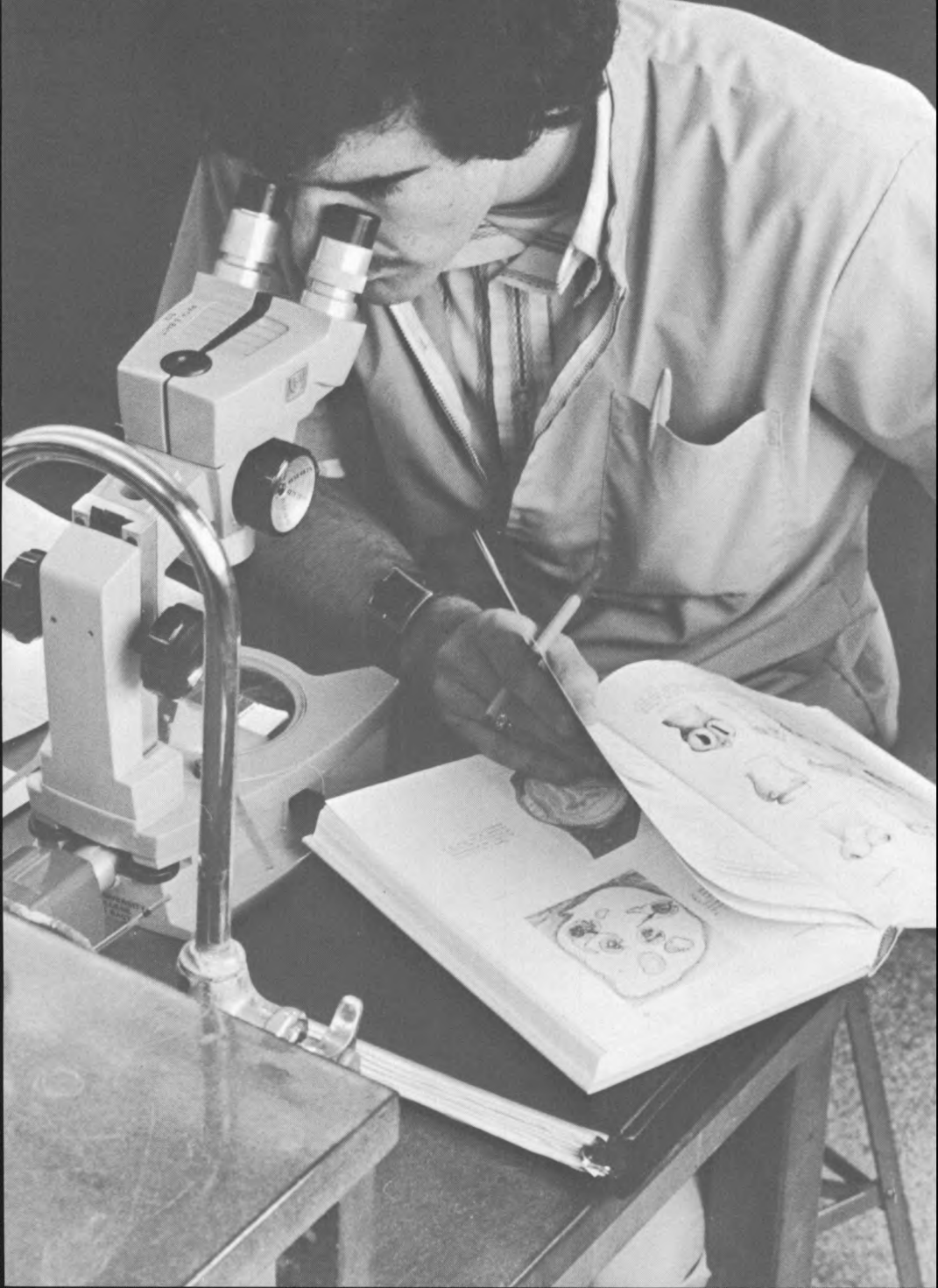
Cornell students are expected to conduct themselves in a decent manner with respect for the

integrity of the individual and the best interests of the community.

The standards of conduct expected of a Cornell veterinary student are defined by the Student Honor Code and implemented by a student Judiciary Administrative Board granted initial jurisdiction for student conduct by the Faculty Committee on Student Conduct. A student may at any time be removed from the University by the faculty.

The Veterinary College Student Honor Code has been established in recognition of the importance of ethics, honor, and personal integrity in the individual's training for the veterinary profession. The code places the responsibility for ethical and professional conduct upon the students. A copy of the honor code is given to each undergraduate and graduate student at the time of registration, and it is the student's duty to become familiar with the contents of the code and observe them during the four years in the College.

For student consultation and guidance, the college maintains an Office of Student Administration and has a Student/Faculty Liaison Committee, a Committee on Student Conduct, and class advisers. All academic actions are voted by the College of Veterinary Medicine faculty. A student may appeal to the faculty through the dean or the secretary of the College.



Cornell University

Description of Courses

Under each department heading, there are brief descriptions of the courses offered. Most of these courses are a part of the veterinary core curriculum; some are elective to veterinary students or are given primarily for graduate students or students of other colleges of the University.

The clinics are operated by several departments. A brief statement about the particular clinical work of each department concerned will be found in the general description of the activities of that department. A general statement of the operation of the clinics, with courses and numbers, is given under a special heading.

Courses in other colleges available to all Cornell students may be found in *Cornell University: Description of Courses*.

All academic courses of the University are open to students of all races, religions, ethnic origins, ages, sexes, and political persuasions. No requirement, prerequisite, device, rule, or other means shall be used by any employee of the University to encourage, establish, or maintain segregation on the basis of race, religion, ethnic origin, age, sex, or political persuasion in any academic course of the University.

Course Numbering System

500 series—D.V.M. core curriculum courses
600 series—Elective courses for D.V.M. and other students
700 series—Graduate-level courses

Anatomy

Professors H. E. Evans, chairman; A. deLahunta, R. E. Habel, W. O. Sack; Associate Professor J. F. Cummings; Graduate Assistants A. G. Watson, G. A. Chibuzo, I. Foss; Visiting Professor J. Grandage

500 Gross Anatomy First year, fall term. Credit five hours. Prerequisite: course work equivalent to that required for admission to the

Veterinary College. Lecture T 9:05. Laboratory M T Th F 10:10–12:35. H. E. Evans, A. deLahunta, A. G. Watson, G. A. Chibuzo.

The structure of the typical mammal is studied by detailed systematic and regional dissection of the dog. The basic features of avian anatomy are studied by dissection and the anatomy of laboratory animals is reviewed in appropriate species. The lectures, supplemented by demonstrations, consider the comparative and regional gross aspects of vertebrate organ systems, anatomical terminology, literature, techniques, and radiographic anatomy.

501 Gross Anatomy First year, spring term. Credit five hours. Prerequisite: Anatomy 500. Lecture Th 8. Laboratory M T Th 2:05–4:25, W 10:10–12:35. W. O. Sack, A. G. Watson, G. A. Chibuzo.

Regional anatomy of the horse, cow, sheep, and pig is studied by dissection with special attention to the anatomy of physiological processes and clinical procedures, and the veterinary public health inspection of food animals.

502 Developmental and Microscopic

Anatomy First year, fall term. Credit three hours. Prerequisites: course work equivalent to that required for admission to the Veterinary College and completion of, or concurrent registration in, Anatomy 500 or 700. Lecture M 8. Laboratory W 10:10–12:35, Th 2:05–4:25. A. deLahunta, J. F. Cummings, I. Foss.

The study of development is designed to provide a foundation for the understanding of definitive anatomy and the formation of anomalies. The latter part of the course is devoted to cytology and histology, illustrated with material from the domestic animals.

503 Microscopic Anatomy First year, spring term. Credit three hours. Prerequisites: Anatomy 502 and completion of, or concurrent registration in, Anatomy 501 or 700. Lecture T 9:05. Laboratory T F 10:10–12:35. J. F. Cummings, I. Foss.

The microscopic structure of the tissues and organs of domestic animals is studied. Illustrated lectures are presented to relate structure to function, correlate microscopic and gross anatomy, and establish a foundation for subsequent studies in physiology and pathology. Slides of tissues and organs are provided.

504 Neuroanatomy First year, spring term. Credit two hours. M 10:10–12:35, T 8. A. deLahunta.

The nervous system of domestic animals is studied by functional systems. It is a vertically integrated course that includes the diagnosis of diseases of the nervous system. Clinical cases with pertinent lesions are demonstrated with each system.

505–506 Applied Anatomy Third year, fall term. Credit one hour. Laboratory T W or Th 2:05–4:25. R. E. Habel. Third year, spring term. Credit one hour. Laboratory T Th or F 2:05–4:25. R. E. Habel.

An opportunity for practice in the recognition of the anatomical features that are essential to diagnostic, surgical, obstetrical, and post-mortem procedures. The approach is topographical, comparative, and clinical. The emphasis is on the study of living animals, supplemented by dissections, serial transections, models, and radiographs.

600 Special Projects in Anatomy Fall and spring term. By permission of instructor only. Hours to be arranged.

601 Advanced Anatomy Fall and spring terms. Hours and credit to be arranged. Prerequisites: Anatomy 500 and 502 or similar preparation in comparative anatomy, embryology, and histology. A. deLahunta, H. E. Evans, W. O. Sack, J. F. Cummings, R. E. Habel. An opportunity for advanced study under personal faculty direction.

602 Advanced Clinical Neurology Spring term. Credit one hour. Prerequisite: first three semesters of veterinary curriculum. W 8. A. deLahunta.

Correlation of anatomy, physiology, and pathology in the diagnosis and treatment of diseases of the nervous system and an understanding of their pathogenesis. Case demonstrations will be emphasized.

700 Vertebrate Morphology Spring term. Credit three hours. Prerequisite: graduate status or Biological Sciences 273. Laboratory T Th 9:05–12. H. E. Evans.

Designed for advanced students in animal and biological sciences. A dissection of the dog serves as the basis for a functional consideration of the component parts of mammalian organ systems. This is followed by a dissection

of the cow. Other species of interest to the class may also be presented.

701 Comparative Anatomy of the Digestive System Fall term. Credit one hour. Prerequisite: Anatomy 500, 501, or 700 or a course in comparative anatomy. Embryology and histology are recommended. Lecture W 8. R. E. Habel. A general knowledge of the gross anatomy of each organ will be assumed, and emphasis will be placed on the micro-macroscopic muscular and vascular architecture, the innervation, and the functional cytology of the epithelium.

Physiology, Biochemistry, and Pharmacology

Professors C. E. Stevens, chairman; A. L. Aronson, E. N. Bergman, A. Dobson, T. R. Houpt, A. F. Sellers, J. F. Wootton; Associate Professor W. J. Arion; Assistant Professors K. A. Houpt, W. S. Schwark; Research Associates C. J. Drost, R. N. Heitmann, G. J. Milanowski; Graduate Assistants S. M. Anika, B. A. Arnold, L. M. Ballas, D. Callaghan, D. Kalish, F. M. Mollura, K. Munckenbeck

The following fields of activity are covered in the work of the department: biochemistry, physiology, pharmacology, and toxicology.

525 Vertebrate Biochemistry Fall term. First-year veterinary students or consent of the instructors. Credit four hours. Prerequisite: Biological Sciences 330–331 (432–431) or an equivalent course in general biochemistry. Training in quantitative analysis is recommended. Lectures M W F 9:05. Discussion Th 9:05. Laboratories (alternate weeks) M T 2:05–4:25. J. F. Wootton, W. J. Arion, and staff. An intermediate-level course correlating the metabolic structural and functional characteristics of tissues. Metabolic integration and regulation are emphasized.

526 Physiology for Veterinary Students First year, spring term. Credit four hours. Prerequisites: Physiology 525, Anatomy 500 and 501, or Anatomy 700 and Biological Sciences 330–331 (Principles of Biochemistry) Lecture M W F 9:05, Laboratory Th 9:05–12:35. T. R. Houpt, A. Dobson, A. F. Sellers, K. A. Houpt.

527 Physiology for Veterinary Students Second year, fall term. Credit four hours. Prerequisite: Physiology 526. Lecture M T Th 8. Laboratory W 9:05–12:35. E. N. Bergman, C. E. Stevens.

528 Basic Pharmacology Second year, spring term. Credit four hours. Prerequisites: Anatomy 500, 501, 502, 503, 504; Physiology 525, 526, 527; Pathology 535 or consent of the instructor.

tors. Lectures M, Th 8:00. Laboratory T 1:05–4:25. A. L. Aronson, W. S. Schwark. Factors governing the physiological disposition of drugs and poisons will be emphasized together with a consideration of the action of drugs affecting the nervous system. A number of toxicological topics are covered in this course and antibacterial chemotherapy is introduced.

529 Clinical Pharmacology Third year, fall term. Credit two hours. Prerequisite: Pharmacology 528 or consent of the instructors. Lectures Th F 10:10. A. L. Aronson, W. S. Schwark. Given in conjunction with Clinical Course 579 and will consider aspects of the clinical use of drugs to treat disease processes.

620 Special Projects in Physiology Fall or spring term. By permission of instructor only. Hours to be arranged.

621 Toxicology Spring term for second-, third-, or fourth-year students. Credit one hour. F 2:05. A. L. Aronson, W. S. Schwark. Basic and clinical aspects of the more common poisonings that affect domestic animals will be considered. Emphasis will be given to heavy-metal poisoning; chelation phenomena; selected organic poisonings including pesticides, herbicides, and rodenticides, and forensic considerations.

622 Special Projects in Pharmacology Fall, spring, or summer term. Hours to be arranged. By permission of instructor only. A. L. Aronson, W. S. Schwark.

626 Veterinary Animal Behavior Spring term for all veterinary students. Credit two hours. M 1:05, F 2:05–4:25. K. A. Houpt. The behavior of animals of interest to veterinarians. Dogs, cats, cattle, horses, sheep, and swine will be studied in depth; other species such as goats, rabbits, and chickens will be studied in less detail. The course will utilize both ethology and physiological psychology as approaches to animal behavior. The purpose will be not only to present the facts of animal behavior, but also to help the student to critically evaluate behavioral studies.

627 Acid-Base Relations Fall term. Credit one hour. Prerequisite: Physiology 526 or equivalent. Elective course for second-, third-, or fourth-year veterinary students. The course is based on the self-instruction program to promote the understanding of the basis, interpretations, and techniques of measuring acid-base status.

720 Special Problems in Physiology Fall or spring term. Hours to be arranged. Registration by permission.

Laboratory work, conferences, collateral reading, and reports, adapted to the needs of students.

721 Research Fall or spring term. Graduate students only. Hours to be arranged.

722 Methods in Gastroenterological Research

Spring term. Credit four hours. Prerequisites: Biological Sciences 414 and a course in biochemistry, or Physiology 527 or equivalent and consent of instructor. Enrollment limited, pre-registration essential. Two lectures and one six-hour laboratory a week; times to be arranged. A. Dobson and associates. Experience with a variety of current physiological techniques for the study of the functions of the gastrointestinal tract with special emphasis on their limitations.

723 Comparative Gastroenterology Fall term. Credit three hours. M W F 10:10. Prerequisites: courses in general mammalian physiology, biochemistry, and nutrition, and consent of instructor. C. E. Stevens, H. F. Hintz, L. P. Krook, R. H. Wasserman. Lectures will emphasize (1) functional comparison of invertebrate and vertebrate digestive systems, (2) preparations and procedures used to study the function or malfunction in these systems, and (3) digestive tract diseases.

724 Physiologic Disposition of Drugs and Poisons Spring term. Credit two or three hours. Prerequisites: a course in biochemistry and consent of the instructor. M Th 8, T 1:05. A. L. Aronson, W. S. Schwark. The morning sequence (2 credits) will include the factors governing the physiological disposition of drugs and poisons, drug-receptor interactions, selected aspects of cellular pharmacology, autonomic pharmacology, and an introduction to antibacterial chemotherapy. The afternoon sequence (1 credit) will include the action of drugs affecting the central nervous system.

725 Vertebrate Biochemistry Lectures Fall term. Credit three hours. M W F 9:05. Prerequisite: Biological Sciences 330–331 (432–431) or an equivalent course in general biochemistry. Offered to graduate and upper-division students. J. F. Wootton, W. J. Arion. An intermediate-level course correlating the metabolic, structural, and functional characteristics of tissues. Metabolic integration and regulation are emphasized.

726 Physiology Spring term. Credit three hours. For graduate students. Prerequisites: Biochemistry 525, Anatomy 500 and 501, or Anatomy 700. M W F 9:05. T. R. Houpt, A. Dobson, A. F. Sellers. Lectures and demonstrations on cellular

physiology, muscle, nervous system, respiratory system, urine secretion, blood, and lymph.

727 Physiology Fall term. Credit three hours. For graduate students. Prerequisite: Physiology 726. M T Th 8. E. N. Bergman, C. E. Stevens. Lectures and demonstrations on circulation, digestion, endocrine organs, metabolism, and reproduction.

728 Basic Concepts in Pharmacokinetics Spring term. Credit one hour. The course is offered to graduate students and as an elective course to D.V.M. students at the sophomore level and above. F 3. K. B. Bischoff, A. L. Aronson.

The course will provide an introduction to the concepts and techniques used in pharmacokinetics—the study of quantitative aspects of drug disposition in and elimination from the body. The physiological, pharmacological, and physical chemical basis of compartmental analysis will be developed. No previous knowledge of the subject will be presumed and the primary focus will be on physiological principles. These fundamentals could be used as a basis for more advanced and formal study in the area.

Physical Biology/Section of Physiology

Professors D. N. Tapper, acting chairman; E. L. Gasteiger, F. W. Lengemann, R. H. Wasserman; Associate Professors A. P. Casarett, F. A. Kallfelz, J. C. Thompson, Jr.; Visiting Lecturer T. Oku; Senior Research Associates R. A. Corradino, F. L. Hiltz, H. Moraff, R. A. Wentworth; Research Associates H. J. Armbricht, S. I. Koo, M. E. Villareale; Visiting Research Fellow O. F. Idris; Graduate Assistants R. Allhands, F. Barken, T. Bauman, W. Beilman, A. Craig, J. Feher, N. Mohler, N. Rackovsky, J. Zimmer

The department is well equipped for advanced work in the applications of physical and biochemical methods to problems of animal and biological research. The following research areas are emphasized: a) computer-informational systems, b) environmental contamination, c) membrane transport, d) mineral metabolism, e) neurophysiology, f) physical methods in veterinary medicine, g) radiation biology, and h) veterinary nuclear medicine.

The Department of Physical Biology has recently become the nucleus of the newly-created Section of Physiology of the Division of Biological Sciences. The primary responsibility of this new section is the teaching and training of undergraduate students of the University in the physiological disciplines, an activity in which this department has been involved for the past several years. The section includes

joint appointees from other departments of the College and of the University, and expands the role of the College in University-wide educational activities and provides a means of additional interaction for other Colleges of the University and the College of Veterinary Medicine.

Bio Sci 211* (Animal Science 220) Animal Reproduction and Development Fall term. Credit four hours. Limited to 36 students per lab section. Prerequisite: a year of college biology or equivalent. Lecture, T Th 9:05; demonstration and laboratory, M T W Th or F 2-4:25 or T 10:10-12:35 or F 11:15-1:25. R. H. Foote.

An introduction to the comparative anatomy and physiology of reproduction of farm animals. The life cycle from fertilization through development and growth to sexual maturity will be studied, with emphasis on physiological mechanisms involved, relevant genetic control, and the application to fertility regulation of animal and human populations. An audio-tutorial laboratory is available for independent study to prepare for laboratory experiments.

Bio Sci 310 Invertebrate Zoology Fall or spring term. Credit four hours. Enrollment limited, with preference given to upperclass students. Prerequisite: one year of introductory biology for majors. Lecture, W F 11:15. Laboratory, W F 2-4:25. Each student will be expected to do a significant amount of independent work and a term paper may be required. J. M. Anderson. Lectures on selected topics in the development, structure, function, and interrelations of invertebrate animals, with particular attention to phylogenetic aspects. Intensive laboratory work on representative invertebrates, utilizing living or fresh specimens wherever possible.

Bio Sci 312 Anatomy of the Gull Summer term. Credit one hour. S-U grades only. Prerequisite: 1 year of introductory biology. Daily lectures, lecture-demonstrations, and laboratories for 1 week. H. E. Evans. The functional anatomy of all organ systems with emphasis on sensory, nervous, digestive, and respiratory systems.

A special course offered at the Shoals Marine Laboratory of Cornell University on an island off Portsmouth, N.H. For more details and applications, consult the Office of Marine Biology, 202 Plant Science Building.

Bio Sci 313 Histology: The Biology of the Tissues Fall term. Credit four hours. Prerequisite: 1 year of introductory biology; a background in vertebrate anatomy and organic

* Application has been made for listing as a biological sciences course.

chemistry or biochemistry recommended. Lecture, T Th 11:15. Laboratory, T Th 2-4:25. W. A. Wimsatt.

Provides the student with a basis for understanding the microscopic, fine structural, and functional organization of vertebrates as well as the methods of analytic morphology at the cell and tissue levels. The dynamic interrelations of structure, composition, and function in cells and tissues are stressed.

[Bio Sci 315 Ecological Animal Physiology] Fall term. Credit four hours. Enrollment limited. Prerequisite: 1 year of introductory biology for majors. Offered in alternate years. Not offered 1976-77. Lecture M W F 10:10. Laboratory, W or Th 1:25-4:25. W. N. McFarland, F. H. Pough.

An introductory course for students interested in ecology and physiology. The characteristics of the physical environment that are important to organisms are discussed; and the physiological, behavioral, and morphological adaptations of vertebrate and invertebrate animals to environment are analyzed.]

[VM 345 (Biological Sciences 212*) Elementary Animal Physiology] Spring term. Credit three hours. Prerequisites: one year of biology or zoology and college courses in chemistry. Not offered 1976-77. M W F 10:10. Lectures and demonstrations arranged especially for students of agriculture but open to others. Intended for students who do not plan to continue in physiology or allied fields.]

VM 346 (Biological Sciences 314*) Introductory Animal Physiology Spring term. Credit four hours. Prerequisites: one year of biology, college chemistry, and mathematics. Three lectures and 1 recitation. M W F 11:15. D. N. Tapper. A general course in vertebrate physiology emphasizing the basic characteristics of the circulatory, nervous, pulmonary, renal, and gastrointestinal systems and of energy metabolism, endocrinology, and reproductive physiology. Neural and hormonal control of function is emphasized. (See Physical Biology 348 for associated laboratory.)

[VM 347 (Biological Sciences 311*) Introductory Physical Biology] Fall term. Credit three hours. Prerequisites: basic biology, chemistry, and calculus, or permission of instructor. Not offered 1976-77. M W F 10:10. R. H. Wasserman, F. W. Lengemann, H. Moraff. The specific application of quantitative and physical concepts to biological problems. This course provides background or is complementary to other courses at this or advanced levels that deal with physiology, nutrition, radioisotopes in biological research, cellular membranes, quantitative ecology, and biophysics. Topics include the interrelations of

biological and physical sciences; mathematical approach to physiological problems; principles of tracers, kinetics, and compartmental analysis; systems analysis and control theory; membranes and transport processes; physicochemical aspects; thermodynamics and biological systems; ion binding to macromolecules ion selectivity theory.]

VM 348 (Biological Sciences 316*) Introductory Animal Physiology Laboratory Spring term. Credit one hour. Limited to 100 students with priority of registration given to students concentrating in animal physiology. Prerequisite or corequisite: Physical Biology 346. Designed to supplement Physical Biology 346. Day to be announced, 1:25-4:25. Laboratory sessions alternate weeks. D. N. Tapper. Laboratory sessions will consist of demonstrations, instructor-assisted experiments, and student-run experiments covering the nervous, pulmonary, renal, circulatory, and gastrointestinal systems.

Bio Sci 412 Special Histology: The Biology of the Organs Spring term. Credit four hours. Limited to 18 students. Prerequisite: 313 or written permission of instructor. Offered in alternate years. Lecture, W F 9:05. Laboratory, W F 2-4:25. W. A. Wimsatt. A continuation of 313. The microscopic and ultrastructural organization of the principal vertebrate organ systems are studied in relation to their development, functional interaction, and special physiological roles. Courses 313 and 412 together present the fundamental aspects of the microscopic and submicroscopic organization of the vertebrate. The organization of the course involves student participation in lecture-seminars, and the prosecution of independent project work supplementary to the regular work of the laboratory. The latter enables students to gain practical experience with histological and histochemical preparative techniques.

Bio Sci 451* (Animal Science 427) Fundamentals of Endocrinology Fall term. Credit four hours. Prerequisite: a course in human or veterinary physiology, or permission of instructor. Lecture, T Th S 10:10; laboratory, T or Th 1:25-4:25. W. Hansel, W. R. Butler. The physiology of the endocrine glands and the roles played by each hormone in the regulation of normal body processes. The laboratory work consists of a series of experiments designed to illustrate the basic principles of endocrinology.

[Bio Sci 452* (Animal Science 428) Comparative Physiology of Reproduction of Vertebrates] Spring term. Credit two hours.

* Application has been made for listing as a biological sciences course.

Prerequisite: 427 or consent of instructor. Not offered in spring, 1977. Lecture, W F 1:25. A. van Tienhoven.

Sex and its manifestations. Neuroendocrinology, endocrinology of reproduction, sexual behavior, gametogenesis, fertilization, embryonic development, oviparity, viviparity, environment and reproduction, nutrition and reproduction.]

[Bio Sci 454* (Animal Science 429) Reproductive Physiology of Vertebrates Laboratory]

Spring term. Credit two hours. Prerequisite: 428 or coregistration in 428, or permission of instructor. Not offered in spring, 1977. Hours to be arranged; organization meeting F 2:30. A. van Tienhoven.

The laboratory provides students with an opportunity to design and execute independently experiments with limited objectives.]

VM 550 Applied Radiation Biology and

Veterinary Nuclear Medicine Third year, fall term. Credit one hour. M 11:15. A. P. Casarett, F. A. Kallfelz.

Lectures on the nature of radiation, effects on cells and tissues, and diagnostic and therapeutic applications in veterinary medicine.

VM 600 (Biological Sciences 419, 619*)

Special Projects in Anatomy Fall or spring term. Variable credit. Prerequisite: written permission of instructor. Hours to be arranged. Staff.

VM 650 Special Projects in Physical Biology

Fall or spring term. By permission of instructor only. Hours to be arranged.

VM 651 Veterinary Statistics Spring term

1977 and alternate years. Credit two hours. For all veterinary students who want to acquire a basic knowledge of statistics in the process of learning more about the supply, demand, income, and distribution of veterinary practitioners. W 8, F 2:05-4:25. J. C. Thompson, Jr. A basic course in the use of various statistical techniques to examine veterinary data developed by the United States Census Bureau and other governmental, institutional, and commercial agencies. The data will be used to demonstrate statistical techniques ranging from simple aggregation procedures and measures of dispersion to the use of various statistical tests and their application. Emphasis will focus on the distribution of veterinarians by geographical area and the types of practice (large and small animals, research, public health, teaching, etc.), income per establishment, and demand-supply relationships. Statistical analysis of the data will provide information useful for estimating veterinary trends and opportunities.

VM 652 Applied Electrophysiology Spring

term. For second- and third-year students. Credit two hours. Lecture W 11:15. Demonstra-

tion laboratory F 2:05-4:25. E. L. Gasteiger. Lecture and demonstration laboratory emphasizing electroencephalographic and electromyographic techniques for study of the nervous and muscular systems in normal and diseased states.

[VM 653 Clinical and Research Techniques in Veterinary Nuclear Medicine]

Fall term. Credit two hours. Intended primarily as an elective course for veterinary students. Prerequisites: Physical Biology 550 or equivalent, Pathology 636 or equivalent, and/or permission of the instructor. Not offered 1976-77. One lecture and one laboratory; time to be arranged. F. A. Kallfelz, F. W. Lengemann.

Lectures and laboratory exercises concerning the theoretical and technical aspects of radioisotope procedures of particular relevance to clinical veterinary medicine and veterinary research. Topics include nuclear detection instrumentation, intestinal absorption, blood volume, milk volume, autoradiography, whole body counting, bone scanning, radioimmunoassay, and renal and thyroid function tests. Clinical cases will be used as available.]

[VM 654 Special Topics in Mineralized

Tissues] Fall term. Credit two hours. Prerequisites: biochemistry or physiological chemistry and animal physiology. Not offered 1976-77. Two lectures per week. Elective course. R. H. Wasserman, R. A. Corradino, L. P. Krook. Introduction to the histology, anatomy, and pathology of bones and teeth, kinetics of bone and bone minerals, biochemistry of calcification, factors affecting calcium and bone metabolism (parathyroid hormone, calcitonin, vitamin D, trace elements, etc.) bone-seeking radionuclides, and calcium homeostatic mechanisms.]

[VM 700 (Biological Sciences 616*) Vertebrate Morphology]

Spring term. Credit three hours. Designed for graduate students in animal science and biological science. Prerequisite: graduate standing or Bio Sci 274 (273). Not offered 1976-77. Laboratory T Th 9:05-12:05. H. E. Evans.

A dissection of the dog serves as the basis for a functional consideration of the major component parts of mammalian organ systems. This is followed by a dissection of the cow. Other species of interest to members of the class may also be dissected.]

[VM 750 Radioisotopes in Biological

Research] Spring term. Credit four hours. Prerequisites: courses in animal or plant physiology and quantitative chemistry and/or permission of the instructor. Not offered 1976-77. Lectures T Th 11:05. Laboratory T or W 1:30-5. F. W. Lengemann and staff.

* Application has been made for listing as a biological sciences course.

Lectures and laboratories will deal with the radioisotope as a tool in biological research. Among the topics considered will be the utilization and detection of beta-emitting isotopes, gamma spectrometry, Cerenkov counting, neutron activation, autoradiography, whole body counting and bone scanning. Particular emphasis is placed on liquid scintillation counting, double label experiments, and on ^{14}C and ^3H as metabolic tracers. Experiments are designed to present basic principles while utilizing plants and/or animals as the subject material.]

[VM 751 Biological Effects of Radiation Fall term. Credit three hours. Not offered 1976-77. Lecture T Th 10:10. Laboratory Th 1:30-4:25. A. P. Casarett.

Lectures and laboratories on radiation physics, radiation chemistry, radiation effects at the cellular level, radiation effects in multicellular organisms, genetic effects of radiation, and environmental considerations. Not offered in 1976.]

VM 752 (Biological Sciences 618*) Biological Membranes and Nutrient Transfer Spring term. Offered in alternate years. Credit two hours. Prerequisites: animal or plant physiology, quantitative and organic chemistry, physics, and consent of the instructor. Cellular physiology and elementary physical chemistry recommended. R. H. Wasserman.

An introduction to elementary biophysical properties of biological membranes, theoretical aspects of permeability and transport, and mechanism of transfer of inorganic and organic substances across intestine, placenta, kidney, erythrocytes, bacteria, and other biological systems.

VM 753 (Biological Sciences 697, 699*) Functional Organization of the Mammalian Nervous System Fall term. Credit six hours.

Offered in alternate years. Prerequisite: two years of biological science. Courses in biochemistry, physics, and neural anatomy recommended. Lectures M W F 10:10. Laboratory W 1:25. E. L. Gasteiger. Cellular, sensory, central integrative, and motor aspects of the nervous system will be considered with an emphasis on the electrophysiological approach. Laboratory studies will include electrical activity of cells, reflexes, decerebrate rigidity, acoustic microphonic response, subcortical stimulation, and evoked and spontaneous cortical activity.

VM 755 Physical Biology Graduate Seminar Fall and spring terms. Credit one hour. R. H. Wasserman and staff.

[VM 757 Experimental Physiology for Graduate Students Fall term. Credit three hours. Prerequisites: Anatomy 500 and 501 or 700, and

Biochemistry 525, or Biological Sciences 321-322 and Biochemistry 401. Consent of the instructor is required. Registration limited. Not offered 1976-77.]

[VM 758 (Biological Sciences 658*) Molecular Mechanisms of Hormone Action Spring term 1978 and alternate years. Credit two hours. Prerequisite: permission of instructor. Not offered 1976-77. R. A. Corradino.

An advanced course developed from the current literature on endocrine mechanisms. Student presentation of selected topics required.]

VM 759 (Biological Sciences 615*) The Nutrition and Physiology of Mineral Elements Fall term. Credit two hours. Prerequisites:

basic physiology, intermediate biochemistry, general nutrition. T Th 8, Rm. G-3 Veterinary Research Tower. R. Wasserman, R. Schwartz, D. VanCampen. Lectures on nutritional aspects, and physiological, biochemical and hormonal relationships of the prominent macro- and microelements, with emphasis on recent developments. Included will be information on methodologies of mineral research and the chemistry of ions and complexes, and essentiality, requirements, transport, function, homeostasis, interrelationship, and toxicity of various mineral elements.

Pathology

Professors Robert M. Lewis, chairman; J. Bentinck-Smith, C. I. Boyer, L. Coggins (sabbatic leave August 15, 1976-August 15, 1977), J. R. Georgi (sabbatic leave, January 1, 1977-June 30, 1977), L. Krook, K. McEntee, F. M. Noronha, C. G. Rickard, J. H. Whitlock; Adjunct Professors L. Z. Saunders, K. E. Wolf; Associate Professors E. J. Andrews, J. M. King, R. R. Minor, H. F. Schryver, D. O. Slauson; Assistant Professor G. L. Cockerell; Adjunct Assistant Professor G. V. Lesser; Senior Research Associates R. B. Baggs, C. L. Gries, M. J. Kemen, J. E. Post; Interns H. Abid, B. Cooper, P. Frelie, D. Meuten, R. Munson; Graduate Assistants A. Al Darraji, A. Antillon, R. Elston, W. Haschek, B. Summers, S. Wade, Y. Yuan; Bristol Resident C. Wimberly

The department is well equipped with modern facilities to provide opportunity for advanced work in necropsy and surgical pathology, immunopathology, parasitology, nutritional pathology, laboratory animal pathology, laboratory diagnostic methods, oncology, and electron microscopy. The department maintains a necropsy service, tissue culture and virology laboratories, and two electron microscope laboratories. These facilities provide an

* Application has been made for listing as a biological sciences course.

abundance of pathological material for teaching and research purposes. Clinical cases that have been adequately examined by clinical methods are available for necropsy study.

The following courses are given particularly for veterinary students. Courses in the 500 series are required. When there is room for them, properly prepared students of other colleges will be admitted, but permission to register must be obtained.

330 Introductory Parasitology and Symbiology

Spring term. Credit three hours. Prerequisite: one year of biology. Lecture T Th 11:15. Laboratory T 2-3:20 and one hour by appointment. J. H. Whitlock, J. R. Georgi.

A study of unrelated species living together in intimate physiological association. Parasitoses that result in disease in the host are presented as important and special cases of the symbiotic spectrum. Emphasis is placed on an integrative study of the causation of disease in human beings and in cultivated and natural populations of plants and animals. The biological functions of disease and the impact of human activities on the disease structure of populations is examined. Laboratory exercises will involve a broad range of symbiotes and pathogens from viruses to nemas and arthropods.

440 Parasitic Helminthology Spring term. Credit three hours. Prerequisites: one year of biology and VM 330 or equivalent. Limited to ten students. Two laboratories (time to be announced) and one hour by appointment. J. R. Georgi, J. H. Whitlock.

A study of the systematics and bionomics of parasitic platyhelminthes and nemathelminthes with emphasis on the experimental methodology of modern helminthology. Laboratory exercises include preparation of specimens for microscopic examination, identification of specimens, artificial culture and manipulation of life cycles, and investigation of host-parasite interactions. A term report based on experimental findings and a review of the relevant literature is required.

535 General Pathology Second year, fall term. Credit four hours. Prerequisites: Anatomy 502 and 503 or equivalent histology courses. In addition, it is desirable that the student have at least one year's work in anatomy and physiology. In special cases of students who are majoring in biology and expect to take no further work in pathology, these prerequisites may be waived in part; when this is done, the course will not be accepted as a prerequisite for other courses. Lecture T F 9:05. Laboratory T F 10:10-12:35. Dr. C. G. Rickard. A study of disease processes, including congenital anomalies, circulatory diseases, degenerations, necrosis, inflammation, and

neoplastic diseases (tumors). The gross, light, and electron microscopic features are discussed in relation to the effects on the host animal.

536 Special Pathology Second year, spring term. Credit five hours. Prerequisite: Pathology 535. Lecture T Th 9:05. Laboratory T Th 10:10-12:35. R. M. Lewis and staff.

A systematic study of the diseases in each organ system, with emphasis on differential diagnostic features. Veterinary pathologists who are specialists in several aspects treated in the course participate in teaching the areas of their specialization.

537 Veterinary Parasitology Second year, fall term. Credit four hours. Prerequisite: zoology or biology. Lecture M Th 9:05. Laboratory M Th 10:10. J. R. Georgi.

A systematic study of the helminth and arthropod parasites of domestic animals with particular emphasis on diagnosis, treatment, and control of parasitisms of veterinary and public health importance.

539 Introduction to Laboratory Animal Medicine Third year, fall term. Credit one hour. Prerequisites: Pathology 535 and 536. Lecture M 10:10. E. J. Andrews and staff.

An introduction to the biology and diseases of common laboratory animal species including mice, rats, hamsters, guinea pigs, rabbits, and nonhuman primates. Exotic species including amphibia, reptiles, and exotic cats are also discussed. Practical means of diagnosis and treatment are emphasized. The course also provides an overview of the many aspects of laboratory animal medicine as practiced in academics, industry and research.

571 Clinical Pathology J. Bentinck-Smith, J. B. Tasker. See Clinical Course 571, p. 41.

635 Special Problems in Pathology Fall or spring term. By permission of instructor only. Hours to be arranged. R. M. Lewis.

636 Wildlife Pathology Fall term. Credit two hours. Veterinary elective course for first-, second-, or third-year students. Lecture W 8. Laboratory W 2:05-4:25. J. M. King. A presentation of the nature and causes of diseases of wild rabbits, opossums, squirrels, deer, certain water fowl, and some other species. Emphasis on epizootiology, etiology, pathogenesis, diagnostic lesions, and effects on populations. Laboratory experience in specimen collection and necropsy techniques. Guest lectures by members of the Department of Natural Resources on ecology and population dynamics.

637 Postmortem Pathology Fall term. Credit one hour. Veterinary elective course for first-,

second- or third-year students. Lecture F 2. J. M. King.

A presentation of gross and microscopic lesions of diagnostic significance, employing color projection slides as illustrations. Emphasis on pathological and differential diagnosis of a wide spectrum of viral, metabolic, bacterial, parasitic, and other diseases.

638 Microscopy Fall or spring term. Credit one hour. Veterinary elective for any class. Lecture W 8. R. Smith, J. Bentinck-Smith. An illustrated presentation of practical microscopy including light, darkfield, phase contrast, and photomicroscopy.

736 Pathology of Nutritional Diseases

Spring term. Credit three hours. For graduate students of nutrition, and as elective course for veterinary students at sophomore level or above. Prerequisite: Pathology 535. Lecture W 8. Laboratory W 2:05-4:25. L. P. Krook.

737 Advanced Work in Animal Parasitology

Fall or spring term. Credit one to three hours by arrangement. For advanced undergraduate and graduate students. Prerequisite: Pathology 330 or 537. J. H. Whitlock, J. R. Georgi. Special problems in parasitology and symbiology.

739 Advanced Work in Pathology

Fall or spring term. Credit one to three hours by arrangement. Properly prepared students may undertake special problems or receive special assignments. R. M. Lewis and staff.

740 Reproductive Pathology

Spring term. Credit two hours. Elective. Prerequisites: 535 and 536. Lecture W 8; laboratory W 9-11:30. K. McEntee.

741 Care and Management of Laboratory Animals

Fall term. Credit two hours. Prerequisite: permission of instructor. Hours to be arranged. E. J. Andrews, R. B. Baggs, C. I. Boyer, Jr. Each species of laboratory animal common to biomedical research is discussed with regard to anatomical and physiological characteristics, breeding, nutrition, and husbandry. Specialized husbandry methods including gnotobiotic and specific-pathogen-free facilities are presented as well as the characteristics and management of exotic laboratory animal species.

742 Ultrastructural Pathology

Fall term. Credit two hours. Primarily for graduate students in veterinary medicine. Prerequisites: biology courses at the advanced undergraduate or graduate level are required, and Pathology 535 and 536 are strongly recommended. Two lectures per week, supplemented by demonstrations. R. R. Minor. Study is directed toward development of

capability in interpretation of electron micrographs of biological structures in health and disease. Techniques of electron microscopy of biological material are briefly reviewed. The major part of the course is directed toward alterations of specific organelles and subcellular systems in pathologic processes, such as inflammation and neoplasia, and the ultrastructural pathology of selected organ systems, e.g., kidney, blood vasculature, and liver. Correlation of ultrastructural changes with gross and histopathology of animal disease is emphasized.

743 Gastroenteric Pathology

Spring term. Credit one hour. Th 3. L. P. Krook. Demonstration and discussion of necropsies.

744 Diseases of Laboratory Rodents and Rabbits

Fall term. Credit three hours. Prerequisite: permission of instructor. Hours to be arranged. E. J. Andrews, C. I. Boyer, Jr. Detailed discussions of infectious and non-infectious (metabolic-degenerative) diseases of mice, rats, hamsters, guinea pigs, and rabbits. Diagnostic methods and preventive medicine are stressed.

745 Diseases of Nonhuman Primates

Spring term. Credit three hours. Prerequisite: permission of instructor. Hours to be arranged. E. J. Andrews and R. B. Baggs. Detailed discussions of infectious and non-infectious (metabolic-degenerative) diseases of nonhuman primates commonly used in biomedical research. Diagnostic methods, preventive medicine, and zoonotic aspects of various diseases are emphasized.

746 Comparative Pathology

Spring term. Credit three hours. Prerequisite: permission of instructor. Hours to be arranged. E. J. Andrews, R. M. Lewis, G. C. Poppensiek, and staff. A presentation of spontaneous animal diseases which are considered analogs of the same diseases in man. Experimentally induced conditions and the relevancy of each model are discussed.

747 Laboratory Animal Genetics

Fall term. Credit one hour. Prerequisite: permission of instructor. Hours to be arranged. E. J. Andrews and staff. Discussions of specialized areas of genetics and their application to laboratory animals and biomedical research. Topics include introductions to cytogenetics, immunogenetics, pharmacogenetics, and behavioral genetics. Applications of genetic principles to the establishment and maintenance of inbred stocks of laboratory animals.

748 Laboratory Animal Seminar Fall or spring term. No credit. Required of graduate

students in Laboratory Animal Medicine. Special topics in Laboratory Animal Medicine and related disciplines.

749 Laboratory Animal Clinical Rotation

Fall or spring term. Credit four hours. Limited to graduate students in Laboratory Animal Medicine. Hours to be arranged.

To gain clinical experience in the management and care of various laboratory animal species as well as the professional operation of a large animal facility, students are rotated through various areas including the experimental surgery, laboratory animal diagnostic laboratory, and the animal facility.

788 Seminar in Surgical Pathology

Fall or spring term. Credit one hour. Veterinary elective for third- and fourth-year veterinary students, graduate students, interns, and residents. Lecture/seminar Th 8. R. M. Lewis.

The major objective of this course is to introduce the student to the gross and microscopic features of surgical pathology. Selected material from the Surgical Service is prepared in advance for independent review by the students. This material is presented in a slide seminar format by the students under the review of the faculty. Emphasis is placed on pathogenesis, etiology, and pathologic descriptions of the lesions. In addition, appropriate guest lectures are presented to cover specific areas of interest and special topics not encountered in the departmental service programs.

789 Seminar in Necropsy Pathology

Fall or spring term. Credit one hour. Veterinary elective for third- and fourth-year veterinary students, graduate students, interns, and residents. Lecture/seminar T 8. R. M. Lewis.

The major objective of this course is to introduce the student to the gross and microscopic features of necropsy pathology. Selected material from the Necropsy Service is prepared in advance for independent review by the students. This material is presented in a slide seminar format by the students under the review of the faculty. Emphasis is placed on pathogenesis, etiology, and pathologic description of the lesions. In addition, appropriate guest lectures are presented to cover specific areas of interest and special topics not encountered in the departmental service programs.

790 Special Topics in Pathology

Fall or spring term. Credit one hour. Veterinary elective for third- and fourth-year veterinary students, graduate students, interns, and residents. Lecture/seminar F 9. R. M. Lewis.

The major objective of this course is to introduce the student to the gross and microscopic features of special topics in pathology. Selected material from the Surgical and Necropsy Services is prepared in advance for inde-

pendent review by the students. This material is presented in a slide seminar format by the students under the review of the faculty. Emphasis is placed on pathogenesis, etiology, and pathologic description of the lesions. In addition, appropriate guest lectures are presented to cover specific areas of interest and special topics not encountered in the departmental service programs.

Microbiology

Professors J. H. Gillespie, chairman; B. W. Calnek, L. E. Carmichael, L. Coggins (sabbatic leave), J. Fabricant, R. F. Kahrs, K. M. Lee, D. D. McGregor, N. L. Norcross, G. C. Poppensiek, B. E. Sheffy, A. J. Winter; Professor Emeritus D. W. Bruner; Adjunct Professors D. Axelrod, J. J. Callis, C. J. Sindermann; Associate Professors M. J. G. Appel, S. G. Campbell, L. Leibovitz, G. Lust, F. W. Scott; Assistant Professors R. D. Schultz, J. F. Timoney; Senior Research Associate C. G. Fabricant; Research Associates H. Greisen, D. F. Holmes; Graduate Assistants E. Bloch, R. Flores-Castro, B. Hartland, Y. Hoshino, G. Letchworth, D. Miller, D. Mills, J. Smith, R. Swanson

Courses 515, 516, 517, 518, 519, and 520 are required in the core curriculum of the College of Veterinary Medicine and are given particularly for veterinary students. Students of other colleges must have permission to register in any of these courses. The other courses are not a part of the regular veterinary curriculum. They are available to graduate, veterinary, and undergraduate students who have obtained the proper prerequisite training. Permission to register must be obtained.

315 Basic Immunology Lectures

Fall term. Credit two hours. Prerequisite: a course in basic microbiology or special permission of the instructor. T Th 9:05. 204 Stocking Hall. A. J. Winter.

Course material covers at an elementary level the spectrum of facts and concepts in current immunology with special emphasis on the biologic function of the immune response in protective immunity.

316 Pathogenic Microbiology

Spring term of odd-numbered years. Credit four hours. Intended primarily for microbiology majors, undergraduate and graduate. Course limited to 48 students. Prerequisites: 290 (290A) General Microbiology Lectures; 291 (290B) General Microbiology Laboratory; and 315 Basic Immunology Lectures. Lectures T Th 1:05-2:00. Laboratory 2:05-4:25. J. H. Gillespie, D. Bemis and K. M. Lee.

This is a two-part course in medical microbiology covering pathogenic bacteriology and animal virology with particular emphasis on *in vitro* and *in vivo* techniques for isolation and

identification of pathogenic microorganisms. Antisera for certain pathogens are produced in laboratory animals and used in serological tests. An important aspect of the course is the pathological and immunological response of various hosts to pathogens of bacterial and viral origin.

515 Veterinary Immunology Second year, fall term. Credit two hours. Lecture T 1:05, Laboratory M 2:05-4:25. S. G. Campbell. The objective of the lectures is to give the veterinary student a general outline of the mammalian and avian immune response. Emphasis will be on basic principles using examples from domestic animals, thereby stressing the applications of immunology to veterinary medicine. The laboratories illustrate concepts presented in the lectures and give the student firsthand experience of the production of the immune responses in animals. They also allow the student to carry out the serological tests commonly used in veterinary medicine or to see the more complex tests presented as demonstrations.

516 Veterinary Bacteriology Second year, fall term. Credit two hours. Lecture M 1:05, Laboratory 2:05-4:25. J. F. Timoney. Lectures will be organized on a body system and lesion basis. The interaction of pathogenic bacteria with normal flora and normal and acquired host defenses will be stressed together with such aspects as survival outside the host, transmission, vaccines, and antibiotic sensitivity and resistance. The laboratory will cover cultural, isolation, and identification procedures of the bacteria discussed in lecture as far as possible using real or simulated clinical specimens as sources of the organisms under study.

517 Veterinary Virology Second year, spring term. Credit two hours. Lecture M 1:05, Laboratory 2:05-4:25. F. W. Scott. This course will cover viruses that produce important diseases in animals. Topics of interest to the clinician to better understand and control these diseases will be discussed, including the basic properties of the virus, how the virus produces disease, and how the host responds to the virus infection. In the laboratory, emphasis will be on virological and serological procedures important for the diagnosis of various virus diseases.

518 Veterinary Mycology and Protozoology Second year, fall term. Credit one hour. Th 2:05-4:25. J. F. Timoney, L. Leibovitz. The fungi and protozoa pathogenic for domestic animals together with certain saprophytic fungi commonly occurring on the skin of animals, and the protozoa of rumen contents will be studied. Organisms not indigenous to the United States will be covered only at a rather

superficial level. Laboratories will cover the cultural and morphological characteristics of these organisms and their demonstration in clinical specimens.

519 Epidemiology and Infectious Diseases

Second year, spring term. Credit four hours. Lecture W Th F 1:05-1:55. Discussion M 10:10-12:35. R. F. Kahrs, D. F. Holmes. A survey of the application of epidemiologic methodology to the investigation of animal and human disease outbreaks; investigation of the cause of new or unknown diseases and the development and evaluation of eradication and control programs. The diagnosis, clinical signs, prevention, and control of animal diseases exotic to the United States and of infectious diseases transmissible between animals and man will be described from an etiologic and epidemiologic viewpoint, with sections on food, waterborne, and occupational diseases.

520 Applied Microbiology and Preventive Medicine

Fourth year, spring term. Credit three hours. M T Th 8. R. F. Kahrs, D. F. Holmes. A continuation of 519. Stress will be on the application of fundamental concepts of microbiology and immunology to animal disease diagnosis, surveillance, and control including development, evaluation, and use of biologics. Emphasis will be on the influence exerted by veterinarians in preventing diseases transmissible by agricultural products. The relationship of the practicing veterinarian to disease control agencies and the responsibility of individual veterinarians in maintenance of human health and environmental quality will be stressed.

605 Special Projects in Microbiology Fall or spring term. Credit and hours to be arranged. S-U grade. Prerequisite: permission of the instructor. Microbiology staff.

The course is designed for undergraduates and as a veterinary elective. Preferably, students should have some background in pathogenic microbiology and immunology.

606 Small Animal Infectious Diseases Spring term. Credit two hours. Prerequisite: three semesters of the Veterinary College curriculum or permission of the instructor. W 11:15, F 2:05. F. W. Scott.

An elective course designed to give the future small animal practitioner a greater understanding of the infectious diseases of the dog and cat. Emphasis will be on etiology, pathogenesis, and prevention, including maternal immunity, vaccination, and hospital design as it relates to spread of disease. The course will be coordinated with small animal medicine and microbiology core courses in order to prevent excess repetition. The diseases covered will include the diseases of dogs and cats that

are caused by viruses, bacteria, fungi, and protozoa.

607 Virus Diseases of Cattle Fall term. Credit one hour. Elective course for all veterinary students; nonveterinary students need permission of instructor. T 8 or W 8. R. F. Kahrs. A series of illustrated lectures and discussions on the cause, diagnosis, treatment, prevention, and control of viral diseases of cattle. Emphasis will be placed on recognition of virus diseases and practical procedures for diagnosis. Careful consideration will be given to the usefulness and hazards of control by vaccination. Case studies of product complaints submitted to vaccine producers will be included.

608 Advanced Epidemiology Fall term. Credit two hours. Prerequisite: elective course primarily for third- and fourth-year veterinary students. Prerequisite for all other students: Microbiology 519 and permission of instructor. T 1:05. Discussion to be arranged. R. F. Kahrs. Lectures and discussions on application of the epidemiologic method to the investigation of specific outbreaks, the development and evaluation of disease control programs, and investigation into the cause of unknown diseases. Topics studied in detail will depend on the interests of participants.

705 Advanced Immunology Lectures Spring term of even-numbered years. Credit three hours. Prerequisite: an elementary immunology course or permission of the instructors. Lectures: M W F 9. N. L. Norcross, S. G. Campbell, R. D. Schultz, V. L. Utermohlen, A. J. Winter, and invited speakers. The lectures are designed to cover the field of immunology at an advanced level. Lecture topics include the basic components of immunity, antigens, immunoglobulins, etc.; the dynamics of the immune response, the development and function of the B and T systems, immunosuppression; amplification and effector mechanisms of the immune response, complement, hypersensitivity, and protective immunity.

706 Advanced Immunology Laboratory Spring term of even-numbered years. Credit three hours. Prerequisite: permission of the instructors. T Th 1:30. S. G. Campbell, N. L. Norcross, R. D. Schultz, A. J. Winter. In two parts: (1) a comprehensive exercise in antibody production and analysis; (2) a series of individual exercises in modern immunological techniques which includes gel filtration, ion exchange chromatography, fluorescent antibody, lymphocyte blastogenesis, Jerne Plaque, immunodiffusion, acrylamide gel electrophoresis, hemagglutination, immunoelectrophoresis, radioimmunoassay, complement

fixation, quantitative precipitation, migration inhibition, and lymphocyte rosetting.

707 Advanced Work in Bacteriology, Virology, or Immunology Credit and hours to be arranged. Prerequisite: permission of the instructor. S-U grade optional. Microbiology staff. The course is designed primarily for graduate students with a good background in pathogenic microbiology and immunology. It may be elected by veterinary students who are properly prepared.

708 Advanced Animal Virology Lectures Spring term of odd-numbered years. Two or three credit hours. Three hours for two lectures and one seminar-discussion section. Two credit hours for lecture portion. Microbiology 316, 517 or equivalent considered highly desirable. General knowledge of biochemistry and animal pathology helpful, but not required. Seminar-discussion section limited to twenty students, with priority given graduate students. S-U grades unless otherwise requested. M W 11:15-12:05. Seminar-discussion period of two and one-half hours to be arranged. L. E. Carmichael and staff. Principles of animal virology are stressed. Lecture topics include structure and classification of animal viruses, multiplication of RNA and DNA viruses; pathogenesis and host-response to viral infections; biology of selected oncogenic viruses; chronic effects of viral persistence; evolutionary aspects; and systematic treatment of selected viral groups. Course outline available from the secretary for the course.

709 Advanced Animal Virology Laboratory Spring term of odd-numbered years. Credit two hours. Prerequisite: permission of instructor. Time to be arranged. M. J. G. Appel, L. E. Carmichael, K. M. Lee, and staff. Discussions and laboratory exercises covering cell culture procedures, concentration and purification of virions, analyses of viral proteins and nucleic acids, virus assays and serology, and cell transformation.

710 Microbiology and Immunology Seminar Fall and spring terms. No credit. Required of all graduate students in microbiology. Time to be arranged.

711 Laboratory Methods of Diagnosis Fall and spring terms. Credit one to three hours by arrangement. Prerequisite: permission of instructor. Instructions and practice in the application of bacteriological and serological methods for the diagnosis of disease.

712 Immunopathology and Clinical Immunology Fall term. Course designed for undergraduate professional students, advanced undergraduate students and graduate students.

Credit two hours (one-hour lecture, two-hour laboratory). Prerequisites: Pathology 535 and introductory immunology or permission of the instructors. F 1-4:25. R. D. Schultz.

Presentation of current immunologic techniques and immunological concepts applicable to the diagnosis of specific diseases of domestic animals. Special emphasis will be given to the immunologically mediated disorders. Taught on a systems basis.

Avian and Aquatic Animal Medicine

Professors B. W. Calnek, acting chairman; J. Fabricant, S. B. Hitchner, M. C. Peckham; Associate Professor L. Leibovitz; Research Associate B. S. Cowen; Research Specialist J. I. Price; Directors of Laboratory W. F. Dean, G. B. Mitchell; Field Veterinarian T. S. Sandhu; Virologist S. A. Haider

The department maintains a poultry disease diagnostic clinic at the College and two regional diagnostic laboratories in different parts of the state. A diagnostic laboratory for aquatic animal diseases is also located at the College. These laboratories supply fresh material for teaching and research purposes. Adequate facilities existing at the College and the P. Philip Levine Research Laboratories for Avian Diseases provide opportunity for advanced study for properly qualified students. A disease-free breeding flock and a poultry disease isolation building are available for studies of most infectious and other diseases of poultry.

255 Poultry Hygiene and Disease Fall term, alternate (even) years. Credit two hours. Prerequisites: Biological Sciences 290 or 290A, and permission of the instructor. Minimum enrollment, 5 students; maximum enrollment, 15 students. Lecture and laboratory Th 2:05-4:25. M. C. Peckham.

The nature of the infectious and parasitic diseases of poultry and the principles of hygiene applicable to poultry farming for the prevention and control of diseases.

555 Avian Diseases Second year, spring term. Credit two hours. Required of veterinary students. Lecture and laboratory F 9:05-12:35. S. B. Hitchner.

Diseases of domestic poultry and other birds are studied with special emphasis on differential diagnosis and control. Fresh and preserved specimens from the poultry diagnostic clinic are presented during the laboratory period.

671 Diseases of Aquatic Animals Spring term. Credit two hours. Elective course for all veterinary students and interested students from other colleges. General knowledge of

microbiology and parasitology would be helpful, but not required. Lecture and laboratory hours to be arranged. L. Leibovitz.

The basic study of this course relates to the etiology, pathology, diagnosis, prevention, and control of diseases of aquatic animals, with special emphasis given to the diseases of fin fish.

770 Advanced Work in Avian Diseases Fall or spring term. By special arrangement with the instructor. Hours to be arranged.

771 Graduate Seminar in Diseases of Aquatic Animals Fall or spring term. Credit one hour. Limited to graduate students of aquatic animal medicine. Seminar Th 3:30-4:30. L. Leibovitz.

The objectives of the seminar are to coordinate the resources of the DAAAM and increase communication between student and faculty to optimize graduate study of aquatic animal medicine. Information related to current literature and techniques employed in aquatic animal medicine will be exchanged. Progress reports, problems, and evaluation of each graduate student's project will be discussed. Diagnostic cases of the fish diagnostic laboratory will be presented and reviewed.

772 Advanced Work in Aquatic Animal Diseases Fall or spring term. By special arrangement with the instructor. Hours to be arranged.

Small Animal Medicine and Surgery

Professor R. W. Kirk, chairman; Associate Professors G. R. Bolton (on leave), R. Dueland, R. E. Hoffer; Assistant Professors D. M. MacCoy, R. C. Riis, D. W. Scott, E. J. Trotter; Visiting Assistant Professors G. L. Spaulding, J. I. Taylor, D. J. Watson; Visiting Instructor J. Smith; Residents D. N. Aron, J. L. Berzon, S. A. Center, J. M. MacDonald; Interns S. M. Barclay, S. P. DiBartola, W. H. Miller, Jr., R. L. Sifferman Instruction consists of lectures, recitations, and laboratory work. The Small Animal Clinic furnishes abundant material for instruction in applied surgical and medical therapeutics of animals. The clinic is run like a small animal practice. Students are assigned to the cases, assist in operations, and, under close supervision, have charge of the patients.

583 Small Animal Medicine and Surgery

Third year, fall term. Credit three hours. Prerequisites: Pathology 536, Clinical Pathology 571, Pharmacology 528. T Th F 11:15. R. W. Kirk, S. A. Center, R. Dueland, J. M. MacDonald, D. W. Scott, G. L. Spaulding, E. J. Trotter. Comprehensive course in medical and surgical

diseases of small animals arranged and presented by systems.

584 Small Animal Medicine and Surgery

Third year, spring term. Credit eight hours. Hours to be arranged. R. W. Kirk, S. A. Center, R. Dueland, R. E. Hoffer, D. M. MacCoy, J. M. MacDonald, R. C. Riis, D. W. Scott, J. Smith, G. L. Spaulding, J. I. Taylor, E. J. Trotter, D. J. Watson.
Continuation of Course 583.

586 Small Animal Surgical Exercises

Third year, spring term. Credit one hour. M T W or Th 2:05-4:25. R. E. Hoffer, R. Dueland, E. J. Trotter, D. M. MacCoy, R. C. Riis, J. Smith, J. I. Taylor, D. N. Aron, J. L. Berzon.

587 General Surgery

Third year, fall term. Credit three hours. Prerequisite: Pathology 536. M T Th 8. R. E. Hoffer, R. Dueland, E. J. Trotter, R. C. Riis, J. I. Taylor, and staff.

688 Special Problems in Small Animal Medicine

Fall or spring term. By permission of instructor only. Hours to be arranged.

689 Special Problems in Small Animal Surgery

Fall or spring term. By permission of instructor only. Hours to be arranged.

788 Advanced Work

Fall and spring terms. Five or more hours a week throughout the term. Hours to be arranged. By permission of instructor only. R. W. Kirk, R. Dueland, R. E. Hoffer, D. W. Scott, E. J. Trotter, R. C. Riis. Research in medicine and surgery of small animals.

Large Animal Medicine, Obstetrics, and Surgery

Professors F. H. Fox, chairman; J. Bentinck-Smith, J. M. Kingsbury, K. McEntee, E. C. Melby, Jr., N. L. Norcross, J. B. Tasker, B. C. Tennant, A. J. Winter; Associate Professors R. K. Braun (on leave), C. E. Hall, N. B. Haynes, H. F. Hintz, F. A. Kallfelz, D. H. Lein, J. E. Lowe, D. S. Postle, H. F. Schryver; Assistant Professors R. P. Hackett, A. D. McCauley, M. C. Smith; Senior Clinicians R. B. Hillman, K. K. White; Senior Research Associate H. O. Dunn; Instructor D. E. Evans; Surgical Residents D. R. Keirn, G. D. Myhre, J. A. Stick; Surgical Interns W. P. Barclay, L. A. Butler; Medical Residents R. M. Dyer, W. K. Scarratt; Medical Intern K. L. Collier; Supervising Veterinarian W. Linquist; Farrier M. E. Conklin

Classroom Work in Large Animal Medicine

The course in veterinary large animal medicine principles and practice extends over the third year of undergraduate study. It includes the constitutional, dietetic, and toxic affections

and the noninfectious maladies of the different systems of organs—digestive, respiratory, circulatory, urinary, cutaneous, reproductive, and visual—of the various genera of domestic animals. It also includes a study of the clinical phases of infectious and parasitic diseases, the disturbances of metabolism, and therapeutics of large animals.

Proximity to a large agricultural college and to a well-stocked farming community tends to offer a greater variety of patients than can be had in a large city remote from country flocks and herds. Students take charge of unusual cases in the hospital and many routine cases in the ambulatory clinic. Complete daily records are prepared by the students on all of the most instructive cases. The course also includes instruction in diagnosis. Through the medium of laboratory work students are expected to acquire a methodical system of examination by repeated systematic observations on both normal and diseased animals. The work involves the use of various special diagnostic methods taught in our own and other laboratories of the college, such as examination of the blood, milk, urine, and feces, the application of serodiagnostic methods, and others.

Ambulatory Clinic

An ambulatory or out-clinic is conducted for the purpose of giving instruction to students under conditions identical with those encountered in private practice. Proper conveyances and equipment are provided, and an opportunity is afforded for observing such diseased farm and dairy animals as cannot be entered in the clinics of the College. The student thereby not only has an opportunity to see cases not readily brought to the College clinic but also assists in handling cases in the same manner and under the same environment as is required of the country practitioner. As the vicinity of Ithaca is largely devoted to dairying, valuable clinical material relating to obstetrics and the diseases of dairy cows is available and is used extensively. In addition, the supervising veterinarian and field veterinarians associated with the New York State Mastitis Program are resident in Ithaca, and senior students are required to accompany and assist them on many field trips dealing with all phases of bovine mastitis, including a study of various methods of milking and housing dairy cattle. In the senior year, field trips are made to study and observe management practices on large horse, sheep, dairy cattle, and swine farms, and these are a required part of courses 561, 562, 563, and 564.

Classroom Work in Large Animal Surgery

Course 587 (General Surgery), course 535 (General Pathology), and course 565 (Large

Animal Surgery) together constitute a group designed to impart a general knowledge of the principles of surgery, surgical pathology, therapeutics, and operative technique.

Laboratory Work in Surgery

The laboratory work includes surgical exercises and general surgery. In the course in large animal surgical exercises, the student is required to perform most of the important operations on horses, cattle, swine, and sheep. The animal is placed under general anesthesia, which is maintained until the close of the period, when the subject may be destroyed. Emphasis is placed on asepsis and antisepsis, arrest of hemorrhage, suturing, and dressing, so that while acquiring skill and knowledge of the appearance, resistance, and general character of living tissue, the student also forms proper habits in surgical procedure and survival surgery.

In the general surgery laboratory, most emphasis is placed upon farm animals, but many basic principles may be adapted to all cases of animals. Subjects taught include restraint, various methods of administering medicines, suturing, bandaging, examination of teeth, examination of the feet, and complete examination for soundness.

Clinical Surgery of the Farm Animal

A hospital is maintained with facilities for the hospitalization of approximately sixty-seven patients. There are two operating rooms equipped with operating tables, stocks, diagnostic and therapeutic x-ray equipment, and other equipment. There is also a farriery with a farrier in attendance. Fourth-year students are in the clinics for the entire day, Monday through Friday, and on Saturday and Sunday mornings. Two classes of patients are admitted: special patients and clinic patients. Special patients are examined, diagnosed, and treated by the senior staff members. The students assist and observe. Clinic patients are examined, diagnosed, and treated by the residents and students. In the hospital, the student has an opportunity to see, examine, and treat many unusual cases that are referred to the College by practitioners. Furthermore, the student has an opportunity to study the progress of cases, which is often impossible when treating patients on the farm. The cooperation between the clinical staff and the laboratories provides the student an opportunity to study the patient critically and to correlate clinical findings with both physiological and pathological findings. Opportunity is given to the student to participate in the examination and treatment of patients whenever possible.

Courses

475 Health and Diseases of Animals Spring term. Credit three hours. Not open to first-year students or to those who have had no course in animal husbandry. Lectures M W F 11:15. C. E. Hall.

Diseases of domestic animals, chiefly those related to food and fibre production, are discussed generally and with specific examples or models. Causes, prevention and control, and importance to human health are emphasized.

560 Clinical Methods Second year, fall term. Credit two hours. Lecture W 1:05. Laboratory W or F 2:05-4:25. Clinical staff.

Staff members from both the Large Animal Clinic and the Small Animal Clinic present material dealing with restraint methods and clinical techniques used in physical examinations for diagnosis and therapeutics. The laboratories will utilize practical demonstrations and student participation in the examination of the normal animal and selected clinical cases of the diseased animal.

561 Obstetrics and Reproductive Diseases

Second year, spring term. Credit three hours. Lectures T 8, W 10:10. Laboratory W or Th 2:05-4:25. D. Lein.

A presentation of applied physiology and endocrinology of the male and female reproductive tract; congenital, infectious, endocrine, and miscellaneous diseases of the genital organs causing infertility and sterility; and artificial insemination.

562 Obstetrics and Reproductive Diseases

Third year, fall term. Credit three hours. Lectures T Th 10:10. Laboratory W or Th 2:05-4:25. D. Lein.

Pregnancy diagnosis, diseases of the gestation period including teratology and abortion, parturition, dystocia, obstetrical operations, and postpartum diseases are presented.

563 Large Animal Medicine Third year, fall term. Credit four hours. T W Th F 9:05.

F. H. Fox.

564 Large Animal Medicine Third year, spring term. Credit four hours. M T W Th 9:05. F. H. Fox, R. B. Hillman.

Lectures or recitations covering physical diagnosis, therapeutics, and some diseases of large animals. In addition to the instruction provided by the departmental staff, M. C. Smith gives lectures concerning poisonous plants.

565 Large Animal Surgery Third year, spring term. Credit four hours. Lectures M T 10:10, Th 8. Laboratory M T W F 2:05-4:25. Surgical staff.

566 Radiology Third year, spring term. Credit two hours. M 9, F 10:10. V. J. Rendano. Fundamentals of radiographic diagnosis, radiation therapy, and radiation safety.

567 Clinical Nutrition Third year, spring term. Credit two hours. Required of veterinary students. T Th 9:05. F. A. Kallfelz. Lectures and demonstrations reviewing basic principles of nutrition and covering nutritional disease problems of domestic animals, as well as the use of nutritional principles in the prevention and treatment of disease.

675 Special Problems in Large Animal Medicine Fall or spring term. By permission of the instructor only. Hours to be arranged.

676 Special Problems in Large Animal Surgery Fall or spring term. By permission of the instructor only. Hours to be arranged.

677 Special Problems in Large Animal Obstetrics Fall or spring term. By permission of the instructor only. Hours to be arranged.

679 Dairy Herd Health Fall term. Credit one hour. Elective course for third- and fourth-year veterinary students. W 7. D. E. Evans. The objective of this course is to teach veterinary students who are interested in dairy-oriented practice the common causes of cattle disease and necessary measures required to prevent these diseases.

680 Poisonous Plants Fall term. Credit one hour. Elective course for all veterinary students. W 8. R. B. Hillman, M. C. Smith. Lectures and field trips will be utilized to establish identification of toxic plants and to acquaint students with criteria for establishing a diagnosis of plant poisoning and instituting rational therapy.

681 Horse Health Management Spring term. Credit one hour. W 8. R. B. Hillman. Offered as an elective course to third- and fourth-year veterinary students with special interest in horses. Prevention of horse diseases from foaling through adulthood by management practices, nutrition, and vaccination procedures will be emphasized.

682 Large Animal Internal Medicine Fall term. Credit two hours. Elective course for third- and fourth-year veterinary students. B. Tennant. W 8. Selected topics of large animal internal medicine using lectures and case presentation. Emphasis will be given to the major diseases of the cardiovascular, respiratory, and gastrointestinal systems.

683 Veterinary Practice Management Spring term. Credit one hour. Elective course for

fourth-year veterinary students. N. B. Haynes. The objective is to familiarize students with the nonmedical aspects of veterinary practice. Topics to be covered include client relations, personnel management, credit management, record keeping and accounting. The veterinarian's legal responsibilities under statutes relating to disease control and drug abuse will be discussed as well as an employer's legal obligation to state and federal agencies concerned with taxes.

684 Horse Lameness Spring term. Credit one hour. Offered to third-year veterinary students. W 11:15. J. E. Lowe. This course is designed to acquaint third-year students with the principles of lameness diagnosis. Physical examination for soundness of the musculoskeletal system is stressed through lecture demonstration and assigned case material from the Large Animal Hospital and Equine Research Park. Motion pictures and television tapes are used each week to illustrate principles of diagnosis and specific types of lameness.

686 Goats: Management and Diseases Spring term. Credit one hour. Elective course for second-, third-, and fourth-year veterinary students. W 8. M. C. Smith. Common nutritional, reproductive, medical, and surgical problems of goats will be emphasized.

778 Gastroenterology Conference Fall and spring terms. Credit one hour. Th 1:05. B. C. Tennant.

779 Veterinary Gastroenterology Spring term. Credit two hours. W 8-9; F 2-3. B. C. Tennant and others. Pathogenesis, diagnosis, and treatment of the major medical diseases of the gastrointestinal tract of domestic animals.

780 Veterinary Research Methods Spring term. Credit two hours, by arrangement. H. O. Dunn. A combined lecture, laboratory, seminar in experimental design, statistical analysis, and statistical inferences. Summarization and publication of research data to be discussed.

Reproductive Pathology K. McEntee. See Pathology 740 p. 33.

Epidemiology and Infectious Diseases R. F. Kahrs. See Microbiology 519 p. 35.

Special Lectures

During the year, lectures on special topics in medicine will be given by eminent practitioners and teachers of veterinary medicine. They will form a part of the instruction in this department.

Opportunities for Research

The activities of the department, aside from the instruction, are devoted to research in connection with diseases of cattle, including mastitis, the phenomena of sterility and abortion in animals of breeding age, diseases of newborn calves, equine nutrition in relation to bone and joint diseases, radiology, clinical pathology, and immunochemistry. Opportunity is afforded for participation in the investigations by graduate students having acceptable preparation.

The Clinical Courses

Professors J. Bentinck-Smith, J. Fabricant, F. H. Fox, S. B. Hitchner, R. W. Kirk, M. C. Peckham, C. G. Rickard, J. B. Tasker, B. C. Tennant; Associate Professors G. R. Bolton (on leave), R. K. Braun (on leave), R. Dueland, R. E. Hoffer, F. A. Kallfelz, J. M. King, D. H. Lein, J. E. Lowe, D. S. Postle; Assistant Professors R. P. Hackett, D. M. McCoy, A. D. McCauley, R. C. Riis, D. W. Scott, M. C. Smith, E. J. Trotter; Visiting Assistant Professors G. L. Spaulding, J. I. Taylor; Senior Clinicians R. B. Hillman, K. K. White; Lecturer G. D. Ryan; Instructors D. E. Evans, J. S. Smith; Residents D. N. Aron, J. L. Berzon, S. A. Center, R. M. Dyer, D. R. Keirn, J. M. MacDonald, G. D. Myhre, W. K. Scarratt, J. A. Stick; Interns S. M. Barclay, W. P. Barclay, L. A. Butler, K. L. Collier, S. P. DiBartola, W. H. Miller, Jr., R. L. Sifferman; Supervising Veterinarian W. Linquist

The practical application of the student's basic knowledge of veterinary medicine to the clinical diagnosis and therapy of disease begins in the third year of a course. During that year the students are required to take Clinical Orientation, which introduces them to clinical work, largely as observers. Their intensive training in clinical medicine and surgery begins in the fourth year, the greater part of which is devoted to actual handling of patients under close supervision of the clinical staff. The technical instruction is divided among four departments as follows.

The Ambulatory Clinic, Consulting Clinic, Radiology, and Clinical Pathology are operated by the Department of Large Animal Medicine, Obstetrics, and Surgery.

The Small Animal Clinic is operated by the Department of Small Animal Medicine and Surgery.

The Poultry Clinic is conducted by the Department of Avian and Aquatic Animal Medicine.

The work in necropsies is conducted by the Department of Pathology.

Information about the respective clinical divisions will be found under the course announcements of the departments concerned. Only

students who have completed the first two years of the veterinary curriculum will be admitted to any one of the clinical courses.

Students must complete all prescribed clinical courses satisfactorily to be eligible for graduation.

568 Veterinary Medical Orientation First year, fall term. Credit two hours. T Th 8. A. de Lahunta, N. B. Haynes.

This course is intended primarily to expose the students to the areas of clinical medicine that relate to the material studied in the gross and developmental anatomy courses. Examples include regional radiographic diagnoses and surgery, cardiac examination, including auscultation, ophthalmic examination including the use of the ophthalmoscope, and the physical examination and restraint of small animals. Lectures on the principles of veterinary medical ethics, veterinary medical organizations, and various practiced topics related to veterinary practice management will also be given.

569 Veterinary Medical Orientation First year, spring term. Credit one hour. M 8.

571 Clinical Pathology Third year, fall term. Credit three hours. Prerequisites or corequisite: Pathology 535 and 536. Students from other colleges may be admitted by special permission without these prerequisites. Lectures M 9:05, F 10:10. Laboratory T 2:05-4:25 or W 10:10-12:35. J. Bentinck-Smith, J. B. Tasker. This course is concerned with the application of the techniques of hematology, urinalysis, cytology, semen examinations, and other laboratory procedures in the diagnosis; the biochemical changes in the blood and other fluids in disease; and the study of pathological alterations in clinical cases.

572 Senior Seminar Fourth year, fall and spring terms. F 8-8:50. S. G. Campbell, chairman. Fourth-year students are required to attend these conferences. First-, second-, and third-year students and all staff members are also invited to attend.

The aims of this course are either to give the student the responsibility and opportunity of selecting and studying a disease entity based on a case or series of cases, or to give the student the responsibility and opportunity of conducting a short-term, clinically-oriented research project under the direction of a faculty member. In either case, an oral report will be presented at a Friday seminar. A written report also will be submitted after the seminar. All participants are encouraged to foster an atmosphere in which discussion, exchange of ideas, and the airing of controversial opinions might flourish.

42 Diagnostic Laboratory

579 General Medicine Second year, spring term. Credit two hours. Clinical staff. The course will cover principles of medicine applicable to all species. Emphasis will be given to the pathogenesis of disease rather than to specific disease entities that will be covered in small and large animal medicine courses.

573 Large Animal Clinic Fourth year, fall term. Credit three hours.

575 Ambulatory Clinic Fourth year, fall term. Credit three hours.

577 Ancillary Clinics Fourth year, fall term. Credit three hours.

589 Small Animal Medical Clinic Fourth year, fall term. Credit three hours.

591 Small Animal Surgical Clinic Fourth year, fall term. Credit three hours.

In the spring term of the fourth year, students may select from the following list of courses. Each course consists of a four-week period of intensive study in that subject and is available at five different periods of time during the semester. Each student must select courses for four of these time periods. A course may also be selected for the fifth time period or it may be used as a free period. Only in special circumstances may a course be repeated.

574 Large Animal Surgical Clinic Credit four hours.

576 Ambulatory Clinic Credit four hours.

578 Diagnostic Clinic Credit four hours.

590 Small Animal Medical Clinic Credit four hours.

592 Small Animal Surgical Clinic Credit four hours.

593 Ophthalmology, Anesthesiology, and Neurology Clinic Credit four hours.

594 Large Animal Medical Clinic Credit four hours.

595 Rotating Clinic Credit sixteen hours.

These clinics operate daily by assignment, including nights and Sundays when necessary. K. K. White, F. H. Fox, J. Bentinck-Smith, R. W. Kirk.

During the fourth and final year, the veterinary student is required to spend time, after 9:00 a.m. daily, studying and ministering to the ailments of patients, and is on call, night and day, during the entire year. For this reason the student is not permitted to carry extra academic

courses, and outside part-time employment is not accepted as a valid excuse for failure to meet full responsibilities in these courses.

Under a plan of rotation, students are required to work in groups in the four clinics so that they may acquire a varied experience. Work in one of the clinics may not be substituted for that in any of the others.

Work in necropsies will be supervised by the Department of Pathology. As a part of their ancillary clinical duties, students will be required to carry out, under the supervision of the clinical pathologist, such laboratory procedures as are indicated. Students in ancillary clinics are assigned to necropsy duty under the supervision of a pathologist, and the results of each necropsy are reported to the clinic group responsible for the case.

Diagnostic Laboratory

Professor R. H. Cypess, director; Associate Professor G. A. Maylin; Assistant Professor J. D. Henion; Field and Services Coordinator S. R. Nusbaum; Senior Research Associate C. L. Gries; Research Associate S. J. Shin; Directors of Laboratories J. G. Ebel, J. O. Eisenstadter, B. F. Hiscock, S. E. Hopkins

The Diagnostic Laboratory occupied a new building in late summer of 1976, and will expand its activities, faculty, and staff substantially during the 1976-77 academic year. In addition to the public service, research, and instructional programs in the Diagnostic Laboratory, the faculty participate collaboratively in the teaching activities in various departments throughout the College.

The Diagnostic Laboratory maintains laboratories of virology, bacteriology, immunology, epidemiology, immunopathology, and toxicology. Last year over 50,000 specimens were received from all parts of New York State for a wide range of diagnostic procedures and tests, in addition to the drug testing described below. This volume is expected to increase as the enlarged program becomes effective.

The toxicology section of the Diagnostic Laboratory is involved in various aspects of clinical and environmental toxicology. In addition it operates the Equine Drug Testing and Research Program, which assists the racing industry and certain other equine activities in the control of the use of drugs that might influence the performance of the horses. A broadly based research program studies the metabolism and pharmacodynamics of drugs, and develops methods for detecting them and their metabolites in blood and other body fluids. Analytical methods employ gas chromatography, mass spectrography, computer analysis, and other sophisticated technology to

achieve detection of drugs at very low levels of concentration. Satellite testing laboratories are established at the harness tracks in the state where all racing animals are examined by a pre-race blood test and over 60,000 tests were done last year. An additional 15,000 tests a year are done at the College on thoroughbreds.

738 Laboratory Methods of Diagnosis Fall or spring term. Credit one to three hours by arrangement. For advanced undergraduate and graduate students. Prerequisites: Pathology 536 and Microbiology 515 or 315. Instruction and practice in the application of immunological, biochemical, microbiological, and pathological methods for the diagnosis of disease.



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Radiation Biology
Whitlock, John H., D.V.M., M.S., Parasitology
Winter, Alexander J., B.S., D.V.M., M.S., Ph.D.,
Veterinary Microbiology
Wolf, Kenneth E., B.S., M.S., Ph.D., Adjunct,
Veterinary Pathology

Wootton, John F., B.S., M.S., Ph.D., Physiological Chemistry

Associate Professors

Andrews, Edwin J., B.S., V.M.D., Ph.D., Laboratory Animal Medicine
 Appel, Max J., D.V.M., Ph.D., Veterinary Virology
 Arion, William J., B.S., M.S., Ph.D., Physiological Chemistry
 Bolton, Gary R., D.V.M., Small Animal Medicine—Cardiology (sabbatic)
 Braun, R. Kenneth, B.S., D.V.M., M.S., Veterinary Medicine (sabbatic)
 Campbell, S. Gordon, B.V.M.S., M.R.C.V.S., M.V.Sc., Ph.D., Veterinary Microbiology
 Casarett, Alison P., B.S., M.S., Ph.D., Radiation Biology; Associate Dean of the Graduate School
 Cummings, John F., B.S., D.V.M., M.S., Ph.D., Veterinary Anatomy; Graduate Faculty Representative
 Dueland, Rudolf, D.V.M., M.S., Veterinary Surgery
 Hall, Charles E., A.B., D.V.M., Reproductive Studies
 Haynes, N. Bruce, B.S., D.V.M., Veterinary Science; Extension Veterinarian and Director of Continuing Education
 Hintz, Harold F., B.S., M.S., Ph.D., Animal Nutrition
 Hoffer, Richard E., D.V.M., M.S., D.A.C.V.S., Small Animal Surgery
 Kallfelz, Francis A., D.V.M., Ph.D., Mark L. Morris Professorship in Clinical Nutrition; Physical Biology
 King, John M., D.V.M., Ph.D., Veterinary Pathology
 Leibovitz, Louis, B.A., B.S., V.M.D., Avian and Aquatic Animal Medicine
 Lein, Donald H., D.V.M., Ph.D., Theriogenology
 Lowe, John E., D.V.M., M.S., Veterinary Surgery; Coordinating Manager of Equine Research Park
 Lust, George, B.S., Ph.D., Biochemistry
 Maylin, George A., D.V.M., M.S., Ph.D., Toxicology
 Minor, Ronald R., V.M.D., Ph.D., Veterinary Pathology
 Postle, Donald S., D.V.M., M.S., Veterinary Science; Director of the New York State Mastitis Control Program
 Schryver, Herbert F., B.A., D.V.M., Ph.D., Pathology; Director of Equine Research Program
 Scott, Fredric W., B.S., D.V.M., Ph.D., Veterinary Microbiology; Director of Cornell Feline Research Laboratory
 Slauson, David O., D.V.M., Ph.D., Immunopathology
 Thompson, John C., Jr., B.S., M.S., Ph.D., Environmental Radiation Biology

Assistant Professors

Cockerell, Gary L., B.S., D.V.M., Ph.D., Immunopathology
 Hackett, Richard P., D.V.M., M.S., Large Animal Medicine, Obstetrics, and Surgery
 Henion, John D., B.A., M.S., Ph.D., Toxicology
 Haupt, Katherine A., B.S., V.M.D., Ph.D., Veterinary Physiology
 Lesser, George V., B.S., D.D.S., Adjunct, Veterinary Pathology
 MacCoy, Douglas M., B.S., D.V.M., Small Animal Medicine and Surgery
 McCauley, Alan D., B.S., D.V.M., Theriogenology
 Rendano, Victor, V.M.D., Radiology, Physical Biology
 Riis, Ronald C., B.S., M.T., D.V.M., M.S., Clinical Ophthalmology
 Schultz, Ronald D., B.S., M.S., Ph.D., Veterinary Immunology
 Schwark, Wayne S., D.V.M., M.Sc., Ph.D., Veterinary Pharmacology
 Scott, Danny W., B.S., D.V.M., Small Animal Medicine and Surgery
 Smith, Mary C., B.S., D.V.M., Large Animal Medicine, Obstetrics, and Surgery
 Spaulding, Glenn L., D.V.M., Visiting, Small Animal Medicine and Surgery
 Taylor, John I., D.V.M., Visiting, Small Animal Medicine and Surgery
 Timoney, John F., B.Sc., M.V.B., M.R.C.V.S., M.S., Ph.D., Veterinary Bacteriology
 Trotter, Eric J., B.S., D.V.M., M.S., Anesthesiology and Small Animal Surgery
 Watson, D. J., B.V.Sc., Ph.D., Visiting, Small Animal Medicine and Surgery

Instructors and Lecturers

Evans, Douglas E., D.V.M., Large Animal Medicine, Obstetrics, and Surgery
 Kingsbury, John M., B.S., A.M., Ph.D., Professor of Phytotoxicology, College of Agriculture and Life Sciences
 Oku, T., B.S., M.S., Ph.D., Health Science Degree, Visiting, Physical Biology
 Smith, Jeffrey S., B.V.Sc., Visiting, Small Animal Medicine

Staff

Research Associates and Specialists

Armbricht, Harvey J., B.S., Ph.D., Physical Biology
 Baggs, Raymond B., B.A., B.S., D.V.M., Ph.D., Laboratory Animal Medicine; Veterinary Pathology
 Corradino, Robert A., B.S., M.S., Ph.D., Physical Biology
 Cowen, Barrett S., B.S., M.S., Ph.D., Avian and Aquatic Animal Medicine
 Dean, William F., B.S.A., M.S., Ph.D., Duck Research Laboratory (Eastport)

Drost, Cornelis J., B.S.E.E., M.E.E., Physiology, Biochemistry, and Pharmacology
 Dunn, Henry O., B.S., M.S., Ph.D., Large Animal Medicine, Obstetrics, and Surgery
 Ebel, Joseph G., Ph.D., Diagnostic Laboratory (Buffalo/Batavia)
 Eisenstadter, Joseph, Ph.D., Diagnostic Laboratory
 Fabricant, Catherine G., B.S., M.S., Veterinary Microbiology
 Frediani, Harold A., A.B., M.S., Ph.D., Diagnostic Laboratory
 Fullmer, Curtis S., B.S., M.S., Ph.D., Physical Biology
 Georgi, Marion E., D.V.M., Veterinary Pathology
 Gilmartin, John E., B.S., Assistant Director of Laboratory Animal Medicine
 Greisen, Helen, B.S., M.S., Ph.D., Veterinary Microbiology
 Gries, Christian L., D.V.M., Ph.D., Diagnostic Laboratory
 Haider, S. A., D.V.M., M.S., Ph.D., Avian and Aquatic Animal Medicine (Eastport)
 Hayes, Gerald L., D.V.M., Field Veterinarian (Earlville)
 Heitmann, Richard N., B.S., Ph.D., Physiology, Biochemistry, and Pharmacology
 Hillman, Robert B., A.B., D.V.M., M.S., Large Animal Medicine, Obstetrics, and Surgery
 Hiltz, Frederick L., S.B.E.E., S.M.E.E., Ph.D., Physical Biology
 Hiscock, Bruce F., B.S., Ph.D., Diagnostic Laboratory
 Holmes, Dorothy F., D.V.M., Ph.D., Veterinary Microbiology
 Kemen, Mathias J., Jr., D.V.M., M.S., Veterinary Pathology
 Koo, Sung I., B.S., M.S., Ph.D., Physical Biology
 Linquist, Wesley, D.V.M., Supervising Veterinarian, Mastitis Program (Ithaca)
 Milanowski, George J., B.E.E., M.E.E., Physiology, Biochemistry, and Pharmacology
 Mitchell, Grayson B., B.S., D.V.M., Director of Laboratory, Avian Disease Program (Kingston)
 Moraff, Howard, A.B., B.S., M.S., Ph.D., Physical Biology
 Nusbaum, Sidney R., D.V.M., Field and Services Coordinator, Diagnostic Laboratory
 Post, John E., B.S., D.V.M., Ph.D., Veterinary Pathology
 Price, Jessie I., B.S., M.S., Ph.D., Avian and Aquatic Animal Medicine (Eastport)
 Sandhu, Tirath S., B.V.Sc., M.S., Ph.D., Field Veterinarian (Eastport)
 Shin, Sang J., B.S., D.V.M., Extension Associate, Diagnostic Laboratory
 Villareale, Michael E., A.B., Ph.M., Ph.D., Physical Biology
 Wager, Leslie A., D.V.M., Field Veterinarian, Mastitis Program (Canton)
 Wentworth, Richard A., B.S., M.S., Ph.D., Physical Biology
 White, Karl K., D.V.M., B.S., Large Animal Medicine, Obstetrics, and Surgery

Teaching Hospital

Director: A. deLahunta
 Board of Directors: A. deLahunta, F. H. Fox (Ambulatory Clinic), R. W. Kirk (Small Animal Clinic), K. K. White (Large Animal Clinic), E. C. Melby, Jr. (ex officio).

Sections:

Medicine: B. C. Tennant (*chief*, internal medicine, gastroenterology)
 Faculty: A. deLahunta (neurology), F. H. Fox (internal medicine), R. B. Hillman (internal medicine), K. A. Houpt (animal behavior), R. F. Kahrs (internal medicine—*infectious diseases*), F. A. Kallfelz (clinical nutrition—internal medicine), R. W. Kirk (dermatology—internal medicine), D. S. Postle (mastitis control), D. C. Riis (ophthalmology), M. C. Smith (internal medicine), D. W. Scott (dermatology), G. L. Spaulding (cardiology)
 Postdoctoral Research Fellows: E. Hunt (gastroenterology), I. G. Mayhew (neurology)
 Residents: S. A. Center, R. M. Dyer, D. E. Evans, D. R. Keirn, J. M. MacDonald, W. K. Scarratt, J. S. Smith (ophthalmology)

Surgery: E. J. Trotter (*chief*)

Faculty: R. T. Dueland, R. P. Hackett, R. E. Hoffer, J. E. Lowe, D. M. McCoy, K. K. White, J. I. Taylor (anesthesiology)

Residents: D. N. Aron, J. L. Berzon, G. D. Myhre, J. A. Stick

Clinical Pathology: J. B. Tasker (*chief*), J. Bentinck-Smith

Pathology: R. M. Lewis (*chief*)

Radiological and Physical Diagnostics: F. A. Kallfelz (*chief*)
 E. L. Gasteiger, V. Rendano, J. Stouffer, D. N. Tapper

Theriogenology: K. McEntee (*chief*)

P. W. Concannon, H. O. Dunn, R. H. Foote, C. E. Hall, W. Hansel, D. H. Lein, A. D. McCauley, A. J. Winter

Library

Reinap, Mia, B.S., B.S.L.S., Librarian of the Flower Veterinary Library
 Miller, Pearl S., B.S., M.Ed., M.L.S., Associate Librarian
 Wilson, Marijo S., B.A., M.L.S., Senior Assistant Librarian

Residents and Interns

Abid, Hashim, M.Sc., B.V.M.S., Veterinary Pathology

Aron, Dennick N., D.V.M., Small Animal Medicine and Surgery
 Barclay, Sandra M., B.S., D.V.M., Small Animal Medicine and Surgery
 Barclay, William P., D.V.M., Large Animal Medicine, Obstetrics, and Surgery
 Berzon, Jeffrey L., B.S., D.V.M., Small Animal Medicine and Surgery
 Butler, Lawrence A., D.V.M., Large Animal Medicine, Obstetrics, and Surgery
 Center, Sharon A., B.S., D.V.M., Small Animal Medicine and Surgery
 Collier, Kenneth L., D.V.M., Large Animal Medicine, Obstetrics, and Surgery
 Cooper, Barry J., B.V.S., Veterinary Pathology
 DiBartola, Stephen P., B.S., D.V.M., Small Animal Medicine and Surgery
 Dyer, Robert M., B.A., V.M.D., Large Animal Medicine, Obstetrics, and Surgery
 Frelter, Paul F., B.S., D.V.M., Veterinary Pathology
 Keirn, David R., B.A., D.V.M., Large Animal Medicine, Obstetrics, and Surgery
 MacDonald, John M., B.Ed., M.Ed., D.V.M., Small Animal Medicine and Surgery
 Meuten, Donald J., B.S., D.V.M., Veterinary Pathology
 Miller, William H., Jr., B.S., V.M.D., Small Animal Medicine and Surgery
 Munson, Robert J., B.S., V.M.D., Veterinary Pathology
 Myhre, Grant D., B.S., D.V.M., Large Animal Medicine, Obstetrics, and Surgery
 Scarratt, William K., B.Sc., D.V.M., Large Animal Medicine, Obstetrics, and Surgery
 Sifferman, Roger L., B.S., D.V.M., Small Animal Medicine and Surgery
 Stick, John A., D.V.M., Large Animal Medicine, Obstetrics, and Surgery
 Weiss, Richard C., B.S., V.M.D., Veterinary Pathology
 Wimberly, H. Charles, D.V.M., Veterinary Pathology

Specialists and Technicians

Ames, Claude K., Livestock Superintendent
 Batik, George J., Medical Illustrator
 Conklin, Marshall E., Farrier
 Lauber, John, Visual Aids Technologist
 Reidemanis, Alfrede, Research Technician
 Rivkin, Lawrence S., Pharmacist
 Ryan, Gerald D., X-ray Lecturer
 Sadler, Lewis L., Medical Illustrator
 Smith, Robert F., Director, Biomedical Communications

Visiting Staff

Grandage, J., Australia
 Oku, T., Japan
 Schoenbaum, M., Israel
 Smith, J., Australia
 Spaulding, G. L., New York City

Taylor, J. I., Australia
 Watson, D. J., Australia

Standing Committees of the College Faculty

General Committee (Elective)

A. Dobson (1975-78), chairman
 L. E. Carmichael (1974-77)
 F. A. Kallfelz (1975-78)
 B. C. Tennant (1976-79)
 J. B. Tasker (1976-79)

Admissions Committee

J. Bentinck-Smith
 R. W. Kirk
 D. H. Lein
 H. F. Schryver
 D. O. Slauson
 J. F. Wootton

Committee on Curriculum* (elected by department members)

R. E. Hoffer, chairman
 J. Bentinck-Smith
 J. F. Cummings
 A. deLahunta
 J. Fabricant
 C. E. Hall
 T. R. Houpt
 R. N. Minor
 C. G. Rickard, ex officio
 D. W. Scott
 D. N. Tapper
 J. F. Timoney

Subcommittee (Class Schedule)

J. Fabricant, chairman
 C. G. Rickard

Committee on College Library

J. Fabricant, chairman
 A. L. Aronson
 W. O. Sack
 B. E. Sheffy

Committee on Deficient Students

J. Bentinck-Smith, chairman
 A. Dobson
 F. H. Fox
 S. B. Hitchner

Committee on Student Conduct

T. R. Houpt, chairman
 E. N. Bergman

* Student representatives are elected from each class.

S. G. Campbell
R. F. Kahrs
G. Lust

Class Advisory Committees

Class of 1980

E. J. Andrews
J. Bentinck-Smith
F. H. Fox
S. B. Hitchner
R. F. Kahrs
F. A. Kallfelz
R. M. Lewis
R. N. Minor
C. G. Poppensiek
K. K. White

Class of 1979

E. N. Bergman
S. G. Campbell
A. deLahunta
R. Dueland
J. R. Georgi
N. B. Haynes
K. A. Houpt
T. R. Houpt
E. C. Melby
S. R. Nusbaum
R. C. Riis
W. O. Sack
A. F. Sellers
M. C. Smith
D. N. Tapper

Class of 1978

H. E. Evans
R. E. Habel
C. E. Hall
R. B. Hillman
R. E. Hoffer
W. S. Schwark
D. W. Scott

Class of 1977

A. L. Aronson
J. F. Cummings
J. E. Lowe
B. C. Tennant
J. F. Timoney
E. J. Trotter
K. K. White

Committee on Scholarships

J. C. Thompson, Jr., chairman
B. S. Cowen
R. W. Kirk
M. C. Peckham
H. F. Schryver
R. H. Wasserman
A. J. Winter

Faculty Council of Representatives (Elective)

J. Bentinck-Smith (1975-78)
R. E. Habel (1974-77)
K. A. Houpt (1976-77)
N. L. Norcross (1975-78)
W. O. Sack (1973-76)

SUNY Senate

J. F. Timoney, senator

Special Committees 1976-77

Clinical Pathological Conference

E. J. Andrews, chairman
R. C. Riis
R. D. Schultz
J. B. Tasker

Sixty-ninth Conference for Veterinarians

January 18, 19, and 20, 1977

G. R. Bolton, chairman
R. E. Barrett
R. K. Braun
A. deLahunta
N. B. Haynes
R. B. Hillman
R. M. Lewis
R. D. Schultz
D. W. Scott
E. J. Trotter

Senior Seminar Committee

D. W. Scott, chairman
S. G. Campbell
A. deLahunta
R. Dueland
R. B. Hillman
S. R. Nusbaum

Committee on Equine Research Program

L. Coggins, chairman
M. J. Kemen
J. E. Lowe
H. F. Schryver
R. H. Wasserman

Biohazard Safety Commission

J. T. Thompson, chairman
R. A. Corradino
K. M. Lee
R. D. Schultz
J. F. Wootton

College-State Society Liaison Committee

D. G. Dedrick
R. Dueland
N. B. Haynes, chief faculty representative
D. L. Jenkins
J. E. Lowe
F. O. Wright

Pharmacy and Therapeutics Committee

A. L. Aronson
A. D. McCauley
D. W. Scott
K. K. White

Veterinary College Representatives to Cornell University Senate (Elective)

L. Leibovitz
R. D. Schultz

Committee on Laboratory Animal Medicine

F. W. Scott, chairman
E. J. Andrews
E. N. Bergman
C. I. Boyer, Jr., ex officio
H. E. Evans
J. E. Gilmartin, ex officio
S. B. Hitchner
R. E. Hoffer
F. W. Lengemann
J. E. Lowe
R. D. Schultz
W. S. Schwark

Student/Faculty Liaison Committee (Elective)*

* Student representatives and faculty members are elected by the student body in the fall. One student serves as chairman. Membership list will be circulated at that time.

Graduate/Faculty Liaison Committee (Elective)*

I. G. Mayhew, student
D. D. Miller, student
J. Smith, student
L. E. Carmichael, faculty
J. F. Cummings, faculty
B. C. Tennant, faculty
A. J. Winter, faculty

* Graduate students select the committee.

Note: A short summary report of the special committees should be given to the Secretary of the College in April for transmittal to the

faculty at the time of the faculty meeting in May.

Cornell Chapter of S.A.V.M.A., 1976-77

President: Richard P. Solana, Class of 1977
Vice President: Sandra J. Manfra, Class of 1977
Secretary: Catherine L. Wilhelmsen, Class of 1978
Treasurer: Reid J. Oliver, Class of 1977

Graduate Students Association

The association of graduate students at the College of Veterinary Medicine is an organization designed to provide a change of pace from the graduate students' rigorous schedule. Various social functions, an annual seminar, and other informal gatherings are all part of the association's calendar. Present officers are Alastair Watson, president and Kevin Jones, secretary-treasurer.

Students

Graduate Students, Spring 1976

Abid, Hashim N., M.Sc., Iraq
Al-bana, Anton S., B.V.M.S., Iraq (leave of absence)
Al-Darraj, Ali Majeed, B.V.M.S., Iraq
Alhands, Roger Vernon, D.V.M., Illinois
Amand, Wilbur, V.M.D., Pennsylvania (leave of absence)
Anika, Sylvanus, D.M.V., Nigeria
Antillion, Armando, D.V.M., M.S., Mexico
Arnold, Bette Ann, B.S., New York State
Ballas, Lawrence, B.S., M.S., Connecticut
Bauman, Thomas, B.S.
Beilman, Wayne
Bemis, David A., B.S., New York State
Bier, Pamela, B.S., Pennsylvania (leave of absence)
Bloch, Earl, B.S., M.A., New York State
Buegert, Claus D., D.V.M., Germany
Boothby, Janet M., M.S., New York State
Bresset, John David, B.S., New Hampshire
Callaghan, Daniel, B.A., Pennsylvania
Church, Edgar, B.S., M.S., Connecticut (leave of absence)
Craig, Arthur, B.S.
deLisle, Geoffrie William, B.V.Sc., New Zealand
Elston, Ralph, B.S., M.S., California
Feher, Joseph, B.S., M.S.
Flores-Castro, Ricardo, D.V.M., Mexico
Gametchu, Bahiru, D.V.M., Ethiopia
Hartland, Bonnie Jane, B.S., New York State
Haschek, Wanda, B.V.Sc., Australia
Hoshino, Yasuto, D.V.M., Japan
Hunt, Brian, B.V.Sc., Australia
Hunt, Elaine Louise, D.V.M., California

Johnson, Margaret, B.S., New York State
 Jones, Kevin, B.S., Pennsylvania
 Kalish, Daniel, B.S., New York State
 Kasali, Olajide, D.V.M., D.T.V.M., M.S., Nigeria
 Keen, James, B.A., New York State
 Krishna Murthy, Kesava, M.V.S., India
 Lai, Steve, M.S., Taiwan (leave of absence)
 LaMotte, George B., B.A., M.S., Pennsylvania
 Maribei, James, D.V.M., M.Sc., Kenya
 Mayhew, Ian, B.V.Sc., California
 McDonough, Patrick, B.S., Pennsylvania
 (leave of absence)
 Miller, Douglas D., B.S., New York State
 Miller, Douglas R., B.S., New York State
 Mills, Daniel C., B.S., M.S.T., New York State
 Mohler, Nancy, B.A., Oregon
 Mollura, Sister Francesca, M.S., B.S., New
 York State
 Schat, Karel A., D.V.M., Holland
 Schurig, Gerhardt G., D.V.M., M.S., Chile
 Sihvonen, Lisa Helena, D.V.M., Finland
 Smith, Janet D., M.S., B.S., Iowa
 Swanson, Robert N., B.S., New York State
 Vanderkolk, Cornelius, D.V.M., Indiana
 Walls, Heather, B.S., New York State
 Wade, Susan Edith, M.A., B.A., New York State
 Watson, Alastair, B.V.Sc., B.Ag.Sc., Australia
 Weber, Richard (leave of absence)
 Yuan, Yang-Dar, B.V.M., M.S., Republic of China
 Zimmer, James, D.V.M., New York State

Fourth Year, Class of 1977*

Abenanty, Linda L., Oneonta
 Allen, Charles H., Newmarket, New Hampshire
 Austin, Frederick G., Beacon
 Beekman, Gerard K., Hauppauge
 Berkowitz, Jay A., Massapequa
 Bertoldo, Gerald R., Staten Island
 Bochino, Mary S., Baldwinville
 Brenneman, James D., Eden
 Byer, Linda D., Macedon
 Carman, Donald M., Baldwin
 Chapman, Edward B., Alpine
 Chuff, Nicholas, Frankfort
 Comings, Timothy C., Bainbridge
 Covitz, Jack, Great Neck
 Cruikshank, Robert E., Ogdensburg
 DeVerna, John C., Jr., Seaford
 Ellis, Roger G., Albany
 Everitt, Jeffrey I., Verona, New Jersey
 Ferry, John W., Germantown
 FitzPatrick, Timothy L., Wayland
 Foley, Mark H., Clinton
 Gaynor, Faith M., Binghamton
 Gillette, Deborah M., Rochester
 Griffin, Craig E., Delmar
 Hajdu, Andrew S., Plainview
 Hall, Jeffrey A., New Canaan, Connecticut
 Hayden, James G., Springfield, Massachusetts
 Helfat, Mark P., Douglaston
 Hoppe, Robert W., Stony Brook

* Those cities not followed by the name of a state are in New York.

Huntington, Ann L., Binghamton
 Jenkins, David H., Catskill
 Levine, Steve B., Flushing
 Lindsey, Alan B., Grand Island
 Lissman, Barry A., Flushing
 Loicano, Steven C., Fredonia
 Lubar, Jonathan B., Morristown, New Jersey
 Lynch, Patrick A., Poughquag
 Makowski, Christine M., Great Neck
 Manfra, Sandra J., Staten Island
 Miller, Lila T., New York City
 Minster, Karl C., West Newbury, Massachusetts
 Monroe, Timothy J., Schenectady
 Noga-Driscoll, Mary Jean, Windsor, Connecticut
 Oliver, Reid J., Syracuse
 Orsini, James, Eastchester
 Perry, Robert W., Melrose, Massachusetts
 Peters, Ronald J., Cambridge
 Pointek, Kathleen A., Esmond, Rhode Island
 Randolph, John F., Flushing
 Reamsnyder, Karen E., Camillus
 Rothermich, Ann L., Ithaca
 Sanders, Clark, Delhi
 Schnabel, Arthur J., New York City
 Schwytzer, Donald G., Wyoming
 Shek, William R., Queens Village
 Silverman, Steven B., Uniondale
 Soland, Richard P., New York City
 Tewes, Anton, Auburn
 Thonsen, William J., East Meadow
 Williams, Craig B., Coventry, Connecticut
 Wolfthal, David M., New York City
 Woods, Rochelle E., Buffalo
 Yarkoni, Uriel, Ithaca
 Yarnell, Gary A., Oceanside

Third Year, Class of 1978

Allen, Gretchen M., Harpswell, Maine
 Babcock, Gary L., Burlington Flats
 Bicknese, Joanne M., Northport
 Bratton, Myron E., Wilmington, Delaware
 Bratton, Patricia D., Smithtown
 Broady, Mark E., Ithaca
 Bruno, Dwight A., Franklin
 Cali, Joseph T., Loudonville
 Carell, Robert J., Dix Hills
 Cerf, Dean, Sloatsburg
 Chamberlain, Thomas P., DeWitt
 Clark, Kathleen M., Newington, Connecticut
 Costlow, David L., Merrick
 DeLong, David, Livingston, New Jersey
 Diez, Jose R., Santurce, Puerto Rico
 Ellis, Laurel A., Burnt Hills
 Evans, Patricia A., Locust Valley
 Fischer, Jonathan M., Cedarhurst
 Franklin, Jessica, Malverne
 Garnes, Diane R., Brooklyn
 Giaquinto, Francis J., Ovid
 Goldstein, Mark A., Hicksville
 Gregory, Clare R., Mount Vision
 Guglielmino, Joanna B., Syracuse
 Jacobs, Allen R., Plainview
 Jann, Henry W., Rochester
 Johnson, Paul K., Massapequa

King, Peter W., Sea Cliff
 Knowlton, Brenda, Fayetteville
 Lafky, Karen Y., Big Flats
 Lea, Pamela, Binghamton
 Levine, Marc L., Douglaston
 Lewis, Steven, Lockport
 Lucknow, Kenneth, Franklin Square
 Lucknow, Scott, Franklin Square
 Lutgens, Kurt, Massapequa
 Marks, Michael, North Miami Beach, Florida
 Matthews, Nora B., Clinton
 McMaster, Carolyn, Williamsville
 McQuade, Joseph T., Brooklyn
 Merrill, George L., Silver Springs
 Meyer, Pamela A., Buffalo
 Miller, Richard L., Great Neck
 Mintzer, Charles M., Great Neck
 Morris, Robert C., Seneca Falls
 Moses, Scott B., Newburgh
 Nashe, George B., New York City
 Naum, Robert M., Rochester
 O'Krepki, James M., Spencer
 O'Leary, Timothy J., Painted Post
 Plance, David, Brooktondale
 Pollock, Roy V., North Pownal, Vermont
 Rappole, Robert G., Chautauqua
 Rath, John W., Rochester
 Schmidt, Marilyn I., Park Ridge, New Jersey
 Schoen, Allen M., Flushing
 Schultz, Steven M., Williamsville
 Siegel, Martin J., Syosset
 Sullivan, William H., Forest Hills
 Thompson, Roger C., Plattsburgh
 Tillou, Guy J., Ithaca
 Truffini, Stanley J., New York City
 Widrick, Patrina A., Croghan
 Wilhelm, William R., Landis, North Carolina
 Wilhelmsen, Catherine L., Huntington Station
 Wilkes, Mary A., New York City
 Wilson, Julia H., Bethesda, Maryland
 Wirsig, Victoria S., Youngstown
 Wisniewski, Jo-Anne F., Kirkland, Washington
 Zielinski, Karen J., Seymour, Connecticut

Second Year, Class of 1979

Behr, Melissa J., Northampton, Massachusetts
 Binder, Robert S., Plainview
 Blackmore, Kit, Clarence Center
 Boardman, Crager J., Jr., Canton
 Breite, Marshall, Accord
 Burgess, Margaret, Wappingers Falls
 Cartin, Robert, Dix Hills
 Charpentier, Amy D., Lunenburg,
 Massachusetts
 Cookingham, Carol A., Kenmore
 Cross, Susan E., Tonawanda
 Davis, Eric, Syracuse
 Demson, Martha V., Lynbrook
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 Dunn, David, Saugus, Massachusetts
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 Felton, Elaine, Warsaw
 Ferraglio, Susan A., Brooklyn

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 Foote, Anita C., New York City
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 Friedman, Jeff A., Forest Hills
 Gardner, Stephen A., Bantam, Connecticut
 Gearhart, Martha S., Rochester
 Gerson, Leslie H., Buffalo
 Haibel, George K., Orchard Park
 Hardie, Elizabeth, Princeton, New Jersey
 Hayden, Joan D., Vernon, Connecticut
 Hershkovitz, Lisa, Riverdale
 Hofmeister, Erik K., Owego
 Hotchkiss, Signe, Bliss
 Huntington, Barbara, Ossining
 Keem, Michael D., Cheektowaga
 Knox, Alison M., Ossining
 Kornet, Mitchell E., Bayside
 Korten, Peter C., Cheshire, Connecticut
 Kreger, Leonard D., Morris, Pennsylvania
 Kross, Susan B., Ellenville
 Kuntz, Roger B., Rochester
 LeClair, Barbara, Lebanon, New Hampshire
 Lengemann, Frederick, Freeville
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 Llop, Quentin H., Buffalo
 Looby, William C., Medford, Massachusetts
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 Martinisi, Venera, New Windsor
 May, Samuel A., Jamaica
 McCormick, Arthur E., Bronxville
 Milligan, Joseph E., Pittstown, New Jersey
 Munschauer, Thomas L., Buffalo
 Murphy, Michael S., Sunderland, Massachusetts
 O'Shea, James E., Forest Hills
 Palermo, Joseph C., Mount Morris
 Palmer, George W., Plattsburgh
 Payne, Richard, Olean
 Peterson, Lorraine E., East Setauket
 Prokop, William, Bayside
 Roth, Lois, Brooklyn
 Sanford, Steven P., Scotia
 von der Schmidt, Edward, Bergenfield,
 New Jersey
 Scipioni, Roberta, Winfield
 Sozanski, Michael S., Horseheads
 Stein, Richard J., Plainview
 Strom, Jeffrey, Floral Park
 Sullivan, Mary A., Rochester
 Szatkowski, Ellen, Rochester
 Tarlach, Natalie, Dundee
 True, Robert G., Framingham, Massachusetts
 Warner, Neal J., Willimantic, Connecticut
 Williams, Ilka Alexandra, Burlington,
 Massachusetts
 Wolfer, Kevin, Silver Springs
 Zeh, John P., Horseheads

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 Duhamel, Ghislaine P., Columbus, Ohio
 Durland, Robert W., Baldwinsville
 Edwards, Allen H., Rochester
 Elbert, Oliver E., Dobbs Ferry
 Ellmers, Gordon R., Old Westbury
 Fettman, Martin J., Brooklyn
 Gerstman, Buddy B., N. Woodmere
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 Griffin, Wayne R., Augusta, Maine
 Grodkiewicz, Jeffrey P., Bayonne, New Jersey
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 Laczak, John P., Wakefield, Rhode Island
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 Lesser, Sue Ann, Elmira
 Lodahl, Claire S., Ithaca
 Maas, Jennifer, Boxborough, Massachusetts
 MacNamara, Brian S., Harriman
 Mackay, Marianne R., Albany
 Mainville, Debra C., Ithaca
 Marder, Brian, Bellmore
 Marienberg, William H., Commack
 Mattucci, Marguerette V., Ithaca
 May, Jonathan E., Mamaroneck
 McEntee, Michael F., Ithaca
 Meier, Roderick S., Rochester
 Meyer, Robert E., Cheektowaga
 Mills, Walter S., III, Chappaqua
 Moran, Jamie J., Ithaca
 Nizolek, Joseph T., Trenton, New Jersey
 Palmeter, Andrew T., Richfield Springs
 Pinkston, Lucy L., Brooklyn
 Price, Richard P., Fairfax, Vermont
 Reisman, Robert W., Yorktown Heights
 Rostkowski, Charlene M., Middletown Springs,
 Vermont
 Sarfaty, Deborah, Wantagh
 Schenkein, Ronnie L., New York City
 Scherr, Les J., New York City
 Schulman, David J., Richmond Hill
 Siegler, Larry P., Franklin Square
 Simoncini, Diane C., South River, New Jersey
 Stockwell, David G., Fort Plain
 Tintle, Kevin L., Piscataway, New Jersey
 Wilkinson, John E., Louisville, Tennessee
 Yanoff, Susan R., Delmar



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(4) Multicategorical Research Building. (5) Microbiology, Physical Biology.
(6) Anatomy and Physiology. (7) Pathology, Avian Diseases. (8) Large Animal Clinic.
(9) Small Animal Clinic and Hospital. (10) Large Animal Hospital. (11) Medicine
and Obstetrics, Ambulatory Clinic, and Mastitis Control. (12) Research and
Ancillary Barns. (13) Garage and Farrier Shop.



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