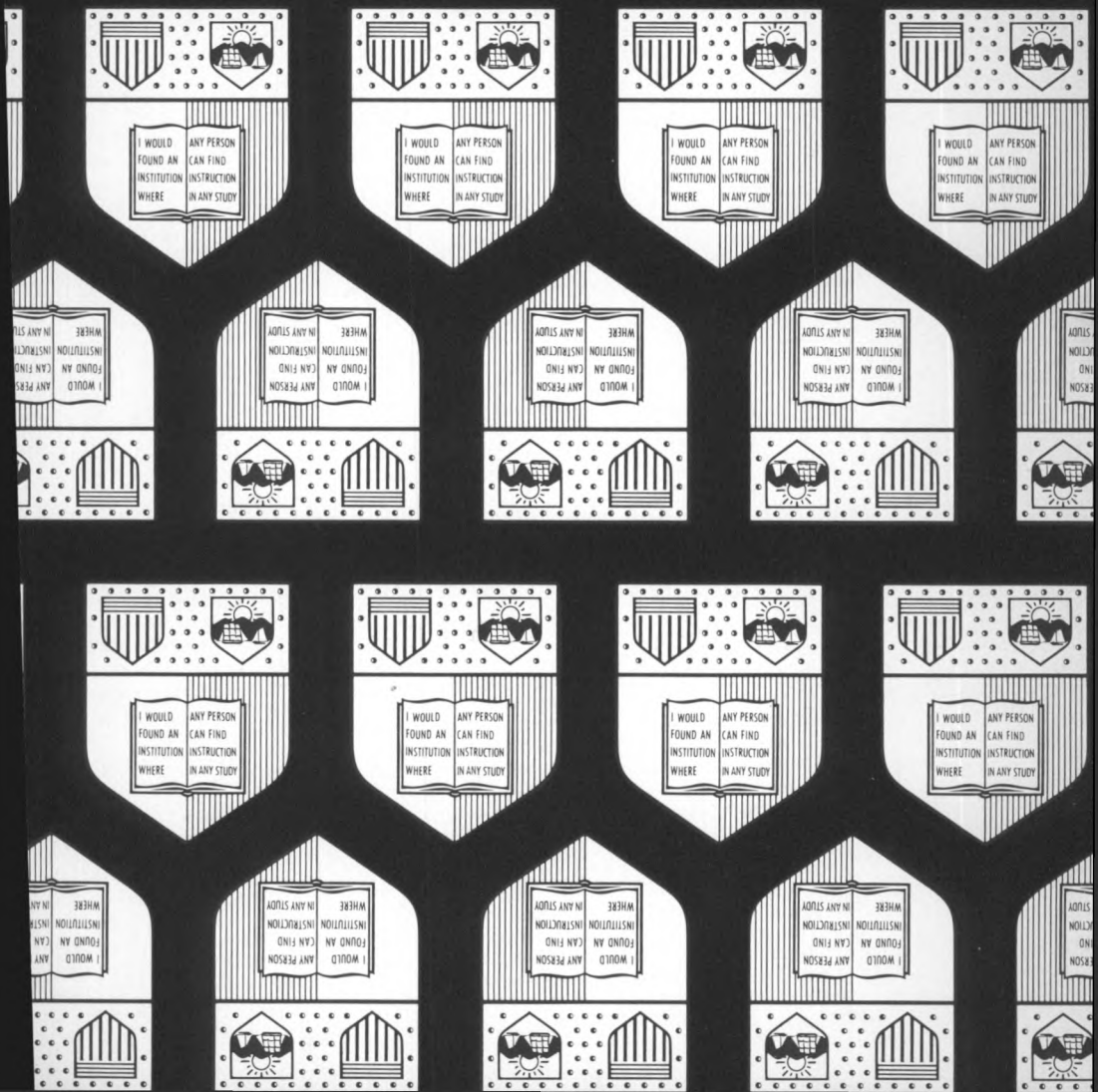
Cornell University Announcements

New York State College of Veterinary Medicine



Cornell University

New York State College of Veterinary Medicine

1979-80

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

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Cornell Academic Calendar

1979–80

Registration	Thursday and Friday, August 30 and 31
Fall term instruction begins	Monday, September 3
Fall recess:	
Instruction suspended, 1:10 p.m.	Saturday, October 20
Instruction resumed	Wednesday, October 24
Thanksgiving recess:	
Instruction suspended, 1:10 p.m.	Wednesday, November 21
Instruction resumed	Monday, November 26
Fall term instruction ends, 5:00 p.m.	Tuesday, December 11
Final examinations begin	Sunday, December 16
Final examinations end	Sunday, December 23
Registration	Thursday and Friday, January 17 and 18
Spring term instruction begins	Monday, January 21
Spring recess:	
Instruction suspended, 1:10 p.m.	Saturday, March 15
Instruction resumed	Monday, March 24
Spring term instruction ends, 1:10 p.m.	Saturday, May 3
Final examinations begin	Monday, May 12
Final examinations end	Tuesday, May 20
Commencement Day	Monday, May 26

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 has scheduled classes on religious holidays. It is the intent of the University that students missing classes due to the observance of religious holidays be given ample opportunity to make up work.

Announcement

Contents

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 pure-bred 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 nationally distinguished 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 that 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 for 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 additions are the eight-story Research Tower, dedicated June 27, 1974, and the Diagnostic Laboratory, dedicated October 17, 1978.

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 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. The library is on the second floor of Schurman Hall. The large reading room, seating seventy, has display shelves for current journals and areas of indexes, abstracts, and other reference books. The three levels of adjoining stacks include journals and monographs and are open for use. Individual study carrels are also available.

The library contains over 66,000 volumes and regularly receives about 1,100 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 about 4 million volumes and over 50,000 journals and serials are made available to students. These collections, interlibrary loans, and photoduplication of materials supplement the research potential of the veterinary library, which is rich in historical and basic research resources as well as recent monographs and selected government publications. A bimonthly 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.

A bibliographic retrieval service located in Mann Library provides ready access to extensive computerized medical and biomedical data bases.

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; these units are used for studies on chickens, pet birds, and other avian species and on shellfish. 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.

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, a part of the Department of Clinical Sciences, has three primary concerns: (1) teaching, (2) consultation and diagnostic services to the practitioner and dairyman, and (3) field research on mastitis control. Five diagnostic laboratories, located in dairy areas of the state, are operated within the program.

Dr. L. A. Wager, program director, also acts in the capacity of field veterinarian at the Canton laboratory. Veterinarians and dairymen in eight northern New York counties with a cow population of approximately 130,000 are served by this laboratory.

Dr. G. L. Hayes is field veterinarian at the Earlville laboratory, which offers service in ten central-eastern counties with a cow population of approximately 257,000.

Dr. J. F. Cone is field veterinarian at the Kingston laboratory, which serves the nineteen eastern counties of New York with an estimated cow population of 134,000.

Dr. G. W. Sellick is field veterinarian at the Springville laboratory, which serves an eleven-county area in western New York with a cow population approximating 192,000.

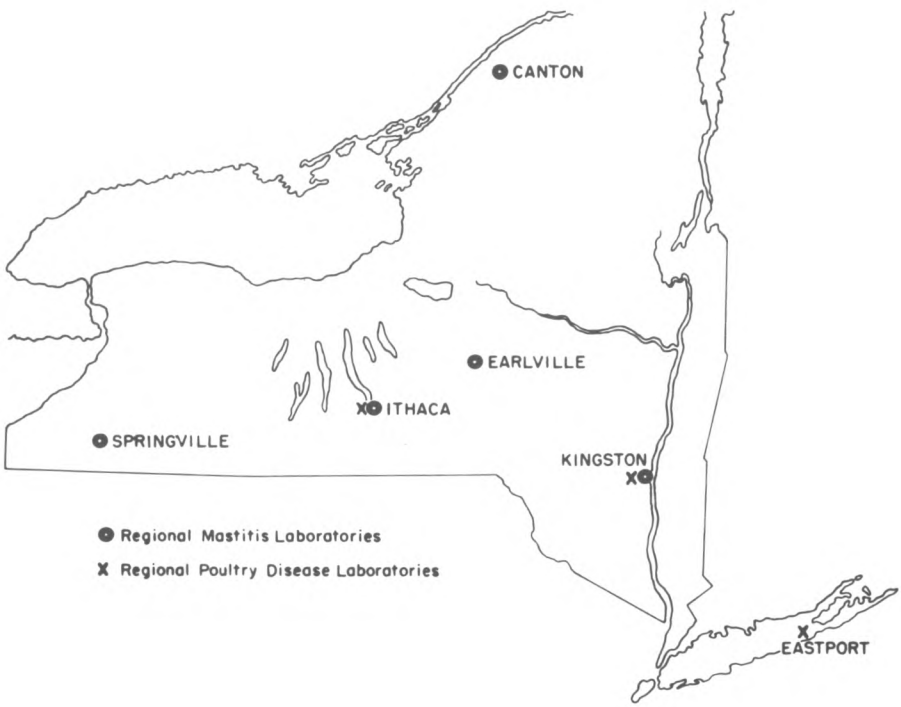
Dr. W. E. Linquist, supervising veterinarian, also acts in the capacity of field veterinarian for the central laboratory located at the New York State College of Veterinary Medicine at Ithaca. At this laboratory, student training and research programs are conducted in addition to the diagnostic services provided for the eleven counties of central New York, which have approximately 134,000 cows.

All laboratories participate in research on basic and practical aspects of mastitis prevention, often in cooperation with the Mastitis Research Sections of the College of Veterinary Medicine and the College of Agriculture and Life Sciences.

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 Disease 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 fields of immunology and virology. Depending upon 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, immunology, 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 and 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.

Muenscher 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.

Clinical Facilities

A teaching hospital consisting of clinical facilities for both large and small animals is located adjacent to the research and preclinical teaching facilities. The hospital comprises 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. An ambulatory service provides patient care on farms in the surrounding territory.

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. The teaching program includes a two-credit core course in clinical nutrition and exposure of students to clinical cases of nutritional importance during seminars, rounds, etc. Research activities in both large and small animal clinical nutrition are included in the program, as well as activities in extension and continuing education. A consulting service for nutritional problems is also available.

Admission to the College

Admission Policy

The Faculty Committee on Admissions endeavors to select the best qualified applicants who, in their judgment, are most 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, a limited number of well-qualified non-New York applicants are also accepted. Candidates who feel their qualifications are outstanding are urged to apply, regardless of residency.

It is the policy of Cornell University actively to support equality of educational and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age, or handicap. The University is committed to the maintenance of affirmative action programs which will assure the continuation of such equality of opportunity.

A brochure describing services for the handicapped student may be obtained by writing to the Office of the Dean of Students, Cornell University, 103 Barnes Hall, Ithaca, New York 14853. Other questions or requests for special assistance may also be directed to that office, or to the Director of Student Administration of the College of Veterinary Medicine.

The Faculty Committee on Admissions is presently conducting a detailed evaluation of its policies and procedures for the admissions year 1979-80 (Class of 1984) and beyond. Basic prerequisites will remain the same for 1979-80. Applicants and prospective applicants should refer to more detailed admissions information available in literature available upon request by writing the New York State College of Veterinary Medicine, Office of Admissions, Cornell University, C107 Schurman Hall, Ithaca, New York 14853.

Selection Criteria

The criteria upon which the admissions committee bases its selection are discussed below.

I. *Academic achievement and aptitude.* The need for learning large amounts of factual material means that

successful applicants must have demonstrated achievement and potential for comprehension of scientific materials and an ability to solve complex problems. This ability is evaluated by examination of the candidate's grades in prerequisite courses (particularly the sciences), by examination of all college-level courses taken, and by consideration of the Graduate Record Examination scores.

II. *The quality of the program presented as preparation for the study of veterinary medicine.* Since the D.V.M. curriculum and the veterinary profession are academically and intellectually rigorous, the committee 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 load 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, or 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 apprised 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 person has accomplishments outside of the professional realm. Therefore, the committee evaluates the depth and breadth of achievement in extracurricular activities, community services, 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 communication skills, poise, leadership abilities, and a talent for getting along with people. Numerous other desirable characteristics are looked for as a candidate is evaluated.

Admission to the College of Veterinary Medicine is determined by the seven-member Faculty Committee on Admissions appointed by the dean. Administrative support is provided by the director of student administration and admissions and the staff of the Office of Admissions. Additional college faculty may be involved in the application review.

The admissions committee spends many hours evaluating the applicant's credentials according to the selection criteria. Quite important to the faculty review is the desire to find evidence of a broad range of educational and extracurricular aptitudes and accomplishments which mirror the highest ideals of the profession of veterinary medicine and reflect uncompromising excellence.

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. This is permitted under exceptional circumstances only.

Admission Requirements

Academic Preparation

Admission to the New York State College of Veterinary Medicine normally requires a minimum of three years preparation in an accredited college or university. In exceptional cases, outstanding students who have completed all the prerequisites in two years of undergraduate education may be considered for admission. 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 with a reputation for academic excellence that offers the prerequisite courses as part of a fully accredited baccalaureate program. 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 a well-rounded post-secondary education, including the preparation for an alternate career.

The *minimum* course requirements for admission are shown in the following table.

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

* One-half of this requirement may be satisfied with an oral communication course.

All prerequisite courses, with the possible exception of biochemistry or microbiology, must be satisfied and documented by letter grades at the time of initial application. Only when there are significant scheduling problems can the biochemistry or microbiology prerequisites be accepted after the initial application deadline. Applicants without these two prerequisites may be at a disadvantage when they are compared with those who have satisfied all course requirements. It will not be possible for an otherwise outstanding applicant who has been accepted to matriculate unless these two prerequisite courses are satisfied with a grade of C- or better as of July 1 of the year of matriculation.

Applicants should have evidence of sound preparation in biology, physics, inorganic and organic chemistry

(each with laboratory), and biochemistry. If the total chemistry credits do not equal the above minimum requirement, another chemistry course should be taken. Some possibilities would include quantitative or qualitative analysis or physical chemistry. Any exceptions must be approved in advance by the Faculty Committee on Admissions. If a course substitution is requested, the applicant should submit to the Office of Admissions a current, detailed course description which discusses the text used, course objectives, materials covered, and credits offered.

Even if substitutions are allowed, the chemistry requirement must include at least one course in organic chemistry with laboratory instruction and a four-semester-hour course in biochemistry.

If the preparatory college does not offer a substantial introductory biochemistry course, courses in related disciplines 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. Laboratory instruction is not required in biochemistry. If, however, a four-hour biochemistry course is *not* offered at your school, a three-hour course plus a course in laboratory instruction must be taken. Applicants must obtain approval in advance for exceptions and substitutions by providing the Office of Admissions with a copy of the course description.

The microbiology prerequisite must include introduction to the major groups and natural distribution of microorganisms, taxonomy, and terminology. Lecture materials should cover size, morphology, and structure of bacteria and fungi and bacterial motility, sporulation, physiology, growth curve, genetics, and multiplication, as well as bacteriophage. The applicant should have further knowledge of sterilization and disinfectants plus environmental mycology and bacteriology with regard to water, soil, foods, milk, sewage, and animal wastes. The microbiology laboratory should develop skills in the use of the microscope in microbiology, various smears and staining procedures for bacteria, motility, growth requirements of bacteria, liquid and solid culture media, sterilization procedures, innoculation and streaking techniques, colonial morphology, interpretation of mixed growth, recognition of staining and morphological characteristics of representative bacteria, counting techniques, dilutions and pipetting of bacterial suspensions, and bacterial counts on water and milk. Recognition and identification of common environmental and saprophytic bacteria and microbiology of skin, milk, water, sewage, and animal wastes must be included in preparatory course work.

Applicants should be proficient in college-level mathematics (for example, one year of calculus) and in written and spoken English. Deficiencies in these fundamental skills hamper professional development in a rigorous, scientific discipline.

Transcripts must document passing grades (C- or better) in all prerequisite courses. A prerequisite with a final grade of less than C- will be considered unsatisfactory for admission purposes. In computing the prerequisite grade point average, a grade of D or F will be included with the grade received in the repeated courses. The evaluation of academic work will involve a review of all related undergraduate and graduate courses, with particular emphasis on the prerequisite subject areas.

Applicants must forward complete course descriptions of any courses taken at an armed forces institute. Courses completed at the United States Armed Forces Institute that do not require a laboratory are acceptable.

Grades are not the sole criterion for admission, although it is desirable that the applicant have at least a 3.0 (on a 4.0 scale) grade-point average for all postsecondary academic work and, in particular, for the prerequisite courses when they are considered separately. Since it is impossible to evaluate honors, pass-fail, and S-U grading systems, it is necessary for the candidate to obtain a letter grade for all the prerequisite courses and to have these grades certified by the registrar at the applicant's undergraduate institution. A limited number of undergraduate advanced placement credit hours may be accepted at the discretion of the Faculty Committee on Admissions and the Office of Admissions, if they appear on the official transcript. In such cases, applicants should provide detailed information from the undergraduate college describing the advanced placement policy of that college.

Animal and Veterinary-Related Experience

By January 1 of the year in which the applicant seeks to matriculate, he or she must have fulfilled one of the two animal experience requirements detailed below. Significant exposure to veterinary medicine and veterinarians is ideal in meeting one or both of these prerequisites. It is recommended that successful applicants fulfill both requirements before matriculation. Both requirements must be fulfilled before the third year of registration in the college. Only experience with animals obtained after the age of fifteen will be acceptable. It is not possible for the college to furnish a list of potential employers. The applicant must assume this responsibility.

Clarification of the appropriateness of the work experience in satisfying the requirement may be obtained by submitting a detailed description of the work situation to the Office of Admissions in advance of the actual application.

Large Animal Experience Requirement. At least one period of ten weeks (400 hours) or more must be spent working with a significant number of large animals. Here, as with the small animal experience, exposure to large animal veterinary medicine is ideal. If the experience is not obtained by working with a veterinarian, the requirement can be met by working on a farm which has a significant number of at least one of the large domesticated animal species, preferably dairy cattle. If, however, for some reason it is not possible to work on a dairy farm, working at one of the following will be acceptable: racetrack, stable or horse farm, cattle ranch, sheep farm, or swine farm. Other experience may be appropriate but should be reviewed in advance by the Director of Admissions and the faculty admissions committee. This experience must include the responsibility for the

general health of the animals, including cleaning, handling, feeding, and so forth. Working with a few personally owned pleasure horses, or university or college animals during a course or research project usually will not suffice.

Small Animal Experience Requirement. At least one period of ten weeks (again, a minimum total of 400 hours) must be spent working in some phase of small animal work. This requirement may be met by working with a veterinarian through a professional practice, zoo, laboratory animal program with significant colonies, or similar types of professionally based experiences. Other possibilities would include owning or working in a bona fide commercial animal-rearing operation such as a kennel, mink ranch, pet farm, etc.

Animal and Veterinary Experience Essay. This one- or two-page typewritten report should describe the applicant's involvement with animals: the work done and the applicant's assessment of the relevance of the experience to the profession of veterinary medicine.

Employer Evaluation. These standard forms must be completed by each employer and/or supervisor with whom the applicant worked to fulfill the animal experience requirements. The employer must send this information directly to the Office of Admissions by November 1. It is the applicant's responsibility to ensure that all required material is on file by the appropriate deadline. Applications without this information will be considered incomplete and will not be reviewed.

Other Requirements

Essay on Aspirations for Veterinary Medicine. Applicants are required to submit a typewritten essay of not more than three double-spaced pages as part of the supplemental application material. This original work should address those factors in an applicant's personal development and philosophy which will be of prime importance in helping the faculty admissions committee understand the applicant's commitment to and motivation for a career as a veterinarian.

Evaluation from Faculty Adviser. A standard form is provided for the applicant's faculty adviser(s) at the institution(s) where undergraduate or graduate academic preparation was completed. Evaluations compiled by advisory committees are also acceptable. Supplemental input from other faculty is often desirable.

Letters of Recommendation. Applicants are asked to provide two letters of recommendation from persons who have known them well for several years. Standard forms are provided by the office for each applicant. Recommendations from casual acquaintances usually serve little purpose for the admissions committee.

Graduate Record Examination. The Graduate Record Examination (GRE) is a requirement for admission consideration. The GRE must be taken no later than October of the year before desired matriculation, but applicants are encouraged to satisfy this requirement as early as practical. Examinations taken more than five years before the application deadline will not be considered.

The GRE is administered by the Educational Testing Service, Box 955, Princeton, New Jersey 08540. Results of the examination will be sent to the college if the institution code R 2549-4, New York State College of Veterinary Medicine is used. Do not use any other code.

A desired minimum score for the aptitude portion (verbal and quantitative) is 1200. Exceptions are possible if there is significant offsetting information to offer assurance of academic excellence. The advanced biology test or other advanced tests are not required but may be included. The college does not as yet use the results of the analytical portion of the GRE.

Application Procedures

Application forms and detailed information can be obtained by writing to the Office of Admissions, New York State College of Veterinary Medicine, Cornell University, C107 Schurman Hall, Ithaca, New York 14853. Preliminary application forms are usually available in late summer of the year before the time admission is sought. Those seeking admission for the fall of 1980 must have a preliminary application form, the initial $35 application fee, information about satisfaction of the animal experience requirements and the Graduate Record Examination test scores, and records of all postsecondary academic work on file at the College Office of Admissions by no later than October 1, 1979.

Supplemental materials such as the personal essay, animal and veterinary-related experience reports, recommendations, etc., are due by November 1, 1979. After that date the admissions committee will review the application file. The committee will look for numerous indicators of academic, personal, and professional excellence, discussed in the previous section on selection criteria. The score resulting from this faculty evaluation will be combined with a score developed from the purely quantitative variables (cumulative grade point average, prerequisite course grade point average, and GRE scores) to determine a preliminary order-or-merit list. The top-ranked applicants on that list will then be invited for an interview.

The Faculty Committee on Admissions plans to commence interviews in January. The interview, of approximately thirty minutes, is normally conducted by two or three members of the faculty admissions committee. This important part of the review process allows the committee to better understand the applicant's academic and nonacademic background, interests, personality, understanding of the profession, and ability to communicate concepts and attitudes. The results of the interview will be added to the previously derived scores to compile the final order-or-merit listing. The college is firmly committed to announcing the selections for the new class by April 15. The maximum foreseeable class size is eighty.

Counseling

Because of the large number of aspiring students, formal individual preapplication counseling sessions cannot normally be granted. However, prospective applicants and others may arrange by appointment to attend group information sessions and college tours. These are given at 9:00 a.m. on the first Saturday of each month of the school year (September through May). For an appointment please call 607/256-7634.

Reapplication

If a previously denied applicant desires to reapply, he or she should follow the same process described above with only slight modification. Previous applications are retained on file for three years after the date of the last application. Reapplication will require new forms, the application fee, and a completely new personal essay as described earlier. This new essay should also include developments the reapplicant believes has strengthened his or her candidacy. Previous essays will not be reviewed. All personal reports and other documents should be dated and signed.

Previously submitted recommendations, evaluations, transcripts, and GRE results will be transferred to the new application file. It is the responsibility of the applicant, however, to ensure that the college is provided current information to supplement that submitted with any previous application. Applicants are not required to retake the GRE, but if that is done, the Faculty Committee on Admissions will review all results with the higher combination of scores being entered for the record.

Advanced Standing

Applicants for admission with advanced standing as members of the second-, third-, or fourth-year class must present educational qualifications and professional accomplishments similar to those expected of students who have completed the previous year's courses here. Unless attending one of the schools or colleges of veterinary medicine accredited by the American Veterinary Medical Association, applicants must satisfactorily pass 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 candidate must file a formal application as directed earlier and must be interviewed by the admissions committee and possibly other faculty. Places for admission to the college with advanced standing are limited and depend on vacancies occurring in that particular class.

It is imperative that the admissions committee have detailed and translated summaries of veterinary medical academic programs and accomplishments for those seeking advanced placement from schools in foreign countries. Advanced standing applications are normally considered during the summer months before desired matriculation, but applications should be on file and completed as early as possible and no later than April 1.

Further Information

Additional questions about admission opportunities can be answered by writing the Office of Admissions or telephoning 607/256-7633. The college *Announcement* may be obtained by writing Cornell University Announcements, Building 7, Research Park, Ithaca, New York 14850.

University Requirements

Applicants for admission must not only satisfy the college 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 registration fee. Candidates will be advised of the due date and amount of this fee at the time an acceptance for admission is sent.

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. Failure to fulfill the health requirements may result in loss of the privilege of registering the following term.

Combined Courses

By judicious planning, D.V.M. students who do their preveterinary work in the College of Agriculture and Life Sciences at Cornell and who are accepted before completion of their B.S. degree, 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 their undergraduate faculty advisers.

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 or her 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 in-

coming 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. Leroy Coggins, Graduate Faculty Representative, New York State College of Veterinary Medicine, Ithaca, New York 14853.

Application for admission must be made to the Graduate School, Sage Graduate Center, Cornell University. Applications for fall term or summer admission will be received until March 1; applications for spring term admission will be received until October 1.

All applicants to the graduate Field of Veterinary Medicine should submit results of the Graduate Record Examinations Aptitude Test taken during the past four years. Scores of an advanced test are also desirable.

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 pursue independent investigations. Courses of study especially adapted to advanced work and research will be found among those listed in pp. 25-46 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.

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.

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.
2. Regular attendance and study in any of the clinics of the College of Veterinary Medicine or of the Medical College.

All candidates must have 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 $3,832 a year for New York residents and $5,474 a year for nonresidents. Most students in the college do not live in University housing. The cost of room and board in Ithaca for 1979-80 is estimated at $2,600. Books, instruments, and supplies cost approximately $300 a year. An additional allowance of $1,000 should be made for clothing, laundry, local transportation, entertainment, and incidentals. These estimates are based on standard budget figures provided by the University Office of Financial Aid for the purpose of allocating funds and budgeting for financial aid. Individual expenditures may exceed these figures, depending on personal preferences in housing, transportation, dining, etc.

Students who wish to pay tuition in monthly installments should contact Academic Management Services, Inc. by telephoning 800/556-6684, a toll-free number. Subscribers to the service pay a $30 fee.

The *Announcement of Academic Information* describes University policies; student services; fee schedules; payment procedures; fines, penalties, and routes of appeal; and extracurricular activities.

Refund Policies

Application and registration fees are nonrefundable after the dates such payments are due.

A student who registers for fewer than 12 credit hours a semester may, upon the recommendation of the dean and with the approval of the registrar, be charged the full administrative and student service charge plus a prorated tuition charge.

A student who takes an approved leave of absence will be charged tuition from the date of registration to that of certified withdrawal as follows: no charge for five days; 10 percent tuition charge accruing for each of the first four weeks; 60 percent the fifth week, 80 percent the sixth week and 100 percent the seventh week. If the student is a financial aid recipient, aid will be reevaluated, possibly necessitating repayment of a portion of the aid received.

In the event of the death of a student, tuition refunds will be calculated by prorating bills by the day.

Students in the Graduate School who register for summer residence credit will pay fees and tuition proportionate to the credit earned, irrespective of the length of time spent on campus.

Candidates for the degree of M.S., Ph.D., or D.Sc. in Veterinary Medicine should consult the *Announcement of the Graduate School* for applicable tuition and fees. *The amount and manner of payment of tuition or other fees may be changed at any time without previous notice.*

Financial Aid

Information and guidance regarding financial aid for veterinary students is available from the college Financial Aid Office. A description of the methods, procedures, calendar, resources and policies can be found in the college publication *Financial Aid 1979-80.* This brochure is updated annually. Although grants and scholarships are not abundant, all of the demonstrated needs of students presently enrolled have been met. Approximately 85 percent of the financial aid available for the coming year will be through programs such as Health Professions student loans, National Direct Student Loans, Higher Education loans, and the College Work Study Program. The college's policy of support is based upon the assumption that parents and spouses are willing to help finance the education of their children or spouses to the extent possible.

To standardize procedures and provide uniform criteria for estimating family financial strength, the college uses the Graduate and Professional School Financial Aid Service (GAPSFAS) and federal income tax information. The college Office of Financial Aid makes individual need analysis, and available aid is recommended accordingly. Financial aid packages prepared by the college Financial Aid Office combine loans, employment, and gifts or grants.

A veterinary student who desires financial aid should request a GAPSFAS application form from the college and must complete it by March 1 for aid beginning the following autumn. Applicants interviewed for admission to the first-year class will receive GAPSFAS forms when interviewed. Application for financial aid does not affect the admissions evaluation process.

Residents of New York State who qualify for the Tuition Assistance Program (TAP) awards must apply each year to the New York State Higher Educational Services Corporation, Tower Building, Empire State Plaza, Albany, New York 12255. Applications should be submitted in early summer; the deadline is March 31 of the academic award year.

Practice in a Veterinary Shortage Area

The Secretary of Health, Education and Welfare is empowered to enter an agreement of repayment of a portion of Health Profession Student loans for practice in a designated veterinary shortage area. Veterinary students are cautioned, however, not to borrow a Health Profession Loan in anticipation of federal repayment.

Loan Funds

Sources 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. Hagen 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; the Joseph Brender Student Loan Fund; the Omega Tau Sigma Fraternity Loan Fund; the Health Professions Loan Program; National Direct Student Loans; New York State Higher Education Services Corporation (similar services are available to residents of most states); and certain other funds administered by Cornell University. Most guaranteed loans defer interest or principal payments until the student has left school. Interest rates vary according to source of the loan, and certain short-term loans are interest free.

Guaranteed student loans are also available through two programs which provide no interest subsidy: New York Supplemental Loan Program for students in medicine, dentistry, and veterinary medicine; and the Health Education Assistance Loan (HEAL) program of the United States Office of Education, Department of Health, Education and Welfare.

Scholarships for Veterinary Students

Veterinary students may receive help from various scholarship funds throughout the four-year course of study. The nature and extent of such assistance depends upon scholastic achievements, specific criteria established by each benefactor, and recommendations of the appropriate college committees. Application procedures are outlined in announcements that are posted and distributed to each student. Committee evaluations and recommendations are completed at the end of spring semester. Scholarship stipends are handled by the University treasurer and credited

to the students' academic charges during the following year. Students interested in securing other forms of financial assistance should contact the college director of financial aid.

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.

Albany Kennel Club Scholarship. This scholarship is awarded to a New York State resident who by character, achievement, and financial need is a worthy recipient. It is given as a mark of respect for the New York State College of Veterinary Medicine which has contributed so substantially to the well being of our four-footed friends.

Allen 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.

The Joseph Brender Student Aid Fund. Established by friends of Joseph Brender, this memorial loan/scholarship fund provides income for an annual scholarship award to veterinary students, with preference given to ethnic minority students.

Harriet G. Bird Memorial Scholarship. Established by the Merwin Memorial Free Clinic for Animals, Inc., for Massachusetts residents. The award is based primarily on the financial need of applicants who maintain satisfactory academic performance.

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.

Priscilla Maxwell Endicott Scholarship. This endowed scholarship was established in 1977 in honor of Niel W. Pieper, D.V.M. 1932. The income is to be used primarily for support of Connecticut students in the college. It is awarded on the basis of creditable academic performance, personal attributes, and financial need. If the scholarship is not needed for Connecticut students it may be used for students from other New England states.

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.

Horse Show Education Fund Scholarship. This scholarship is offered by the Horse Show Education Fund organization of Ashland, Maine, to students from the New England states who have demonstrated a special interest in horses and have financial need.

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.

Madelyn C. Kreisler Scholarship. Established in 1977 from the Madelyn C. Kreisler estate to provide scholarships in veterinary medicine.

Germaine B. Little Student Loan Fund. This loan/scholarship fund was established by the will of Germaine B. Little. Income from this fund is awarded annually to selected veterinary students who have demonstrated 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.

New York State College of Veterinary Medicine Campaign for Excellence Student Fund. This loan/scholarship fund was established from contributions to the college by alumni and friends through

the 1976-80 campaign for Cornell veterinary medicine. Income from the fund is offered annually as scholarship support for students with financial need.

Plainfield Kennel Club Scholarship. The Plainfield (New Jersey) Kennel Club offers this scholarship to a deserving veterinary student from the State of New Jersey.

Ryman and Katherine Powell Student Fund. This loan/scholarship fund was established by two veterinarians, Frank, '63, and Joseph, '67, Powell in honor of their parents. Earned income from this endowment is awarded annually in the form of scholarship, with preference given to students from western New York State.

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.

Student Auxiliary/Student Chapter of the American Veterinary Medical Association Scholarship. This award is for the purchase of textbooks required in the veterinary program. Married students beginning their second year whose spouses are members of the Student Auxiliary and who have demonstrated financial need and satisfactory academic standing are eligible. Credit accounts are established at the bookstore for the recipients.

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 Clinical Sciences.

Troy Kennel Club provides a scholarship of $250 for a veterinary student who needs financial assistance and who has maintained good academic standing.

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.

Colonel and Mrs. Louis G. Weisman Fund. This endowed fund can be used for either loan or scholarship purposes at the discretion of the college. Scholarships are granted from fund earnings to students on the basis of academic performance and financial need.

Western New York Veterinary Association. Two scholarships of $500 each are awarded to students who have completed their third year of study and are residents of western New York counties. Selection is based upon financial need and the awards are presented at the Erie County Fair.

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 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

These are among the prizes awarded at the College Annual Honor Day Banquet held each year in the spring.

The Alpha Psi Prize is given by Beta Chapter of the Alpha Psi Fraternity. This prize is awarded annually to a candidate selected by faculty ballot. The award is made to a member of the graduating class who has shown by his or her scholarship, character, and breadth of interest that he or she is especially well equipped to advance the standards of veterinary science.

American Animal Hospital Association Student Award. The Senior Award, consisting of a letter of commendation and an engraved plaque, is given in recognition of outstanding proficiency in small animal medicine and surgery. Nominations for these awards are made by the faculty of the Department of Clinical Sciences responsible for teaching in the Small Animal Clinic.

The James Gordon Bennett Prize. In 1916 Mr. James Gordon Bennett, New York, New York, endowed this prize for the students who show the greatest humaneness in handling animals, with special reference to the use of anesthesia. Mr. Bennett was the editor of the *New York Herald* (forerunner of the *Herald Tribune*) a century ago. A man of diverse abilities and interests, he is the person who dispatched Henry M. Stanley in 1870 to find Dr. David Livingston in Africa. Nominations are made by the faculty of the Department of Clinical Sciences.

The Anne Besse Prize. Miss A. B. Jennings of New York City endowed this prize in 1925, for the best work in large animal medicine. Candidates are nominated by members of the Department of Clinical Sciences who teach large animal medicine.

The Charles Gross Bondy Prize. Mr. Richard Bondy, New York, New York, endowed this prize in

1929 as a memorial to his son, for the best work in the courses in practical medicine and surgery of small animals. Nominations are made by the faculty of the Department of Clinical Sciences responsible for teaching in the Small Animal Hospital.

The A. Gordon Danks Large Animal Surgery Award. An award initiated in 1978 by the faculty of the surgical section of the Department of Clinical Sciences with responsibility for teaching in the Large Animal Clinic. It is in recognition of the outstanding contributions of Professor Emeritus A. Gordon Danks, first director of student administration and admissions and former chairman of the Department of Large Animal Medicine and Surgery. It is presented to a senior student demonstrating outstanding knowledge and talent in the diagnosis and treatment of surgical problems of large animals. Basic and applied knowledge, diagnostic abilities, general surgical skills, and patient care exhibited during the clinical rotations are considered in the presentation of this award.

Diamond Service Award. This award is 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.

Hill's Senior Student Award. Hill's Division, Riviana Foods, Inc., will make a cash award to a senior student or students, for the best clinical documentation of a clinical small animal case where dietary management was employed as all or a substantial part of the treatment and demonstrated to be beneficial. Nominations are made by members of the Department of Clinical Science with responsibilities in the Small Animal Clinic.

The Merck Manual Awards. Two copies of the *Merck Veterinary Manual,* embossed with the names of the recipients, presented by Merck and Company, Inc., are presented to members of the graduating class. The basis of the award may vary from year to year and is determined by the dean and the director of student administration.

The Jane Miller Prizes. Funds for the endowment of these prizes were given by Dr. Frank H. Miller, a trustee of Cornell University for twenty consecutive years, a graduate of McGill University, and cofounder with H. K. Miller of the first small animal hospital in New York City, for the best work in veterinary physiology. It is awarded as a memorial to his wife to members of the second-year class. Candidates are nominated by the faculty in the Department of Veterinary Physiology, Biochemistry, and Pharmacology.

The Malcolm E. Miller Award. In 1965 Mrs. Mary Wells Miller established this award in memory of her husband, Dr. Malcolm E. Miller '34, a former professor of anatomy and the 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 perseverence, scholastic diligence, outstanding improvement, and other personal characteristics that will bring credit and distinction to the veterinary profession.

The Mary Louise Moore Prize. Dr. Veranus A. Moore established this endowed prize as a memorial to his wife for the best work in bacteriology. Dr. Moore served as head of the Pathology and Bacteriology Department and as dean of the Veterinary College from 1908 to 1930. Nominations are made by the Department of Veterinary Microbiology.

The New York State Veterinary Medical Society Prize. Funds for this prize are provided annually by the society for the best case report. Members of the fourth-year class are eligible to compete. Nominations are made by the Senior Seminar Committee who judge the quality of the case reports.

The Norden Distinguished Teacher Award. The recipient must be a full-time member of the veterinary medical faculty primarily engaged in teaching, which may include part-time research. Preceptorship and teaching ability as judged by student responsiveness and moral character and leadership are the primary qualifications for consideration.

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. The prizes 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. The Alpha Chapter of Phi Zeta, the honor society of veterinary medicine, each year makes an award to the second-year student who has the best academic record after completion of the first three semesters of study. The recipient of the award receives the Beeson-McDermott *Textbook of Medicine.*

The Poultry Disease Prize. This 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, and is awarded to the student with the highest grade in the courses on avian diseases.

The Anna Olafson Sussex Pathology Award. This award was endowed in 1974 by Peter and Harriette Olafson in memory of Dr. Olafson's sister. The award is to be given at the end of the third year on the recommendation of those actively engaged in teaching pathology.

The Jacob Traum Award. Through an endowment established by friends of Jacob Traum '05, professor of bacteriology emeritus, University of California, and formerly chief scientist at the federal Plum Island Animal Disease Laboratory, this prize is awarded to the fourth-year student who is judged by the Department of Veterinary Microbiology as having exhibited superior interest and accomplishment in bacteriology, epizootiology, pathology, and virology, including aptitude for and expressed interest in research on infectious diseases.

The Horace K. White Prizes. An endowment for these prizes was originally given by Mr. Horace K. White (and later his sons of Syracuse, New York) for the students whose academic records for the entire veterinary course are the highest. This award, originally called the President's Prize, was first made in 1873 and is probably the longest-standing prize at Cornell. The original donor was a brother to Andrew Dickson White, the first president of the University.

The Prize of the Women's Auxiliary of the American Veterinary Medical Association. On the recommendation of the Committee on Scholarships, this award is presented to the member of the fourth-year class who is deemed to have best advanced 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. 9-11), successfully complete the courses named in the curriculum below, have paid all fees due, have spent at least one year in residence, and be recommended for graduation by the college faculty.

The academic year, divided into two terms, begins in September and ends in May. Under consideration is a proposal to initiate summer academic clinics for the period between the end of the normal third year and beginning of the fourth year of classes. Students would be given appropriate vacation periods (free blocks) at other times to generally compensate for time spent in clinical study during the summer period.

At the conclusion of each term, the college faculty reviews the records and conduct of students. Unsatisfactory students may be denied permission to register, graduate, or varying degrees of academic warning or probation may be assigned.

The Curriculum

The college has a core-elective curriculum. A summary of the core curriculum is shown below.

The abbreviation "Req." indicates that a course, or its equivalent, is required for graduation but that no formal credit is given for the course. Courses marked "S" are offered on an S-U basis only.

First Year

Fall Term	*Credits*
500 Gross Anatomy	5
502 Developmental and Microscopic Anatomy	3
525 Vertebrate Biochemistry	5
568 Veterinary Medical Orientation	S 2
581 Nutrition	2
	17

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

Second Year

Fall Term	*Credits*
515 Veterinary Immunology	2
516 Veterinary Bacteriology	2
518 Veterinary Mycology and Protozoology	1
527 Physiology for Veterinary Students	4
535 Veterinary Pathology I	4
537 Veterinary Parasitology	4
560 Clinical Methods	2
	19

Spring Term	
517 Veterinary Virology	2
519 Infectious and Zoonotic Diseases	3
528 Basic Pharmacology	4
536 Veterinary Pathology II	5
545 Principles of Epidemiology	2
555 Avian Diseases	2
561 Obstetrics and Reproductive Diseases	3
579 General Medicine	2
	23

Third Year

Fall Term	*Credits*
505 Applied Anatomy	1
520 Preventive Medicine in Animal Health Management	S 2
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	3
587 General Surgery	3
	23

Spring Term	
506 Applied Anatomy	1
564 Large Animal Medicine	4
565 Large Animal Surgery	3
566 Radiology	2
567 Clinical Nutrition	2
584 Small Animal Medicine and Surgery	8
586 Small Animal Surgical Exercises	1
	21

Fourth Year

Fall Term	*Credits*
520 Preventive Medicine in Animal Health Management	S 2
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
	—
	17

Spring Term	
572 Senior Seminar	Req.

Elective Blocks

Major Blocks	
570 Theriogenology	4
574 Large Animal Surgical Clinic	4
576 Ambulatory/Mastitis Clinic	4
590 Small Animal Medicine Clinic	4
592 Small Animal Surgical Clinic	4
594 Large Animal Medicine Clinic	4
596 Opportunities in Veterinary Medicine	4
Minor Blocks	
540 Clinical Pathology Clinic	2
541 Necropsy Clinic	2
578 Anesthesia Clinic	2
580 Radiology Clinic	2
593 Ophthalmology Clinic	2
598 Dermatology Clinic	2

Students must take four of the elective blocks for a total of sixteen credits 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 graduate young men and women to become practitioners, teachers, and researchers 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. (The College Placement Office can provide data on the average salary of graduates.) 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

For several years the need for veterinarians in private practice has exceeded the supply. Recent analysis suggests, however, that there is the potential for an oversupply of veterinarians in private practice beginning in the mid-1980s.

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 manufacturers, 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. In certain areas of the country veterinarians play an essential role in the health and protection of horses at major race tracks.

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, through 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.

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.

Academic Institutions

Every veterinary college and many agricultural and medical colleges have a constant need to identify, recruit, and employ highly qualified veterinarians as teachers, researchers, public service specialists, and administrators. The opportunities here are numerous as more emphasis is placed on the many facets of academic veterinary medicine.

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 of the state 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, 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. Other details are available through the State Board of Examiners.

Health Services

Health services 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. 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 Health Insurance Plan

Cornell sponsors a health insurance plan underwritten by Fiduciary Insurance Co. 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. Students are urged to carefully consider the comprehensive benefits available for a relatively modest fee before waiving the plan. The plan covers services not available on campus, such as hospital care and consul-

tations. Further, it provides for expenses relating to illness or accidents outside Ithaca during the academic year and vacation periods. Families are eligible for coverage. Information about this insurance may be obtained by calling 607/256-6363 or visiting the Gannett Medical Clinic where a representative of the insurance company has an office.

Health Care Plan for Student Spouses

The University Health Services provides health care for student spouses on a prepaid or fee-for-service basis. The fee schedule and other information about this service is available at the front desk and in the Billing Department at the Clinic.

Emergency Health 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 256-5155 during clinic hours or 272-6962 after clinic hours.

Housing and Dining Facilities

University Housing

All applications for 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 are found in the booklet *Living on Campus* 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 Housing Assignment Office, 223 Day Hall.

Graduate Students

University housing in residence halls is available to single graduate students upon application to the Housing Assignment 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 just inside the southwest entrance to the campus. A third residence is a small apartment building, Thurston Court, housing 26 graduate students. It is located just north of the Fall Creek Gorge on Thurston Avenue.

Student Families

The University maintains apartment accommodations for approximately 420 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 Housing Assignment 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 House, 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 six Co-op Dining centers (Willard Straight Hall, Noyes Student Center, North Campus Union, Risley Hall, Sage House, 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 Cornell Dining, 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 Cornell Dining. The Cornellcard program is administered by the Bursar's Office. Information is available from the Bursar's Office, Cornell University, 260 Day Hall.

Cornell Dining 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.

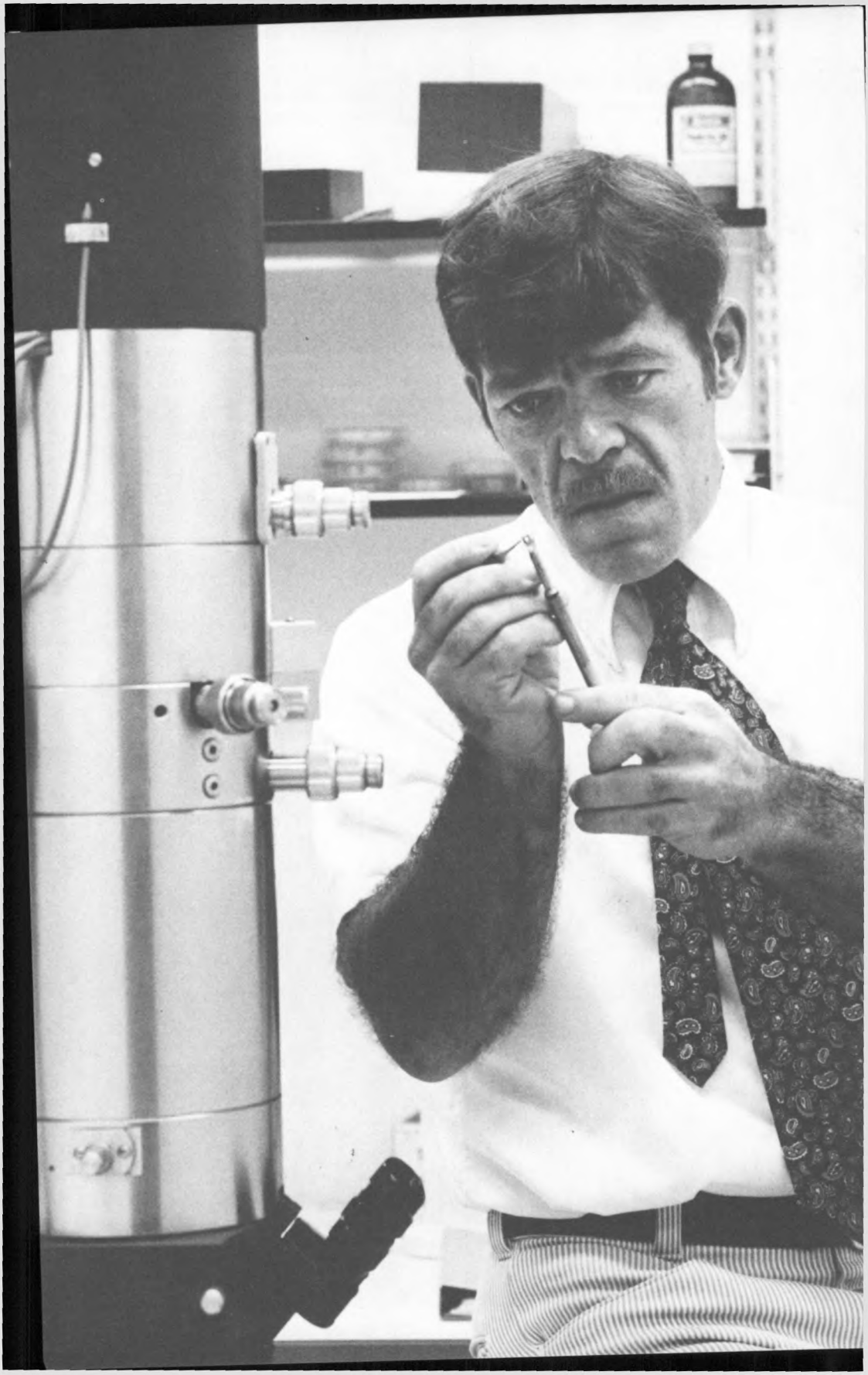
Conduct of Students

Cornell students are expected to conduct themselves in an orderly 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 College of Veterinary Medicine Student Honor Code and various other Cornell regulations. The honor code is implemented by a Student Administrative Board granted initial jurisdiction for student conduct by the faculty. A student may at any time be removed from the University by the faculty.

The College of Veterinary Medicine 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.



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.

Courses in other colleges available to all Cornell students are listed in *Cornell University: Description of Courses.*

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, J. F. Cummings, A. deLahunta, W. O. Sack; Associate Professor D. M. Noden; Visiting Associate Professor P. H. McCarthy; Teaching Assistants A. G. Watson, S. Crowell-Davis, L. C. Hudson

Anatomy courses occupy the largest block of student time during the first year. The department offers 30 credit hours of instruction, including 6 core courses and 6 elective courses.

The anatomy laboratories are well equipped and pleasant to work in. The department maintains a transmission electron microscope and a large serial section embryo collection. Facilities and materials are available for graduate research in neuroanatomy and clinical neurology; gross, microscopic, and ultrastructural anatomy; developmental, comparative, and applied anatomy.

The interests and experiences of the faculty are diverse and allow them to counsel in a variety of areas. A significant effort is made by the faculty to keep abreast of the literature, investigate current anatomical questions, and publish the findings with illustrations prepared in the department. Several books and manuals have been written by faculty members for student use.

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. Laboratories, M T R F 10:10-12:35. H. E. Evans, A. deLahunta, D. M. Noden, A. G. Watson, L. C. Hudson.
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 of the chicken and the anatomy of fish and laboratory animals is reviewed in appropriate species. The lectures (supplemented by demonstrations and films) 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, R 8. Laboratories, M W R 2:05-4:25, T 10:10-12:35. W. O. Sack, A. G. Watson, L. C. Hudson.
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. Laboratories, W 10:10-12:35, R 2:05-4:25. A. deLahunta, J. F. Cummings, D. M. Noden, S. Crowell-Davis.
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. Laboratories, T 2:05-4:25, F 10:10-12:35. J. F. Cummings, S. Crowell-Davis.
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. This 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 R 2:05-4:25. W. O. Sack. Third year, spring term. Credit one hour. Laboratory, T R or F 2:05-4:25. Visiting Professor P. H. McCarthy.
An opportunity for practice in the recognition of the anatomical features that are essential to diagnostic, surgical, obstetrical, and postmortem 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 (one credit per 2½-hour period).

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, D. M. Noden.
An opportunity for advanced study under the personal direction of a faculty member.

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 (also Bio S 414) Spring term. Credit three hours. Prerequisite: graduate status or Biological Sciences 274. Laboratories, T R 1:25-4:25. H. E. Evans. Offered alternate years.
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 (fish to mammal) of interest to the class may also be presented.

Physiology, Biochemistry, and Pharmacology

Professors E. N. Bergman, acting chairman, W. J. Arion, A. L. Aronson, A. Dobson, T. R. Houpt, A. F. Sellers, C. E. Stevens, J. F. Wootton; Associate Professor W. S. Schwark; Assistant Professor K. A. Houpt; Research Associates C. J. Drost, W. G. Baird (visiting); Graduate Assistants E. deLucio, K. Munkenbeck, T. Wolski

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

525 Vertebrate Biochemistry Fall term. Credit five hours. Limited to first-year veterinary students, graduate students, or students with permission of the instructor. Prerequisite: Biological Sciences 330-331 or an equivalent course in general biochemistry. Lectures, M T W R F 9:05. J. F. Wootton and W. J. Arion.
An intermediate-level biochemistry course correlating metabolic, structural, and functional characteristics of animal 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. Lectures, M F 9:05, T 1:05. Laboratory, W or R 9:05-12:35. E. N. Bergman, C. E. Stevens.

527 Physiology for Veterinary Students Second year, fall term. Credit four hours. Prerequisite: Physiology 526. Lectures, M W F 1:05. Laboratory: section I, W 9:05-12:35; section II, R 1:05-4:25. T. R. Houpt and others.

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 instructors. Lectures, M 8, F 9:05, T 1:05. Laboratory, T 2:05-4:25.
Topics covered will include physiological disposition of drugs and poisons, drug receptor interactions, cellular pharmacology, action of drugs affecting the nervous system, and corticosteroid hormones. A number of toxicological topics will be covered in the laboratory session.

529 Clinical Pharmacology Third year, fall term. Credit two hours. Prerequisite: Pharmacology 528 or consent of the instructors. Lectures, T R 1:05. A. L. Aronson, W. S. Schwark.
Topics covered will include chemotherapy, action of drugs affecting the heart, gastrointestinal tract, skin, and the respiratory, endocrine, and urinary system.

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

621 Toxicology Spring term for second-, third-, or fourth-year students. One credit. Grading is S-U. 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, T. R. Wolski.

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 or spring term. Credit one hour. Prerequisite: Physiology 526 or permission of instructor. Elective course for all veterinary students. A. Dobson.
The course uses a self-instruction program to promote an understanding of the basis, interpretation, and technique 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 readings, and reports, adapted to the needs of students.

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

724 Physiologic Disposition of Drugs and Poisons Spring term. Credit one, two, or three hours. Prerequisites: a course in biochemistry and permission of instructor. M R 8, T 1:05. A. L. Aronson, W. S. Schwark.
Depending on the number of credits selected, topics will include the factors governing the physiological disposition of drugs and poisons, drug-receptor interactions, selected aspects of cellular pharmacology, autonomic pharmacology, and corticosteroid hormones and drugs affecting the central nervous system.

726 Physiology Spring term. Credit three hours. For graduate students. Prerequisites: Biochemistry 525, Anatomy 500 and 501, or Anatomy 700. M F 9:05, T 1:05. E. N. Bergman, C. E. Stevens.
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 W F 1:05. T. R. Houpt and others.
Lectures and demonstrations on circulation, digestion, endocrine organs, metabolism, and reproduction.

Physical Biology/Section of Physiology

Professors W. Hansel, Chairman; A. Bensadoun, A. P. Casarett, R. Foote, E. L. Gasteiger, R. Houpt, F. W. Lengemann, D. Tapper, A. van Tienhoven, R. H. Wasserman, and W. Wimsatt; Associate Professors H. Howland, F. A. Kallfelz, J. C. Thompson, Jr.; Assistant Professors K. Beyenbach, K. Houpt, E. Loew; Senior Research Associates P. Concannon, R. A. Corradino, R. A. Wentworth; Research Associates J. Fortune, C. S. Fullmer

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) environmental contamination, (b) membrane transport, (c) mineral metabolism, (d) neurophysiology, (e) physical methods in veterinary medicine, (f) radiation biology, (g) veterinary nuclear medicine, (h) physiology, and (i) reproductive physiology.

The Department of Physical Biology is the nucleus of the Section of Physiology of the Division of Biological Sciences. The primary responsibility of this 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 S 274 The Vertebrates Spring. 5 credits. Primarily for sophomores; this course is a prerequisite for many advanced courses in vertebrate biology, anatomy, and physiology. Laboratories limited to 21 students each section. Prerequisite: one year of introductory biology for majors. Fee, $10. Lectures, T R 10:10. Laboratories, M W 1:25-5, M W 7-10 p.m., or T R 1:25-5. One midterm examination given at 7:30 p.m. Staff.
An introduction to the evolution, classification, comparative anatomy, life history, and behavior of vertebrate animals. Laboratory dissection and demonstration are concerned with structure, classification, systematics, biology of species, and studies of selected aspects of vertebrate life.

Bio S 309 Techniques in Animal Handling and Surgery Intersession. Two credits. S-U grades only. Limited to 16 students, with preference given to students who are preregistered in an independent research course. Prerequisite: written permission of instructor. Fee, $5. M T W R F 9-4:30. A. van Tienhoven.
Using audiovisual materials and actual experience, this minicourse is designed to teach students techniques needed for independent research and honors projects.

[Bio S 310 Invertebrate Zoology Fall. Four credits. Enrollment limited, with preference given to upperclass students. Prerequisite: one year of introductory biology for majors. Not offered 1979-80. Lectures, W F 11:15. Laboratories, 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. Staff.
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 whenever possible.]

Bio S 313 Histology: The Biology of the Tissues Fall. Four credits. Prerequisite: one year of introductory biology; a background in vertebrate anatomy and organic chemistry or biochemistry strongly recommended. Lectures, T R 11:15. Laboratories, T R 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 S 315 Ecological Animal Physiology, Lectures Fall. Three credits. Prerequisite: one year of introductory biology for majors. Offered alternate years. Lectures, M W F 10:10. W. N. McFarland.
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.

Bio S 317 Ecological Animal Physiology, Laboratory Fall. One credit. Limited to 12 students. Prerequisite: concurrent enrollment in 315. Offered alternate years. Laboratory, W or R 1:25-4:25. W. N. McFarland.
Exercises involve measurements of important environmental factors in local habitats, laboratory experiments to familiarize students with the use of physiological methods, and an individual student research project dealing with specific adaptations of organisms to environment.

Bio S 318 Cellular Physiology Summer. Three credits. Prerequisites: one year of introductory college biology and chemistry, or permission of instructor. Lectures, M T W R F 9:30-12 for three weeks. M. V. Hinkle.
A basic course on physiological processes at the cellular level. Particular emphasis is placed on eucaryotic cells and on membrane-related phenomena. Topics include active, passive, and bulk transport across membranes; structure and function of cell organelles; cell growth and proliferation; intercellular communication; excitability; contractility; and specialized cells of the immune, endocrine, and neuromuscular systems. This course may be used as an introduction to organ or medical physiology.

Vet M 346 Introductory Animal Physiology, Lectures (also Bio S 311) Fall. Four credits. Prerequisites: one year of college biology, chemistry, and mathematics. Lectures, M W F 11:15; discussion to be arranged. Three preliminary examinations given at 7:30 p.m. D. N. Tapper.
A general course in vertebrate physiology emphasizing the basic characteristics of the circulatory, nervous, pulmonary, renal, and gastrointestinal systems; energy metabolism; endocrinology; and reproductive physiology. Neural and hormonal control of function is emphasized.

Vet M 348 Introductory Animal Physiology, Laboratory (also Bio S 319) Fall. One credit. Limited to 100 students, with preference given to students concentrating in animal physiology. Prerequisite: concurrent or previous enrollment in Vet M 346. Laboratory, M T W or R 1:25-4:25. Each student must attend a laboratory on alternate weeks. Laboratories limited to 25 students each section. 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 S 351 Biological Rhythms with a Period of One Day to One Year Fall. One credit. Prerequisites: One year of introductory biology and either Math 106, 111, or 113. Not offered 1979-80; first offered fall 1980. Lecture, R 12:20. A. van Tienhoven.
Theoretical and practical aspects of circadian and circennial rhythms will be considered. Selected topics such as the biological clock of plants, insects, and vertebrates will be presented. Light will be considered as a stimulus and as an entraining agent. The role of rhythms on migration and reproduction will be emphasized.]

Bio S 410 Seminar in Anatomy and Physiology Fall or spring. One credit. May be repeated for credit only once. S-U grades only. Limited to upperclass students. Hours and topics to be arranged. Organizational meeting first T of each semester at 7:30 p.m. in Behrman Biology Center (Stimson G20). Staff (coordinator—W. Hansel).

Bio S 412 Special Histology: The Biology of the Organs Spring. Four credits. Limited to 12 students. Prerequisite: Bio S 313 or written permission of instructor. Offered alternate years. Lectures, W F 9:05. Laboratories, 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 preparatory techniques.

Bio S 416 General Animal Physiology: A Quantitative Approach, Lectures Spring. Three credits. S-U grades optional. Prerequisites: one year of college biology and physics. Lectures, M W F 10:10. H. C. Howland.
The principles of animal physiology are developed through consideration of the functioning of cells, tissues, and organs. Specific topics discussed include respiration, metabolism, circulation, excretion, body mechanics, muscle contraction, nerve action, sensory reception, and central nervous system function. A quantitative, systems-theoretical approach is emphasized.

Bio S 418 General Animal Physiology, Laboratory Spring. Two credits. Prerequisite: concurrent

enrollment in Bio S 416 or equivalent. Lectures, one hour to be arranged. Laboratory, M T or R 1:25-4:25. H. C. Howland.
Students are introduced to basic techniques utilized in the study of the physiology of animal tissues. Experiments cover topics dealing with respiration, properties of muscle, circulation, activity of nerves, and osmotic phenomena.

Bio S 419 Undergraduate Research in Animal Physiology and Anatomy Fall or spring. Variable credit. S-U grades optional. Undergraduates must attach to their course registration material written permission from the staff member who will supervise the work and assign the grade. Hours to be arranged. Staff.
Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

Bio S 452 Comparative Physiology of Reproduction of Vertebrates, Lectures (also An Sc 452) Spring. Three credits. Prerequisite: An Sc 427 or permission of instructor. Lectures, M W F 1:25. One preliminary examination given at 7:30 p.m. A. van Tienhoven.
Sex and its manifestations. Neuroendocrinology, endocrinology of reproduction, sexual behavior, gametogenesis, fertilization, embryonic development, care of the zygote, environment and reproduction, and immunological aspects of reproduction.

Bio S 454 Comparative Physiology of Reproduction of Vertebrates, Laboratory (also An Sc 454) Spring. Two credits. Prerequisite: concurrent or previous enrollment in 452, or permission of instructor. Laboratory hours to be arranged; organizational meeting first F of semester at 2:30. A. van Tienhoven.
The laboratory provides students with an opportunity to design and execute independently experiments with limited objectives.

***Bio S 458 Mammalian Physiology** Spring. Six credits. Enrollment limited. Prerequisites: Vet M 346 or equivalent. Lectures, M W F 8. Laboratory, M or W 1:25-5. Discussion to be arranged. K. W. Beyenbach.
An advanced course in mammalian physiology for advanced undergraduates and graduate students. Lectures will be an in-depth coverage of selected topics and will include the cardiovascular system, kidney function, acid-base balance, respiration, digestion, the autonomic and the somatic nervous system, skeletal muscle physiology, endocrinology. The laboratory exercises will be closely coordinated to the lectures and will utilize advanced techniques of animal experimentation.

* This course will be first offered spring 1980 pending approval of the College Curriculum Committee.

Vet M 550 Applied Radiation Biology and Veterinary Nuclear Medicine Third year, fall term. Credit one hour. M 10:10. A. P. Casarett.
Lectures on the nature of radiation effects on cells and tissues, and diagnostic and therapeutic applications in veterinary medicine.

Vet M 600 Graduate Research in Animal Physiology and Anatomy (also Bio S 719) Fall or spring. Variable credit. S-U grades optional. Prerequisite: written permission of section chairperson and staff member who will supervise the work and assign the grade. Hours to be arranged. Department of Anatomy staff.
Similar to Bio S 419, but intended for graduate students who are working with faculty members on an individual basis.

[Bio S 612 Comparative Physiology, Lectures Spring. Two credits. Limited to 12 students. Prerequisites: concurrent enrollment in Bio S 614 and a background in chemistry (inorganic, organic, and biochemistry) and physics in addition to a course in physiology. Bio S 274 and Bio S 310 strongly recommended. Offered alternate years. Not offered 1979-80. Lectures, W F 11:15. Staff.
Lectures emphasize the comparison of physiological processes of organs and organ systems in various invertebrate and vertebrate classes in relation to their evolution and environmental adaption.]

[Bio S 614 Compartive Physiology, Laboratory Spring. Two credits. Limited to 12 students. Prerequisites: concurrent enrollment in Bio S 612 and written permission of instructor. Offered alternate years. Not offered 1979-80. Laboratories, T R 1:25-4:25. Staff.
Laboratories will involve measurements of cardiovascular, respiratory, muscular, excretory, endocrine, alimentary, thermoregulatory, and nervous system function in selected invertebrates and vertebrates.]

Bio S 619 Lipids (also Nutritional Sciences 602) Fall. Two credits. Lectures, T R 11:15. A. Bensadoun.
Advanced course on biochemical, metabolic, and nutritional aspects of lipids. Emphasis is placed on critical analysis of current topics on lipid methodology; lipid absorption; lipoprotein secretion, structure, and catabolism; mechanism of hormonal regulation of lipolysis and fatty acid synthesis; and cholesterol metabolism and atherosclerosis.

Vet M 650 Special Projects in Physical Biology Fall or spring. Variable credit. S-U grades optional. Prerequisite: written permission of section chairperson and staff member who will supervise the work and assign the grade. Hours to be arranged. Staff.
Similar to Bio S 419, but intended for graduate students who are working with faculty members on an individual basis.

Vet M 652 Applied Electrophysiology (also Bio S 617) Fall term. Two credits. Open to seniors, graduate students, and second-, third-, and fourth-year veterinary students. Lecture, W 8. Laboratory, W 2-4:25. E. L. Gasteiger, E. R. Loew.
Theory and practice of electrophysiological techniques currently used for study of the nervous and muscular systems in normal and diseased states. Among specific topics that will be included are electroencephalography, electromyography, electroretinography, and evoked potentials.

Vet M 653 Clinical and Research Techniques in Veterinary Nuclear Medicine Fall term. Credit two

hours. Intended primarily as an elective course for veterinary students. Prerequisites: Vet M 550 or equivalent, Vet M 636 or equivalent, and/or permission of instructor. One lecture and one laboratory, hours 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.

Vet M 750 Radioisotopes in Biological Research (also Bio S 616) Spring term. Credit four hours. Prerequisites: courses in animal or plant physiology, or permission of instructor. Lectures, T R 11:15. Laboratory, T 1:25-5. F. W. Lengemann.
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, and whole body counting. Particular emphasis is placed on liquid scintillation counting, double label experiments, and on ^{14}C and ^{3}H as metabolic tracers. Experiments are designed to present basic principles while utilizing plants and/or animals as the subject material.

[Vet M 752 Biological Membranes and Nutrient Transfer (also Bio S 618) Spring. Two credits. Prerequisites: courses in animal or plant physiology, quantitative and organic chemistry, and physics, and permission of instructor; courses in cellular physiology and elementary physical chemistry recommended. Offered alternate years. Not offered 1979-80. Lectures, T R 11:15. 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.]

Vet M 753 Mammalian Neurophysiology (also Bio S 610) Spring. Three credits. Limited to 16 students. Prerequisites: two years of college biology; courses in biochemistry and physics recommended. Offered alternate years; next offered spring 1980. Lecture and discussion, R 10:10. Laboratories, R 1:25-4:25 and additional hours to be arranged. E. L. Gasteiger.
Studies will include electrical activity of cells, reflexes, decerebrate rigidity, acoustic microphonic response, subcortical stimulation, and evoked and spontaneous cortical activity.

Vet M 755 Physical Biology Graduate Seminar Fall and spring terms. Credit one hour. W. Hansel and staff.

Vet M 758 Molecular Mechanisms of Hormone Action (also Bio S 658) Spring. Two credits. Prerequisite: permission of instructor. Offered alternate years. T R 8. R. A. Corradino.
An advanced course developed from the current literature on endocrine mechanisms.

[Vet M 759 Nutrition and Physiology of Mineral Elements (also Bio S 615 and N S 659) Fall. Two credits. Prerequisites: courses in basic physiology, intermediate biochemistry, and general nutrition. Offered alternate years. Not offered 1979-80. Lectures T R 10:10. R. H. Wasserman, R. Schwartz, D. R. VanCampen.
Lectures on nutritional aspects, and physiological, biochemical, and hormonal relationships of the prominent macroelements 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, interrelationships, and toxicity of various mineral elements.]

Animal Reproduction and Development (An Sc 220) Fall. Four credits. Laboratories limited to 36 students each section. Prerequisite: one year of college biology or equivalent. Lectures, T R 9:05. Laboratory and demonstration, M T W R 2-4:25, 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 audiotutorial laboratory is available for independent study to prepare for laboratory experiments.

Fundamentals of Endocrinology (An Sc 427) Fall. Four credits. (Students who wish to attend only the lectures should enroll in An Sc 426, a three-credit course.) Prerequisite: a course in human or veterinary physiology or permission of instructor. Lectures, T R S 10:10. Laboratory, T or R 1:25-4:25. 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.

Comparative Physiology of Reproduction of Vertebrates, Lectures (An Sc 452) Spring. Two credits. Prerequisite: An Sc 427 or permission of instructor. Lectures, 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, and nutrition and reproduction.

Comparative Physiology of Reproduction of Vertebrates, Laboratory (An Sc 454) Spring. Two credits. Prerequisite: concurrent or previous enrollment in An Sc 428, or permission of instructor. Laboratory, hours to be arranged; organizational meeting F 2:30 first week of semester. A. van Tienhoven.
The laboratory provides students with an opportunity to independently design and execute experiments with limited objectives.

Pathology

Professors Robert M. Lewis, chairman, J. Bentinck-Smith, C. I. Boyer, Jr., L. Coggins, J. R. Georgi, J. King, L. Krook, K. McEntee, F. M. Noronha, C. G. Rickard; Associate Professors: D. H. Lein, R. R. Minor, H. F. Schryver, D. O. Slauson; Assistant Professors: J. A. Carlisle, W. L. Castleman, G. L. Cockerell, B. J. Cooper, R. H. Jacobson; Adjunct Assistant Professor: G. V. Lesser; Senior Research Associate: M. J. Kemen; Interns/Residents: J. Crissman, B. Froscher, J. Lay, R. Seiler, D. Sponenberg, G. Sykes, T. Van Winkle; Graduate Assistants: J. Edwards (in absentia), R. Elston, P. Frelier, H. Gelberg (in absentia), L. Gleeson, R. Gunther, P. Meunier, B. Summers, S. Wade, C. Wimberly, M. Wolfe

The department's modern facilities provide ample 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 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.

[440 Parasitic Helminthology Spring term, alternate years. Credit three hours. Prerequisites: one year of biology and Vet M 330 or equivalent. Limited to 10 students. Not offered 1979-80. Two laboratories, hours to be arranged; one additional hour by appointment. J. R. Georgi.
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-parasitic interactions. A term report based on experimental findings and a review of the relevant literature is required.]

535 Veterinary Pathology I Second year, fall term. Credit four hours. Prerequisites: Anatomy 502 and 503 or equivalent histology courses. Non-veterinary medical students also must have permission of instructor. Lectures, T F 9:05. Laboratories, T F 10:10-12:35. D. O. Slauson.
A study of disease processes beginning at the cellular level and progressing to selected body systems. Cellular pathology, injury and death at the cellular and tissue level, derangements in body fluids and blood flow, inflammation and repair, the nature and causes of tissue injury, abnormalities of cell growth, neoplasia, and the relationship of genetics to disease are discussed as general processes at a mechanistic level. These basic pathogenic processes are subsequently applied to the diseases occurring in complex organ systems such as the skin, endocrine, and reproductive systems, which serves as a bridge between Veterinary Pathology I and Veterinary Pathology II.

536 Veterinary Pathology II Second year, spring term. Credit five hours. Prerequisites: Veterinary Pathology I (535). Lectures, T R 9:05, W 11:15-12:20. Laboratories, T R 10:10-12:35. R. M. Lewis and staff.
A systematic study of the diseases in each major organ system with emphasis on differential diagnostic features, and the correlation of disturbed function with morphologic change.

537 Veterinary Parasitology Second year, fall term. Credit four hours. Prerequisite: zoology or biology. Lectures, M R 9:05. Laboratories, M R 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. Lectures, M 10:10. C. I. Boyer, Jr., 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. See Clinical Course 571, p. 37.

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 summer term. Credit three hours. Veterinary elective for any class. Lecture, W 8. Laboratory, W 7-9 p.m. R. Smith, J. Bentinck-Smith.
An illustrated presentation of practical microscopy including light, darkfield, phase contrast, and photomicroscopy.

639 Audiotutorial Course in Laboratory Animal Medicine and Science Fall or spring term. Credit one hour. Veterinary elective for third- and fourth-year veterinary students. Hours to be arranged. C. I. Boyer, Jr.
The objectives of the course are to discuss, identify, describe, define, or list in regard to laboratory animals (1) the justification for their use, (2) legislation and guidelines pertaining to their use, (3) their role as animal models, (4) the significance of diseases as complications of biomedical teaching and research, (5) the primary uses of each species, (6) their significant biologic characteristics, (7) the principles of sound husbandry procedures, (8) their principal diseases, their significance, and satisfactory procedures for their diagnosis, treatment, control, and prevention including the application of gnotobiotic and pathogen free procedures. The course is intended to prepare the undergraduate veterinary student to handle problems concerning the common laboratory animals: e.g., rodents, lagomorphs, and nonhuman primates, as they are encountered in veterinary practice. Examinations and a subjective evaluation form are required for each mini-course.

736 Pathology of Nutritional Diseases Spring term. Credit three hours. For graduate students in pathology or 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. R. Georgi, J. H. Whitlock.
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 one or two hours. Elective. Prerequisite: Pathology 535. Lecture, W 8. Laboratory, W 9-11:30. K. McEntee.

749 Laboratory Animal Clinical Rotation Fall or spring term. Credit four hours. Limited to graduate students in Laboratory Animal Medicine. Hours to be arranged. C. I. Boyer, Jr.
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, M 8. B. J. Cooper and staff.
The major objective of this course is to introduce the students to the gross and microscopic features of surgical pathology. Selected material from the Surgical Pathology Service is prepared in advance for independent review by the students. The 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 lecturers 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, R 8. J. King.
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 lecturers 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 and staff.
The major objective of this course is to introduce the student to the gross and microscopic features of special topics in pathology, including neuropathology, ocular pathology, reproductive pathology, and the pathology of laboratory animals, avian and marine species. Selected material from the Surgical and Necropsy Services 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 lecturers cover specific areas of interest and special topics not encountered in the departmental service programs.

[791 Mechanisms of Disease Spring term of odd numbered years. Credit three hours. Prerequisites: Veterinary Pathology I or equivalent, basic immunology, biochemistry, or permission of instructor. Lectures, M W F 11:15. D. O. Slauson, R. R. Minor, G. L. Cockerell:
A lecture course in advanced general pathology emphasizing pathogenetic mechanisms involved in selected disease processes. Regulatory phenomena in cells and tissues, cellular pathology, developmental pathology, the nature and causes of disease, connective tissue responses, vascular and cellular events in inflammation, humoral amplification systems, molecular mechanisms in immunopathology and the

biochemistry of hypersensitivity states, macrophage pathophysiology, membrane receptors of hemic-lymphatic cells, molecular messages in cell-mediated immunity, etiopathogenesis of neoplasia, tumor biology and pathology, tumor specific immune mechanisms.]

Microbiology

Professors J. H. Gillespie, chairman, M. Appel, S. G. Campbell, L. E. Carmichael, K. M. Lee, D. D. McGregor, F. W. Scott, B. E. Sheffy; Professor Emeritus D. W. Bruner; Associate Professors G. Lust, J. F. Timoney; Assistant Professors D. F. Antczak, R. G. Bell, G. M. Dunny; Senior Research Associates C. G. Fabricant, D. F. Holmes; Research Associate H. Greisen. Joint Appointees: Professors C. Boyer, L. Coggins, R. Cypess, J. Fabricant, N. L. Norcross, F. Noronha, G. C. Poppensiek, A. J. Winter; Associate Professor L. Leibovitz; Assistant Professor V. Utermohlen. Adjunct Professors D. Axelrod, J. J. Callis, A. Dardiri, W. Hess, C. J. Sindermann; Adjunct Associate Professors D. Morgan, H. A. Poston; Postdoctoral Fellows K. Forsum, S. Tsai, M. Woan, S. Zoha. Graduate assistants: K. Ashfaq, C. Baldwin, M. Conner, J. Desiderio, D. Dueland, B. Gametchu, Y. Hoshino, M. K. Kim, M. Langweiler, F. Osorio, R. Pollock, R. Swanson, M. Tung, R. Weiss, S. Youngren

Courses 515, 516, 517, 518 and 519 are required in the veterinary 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 and permission to register.

315 Basic Immunology, Lectures (also Bio S 305) Fall term. Credit two hours. Prerequisite: a course in basic microbiology or special permission of the instructor. T R 9:05. 204 Stocking Hall. A. J. Winter.
Course material covers current concepts in immunology at an elementary level with special emphasis on the biological functions of the immune response.

316 Basic Immunology, Laboratory (also Bio S 307) Fall term. Credit two hours. Prerequisite: a course in basic microbiology or special permission of the instructor, concurrent enrollment in 315 recommended. Laboratories, T R 10:10-12:35. N. L. Norcross.
Designed to illustrate immunological concepts presented in 315. Laboratory exercises are selected to familiarize students with basic humoral and cellular immune phenomena and to offer firsthand experience in immunological laboratory techniques.

317 Pathogenic Microbiology Spring term. Credit four hours. Intended primarily for microbiology majors, undergraduate and graduate. Course limited to 48 students. Prerequisites: 290 General Microbiology Lectures, 291 General Microbiology Laboratory, and 315 Basic Immunology, Lectures. Suggested prerequisite: 316 Basic Immunology, Laboratory. Lectures, T R 1:05-1:55. Laboratory, 2:05-4:25. G. M. Dunny, J. H. Gillespie 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: section I, M 2:05-4:25; section II, W 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 immunological tests commonly used in veterinary medicine or to see the more complex tests presented as demonstrations. Discussion of the immunological aspects of clinical cases is incorporated whenever possible.

516 Veterinary Bacteriology Second year, fall term. Credit two hours. (Courses 516 and 518 are held simultaneously, and the laboratory portion sectioned.) Lecture, T 8:00-8:50. Laboratory: section I, T F 2:05-4:25; section II, W 9:05-11:30, R 2:05-4:25. J. F. Timoney (on leave), G. Dunny, and C. Boyer.
The lectures in veterinary bacteriology are intended to give the veterinary student an understanding of the circumstances and processes by which pathogenic bacteria enter and cause disease in the different organ systems of animals. Thus the student will be given a basis for an intelligent approach to the symptomatology, diagnosis, control, treatment and prevention of bacterial disease in domestic animals. The laboratories will deal with the isolation, cultural and identification features of the common veterinary pathogenic bacteria. Recognition of these organisms in clinical specimens will be stressed.

517 Veterinary Virology Second year, spring term. Credit two hours. Lecture, F 9:05. Laboratory, M 2:05-4:25. F. W. Scott, L. Coggins.
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. (Courses 516 and 518 are held simultaneously, and the laboratory

portion sectioned.) Lecture, R 8:05-8:50. Laboratory: section I, T F 2:05-4:25; section II, W 9:05-11:30, R 2:05-4:25. J. F. Timoney (on leave), G. Dunny, C. Boyer, and D. Lindmark.
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 Infectious and Zoonotic Diseases Second year, spring term. Credit three hours. Lecture/demonstration/discussion, M 10:10-12:35. Lecture, W 1:05-1:55. D. F. Holmes (zoonotic diseases); G. C. Poppensiek (foreign animal diseases).
Clinical signs, etiology, methods of differential diagnosis, pathogenesis, methods of spread, reservoir hosts, methods of prevention and control of diseases transmissible to man and foreign animal diseases which resemble indigenous, infectious diseases or present serious economic or public health threats to the United States.

605 Special Projects in Microbiology Fall or spring term. Credit and hours to be arranged. S-U grades optional. 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. S-U grades. Prerequisite: three semesters of the veterinary college curriculum or permission of the instructor. F 2:05. F. W. Scott and guest lecturers.
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. Not offered 1979-80.
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.]

705 Advanced Immunology Lectures Spring term. Credit three hours. Prerequisite: an elementary immunology course or permission of the instructors. Offered in alternate years. Next offered spring 1980. Lectures, M W F 9. S. G. Campbell, coordinator, 1980; G. L. Cockerell, D. D. McGregor, N. L. Norcross, D. O. Slauson, V. L. Utermohlen, A. J. Winter, and invited speakers.
The lectures will be presented in groups around a specified topic and are designed to cover, in depth, selected aspects of modern immunology. 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. Offered in alternate years. Next offered spring 1980. Credit three hours. Prerequisite: permission of the instructors. T R 1:30. A. J. Winter, coordinator 1980; Immunology staff.
A series of exercises in modern immunological techniques which include *in vitro* and *in vivo* assays of cellular and humoral immunity.

707 Advanced Work in Bacteriology, Virology, or Immunology Credit and hours to be arranged. Prerequisite: permission of the instructor. S-U grades optional. Microbiology staff.
This 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 Animal Virology Lectures Spring term. Credit three hours. S-U grades unless otherwise requested. Prerequisite: Vet M 317, 517, or equivalent essential. General knowledge of biochemistry and animal pathology helpful. Priority given graduate students. Offered alternate years. Next offered spring 1981. Lectures, M W 11:15-12:05. Seminar-discussion, F 2-4:30. L. E. Carmichael, M. Appel, and staff.
Principles of animal viral pathogenesis are stressed. Topics focus on pathogenesis and host-response to viral infections, biology of selected oncogenic viruses chronic effects of viral persistence, and discussion of selected viral groups.]

[709 Animal Virology Laboratory Spring term. Offered biennially. Will be offered spring 1981. Credit two hours. S-U grades unless otherwise requested. Prerequisite: permission of instructor. Time to be arranged. M. Appel 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 Seminar Fall and spring terms. No credit. S-U grades. Required of all graduate students in microbiology and pathology. Hours to be arranged. J. H. Gillespie and R. R. Minor.

711 Laboratory Methods of Diagnosis Fall and spring terms. Credit one to three hours by arrange-

ment. S-U grades optional. Prerequisite: permission of instructor.
Instructions and practice in the application of microbiological and serological methods for the diagnosis of disease.

713 Seminars on Current Topics in Immunology and Microbiology Fall, spring, summer. No credit. S-U grades. Time to be arranged. Immunology staff.
The major objective is to provide a forum for graduate students to discuss journal articles as well as present research proposals and results.

Avian and Aquatic Animal Medicine

Professors B. W. Calnek, chairman, J. Fabricant, S. B. Hitchner, M. C. Peckham; Associate Professor L. Leibovitz; Assistant Professor, J. C. Carlisle; Senior Research Support Specialist H. W. Layton; Senior Research Associates S. A. Haider, K. A. Schat; Director of Laboratory W. F. Dean; Field Veterinarians G. B. Mitchell, T. S. Sandhu

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, even years. Credit two hours. Prerequisites: Microbiology 290 and permission of the instructor. Minimum enrollment, 5 students; maximum enrollment, 15 students. Lecture and laboratory, R 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. Lectures, M 1:05, F 10:10. Laboratory, F 11:10-12:35. 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, odd years. 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 is not required. Lecture and laboratory hours to be arranged. L. Leibovitz and J. Carlisle.
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.]

672 Aquavet: Introduction to Aquatic Veterinary Medicine

Four weeks of full time instruction at Woods Hole, Massachusetts, immediately after the spring term. Elective course limited to 32 students from Cornell, University of Pennsylvania, and other colleges of veterinary medicine. Credit four hours. C. G. Rickard.

The course is sponsored by this college, the School of Veterinary Medicine at the University of Pennsylvania, and three marine science institutions at Woods Hole—the Marine Biological Laboratory, the Woods Hole Oceanographic Institution, and the Northeast Center of the National Marine Fisheries Service. It is designed to introduce veterinary medical students to medicine as it applies to aquatic animals. The marine environment is described and visited on field trips in the Woods Hole area. Certain aspects of the comparative anatomy, physiology, nutrition, microbiology, pathology, and medicine of a variety of marine and freshwater species are discussed. Some emphasis is placed on systems of aquaculture. The specific diseases of a few selected species are presented as examples, including the diseases of a crustacean, a shellfish, a finfish, and marine mammals. Students present seminars on appropriate topics.

673 Diseases of Aquarium Fish Spring term, even years. Credit three hours. Elective course for all veterinary students and interested students in other colleges. General knowledge of parasitology, microbiology, and pathology would be helpful, but is not required. L. Leibovitz.
The course is an introduction to the subject of diseases of aquarium fish based upon the development of an understanding of normal and pathologic anatomy, a knowledge of specific disease entities, water quality and nutritional requirements of aquarium fish. The student is taught to apply his knowledge in developing diagnostic skills and applying methods for prevention, control, and eradication of diseases of aquarium 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, R 3:30-4:30. J. Carlisle.
The purpose of this seminar is to increase awareness among faculty and graduate students of each other's work and to gain familiarity with pathologic processes in various species. This is accomplished through discussions of naturally occurring or experimental diseases, presented by each of the participants on a rotating basis. Slides or other materials are made available for study by the participants several days in advance of each seminar.

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

Clinical Sciences

Medicine Section: Professors B. C. Tennant (chief; on leave 1979-80), A. deLahunta, F. H. Fox, R. W. Kirk; Associate Professors G. R. Bolton, D. W. Scott; Assistant Professors W. E. Hornbuckle, E. G. Pearson, W. C. Rebhun, R. C. Riis, M. C. Smith, G. L. Spaulding, M. E. White, J. F. Zimmer; Senior Clinician R. B. Hillman; Instructors R. DiFruscia, T. J. Kern

Surgery Section: Associate Professors E. J. Trotter (chief), R. Dueland, J. E. Lowe; Associate Professors R. P. Hackett, H. J. Harvey, D. B. Koch, D. M. MacCoy, D. F. Smith, K. K. Smith (on leave 1979-80); Instructor C. M. Koch

Theriogenology Section: Professors K. McEntee (chief), A. J. Winter; Associate Professors D. O. Cordes, C. E. Hall, D. H. Lein; Assistant Professor N. A. LaFaunce; Senior Research Associate H. O. Dunn

Anesthesiology Section: Professor C. E. Short (chief)

Clinical Pathology Section: Professor J. Bentinck-Smith (chief)

Radiological and Physical Diagnostics: Associate Professor F. A. Kallfelz (chief); Assistant Professors V. T. Rendano, Jr., B. J. Watrous; Lecturer G. D. Ryan

Equine Research: Associate Professors H. F. Schryver (director; on leave September 1979-February 1980), H. F. Hintz, J. E. Lowe

Mastitis Research: Professor N. L. Norcross (director); Associate Professor D. S. Postle

Mastitis Control: L. A. Wager (director); W. E. Linquist, supervisor of Ithaca Laboratory

The majority of the lectures and laboratory courses provided by the Department of Clinical Sciences are taught during the third year of the veterinary curriculum. The practical application of the students' basic knowledge in veterinary medicine to clinical diagnosis and therapy of diseases is emphasized at this time. The fourth year is devoted to intensive training in clinical medicine and surgery. Students are assigned responsibility for patient diagnosis and care under the close supervision of the clinical faculty. The curriculum consists mostly of an assignment to clinical services throughout the teaching hospital. During the first semester of the fourth year, students rotate for short periods through all of the clinical and diagnostic services of the hospital. In the second semester, students elect specific clinical services to serve on for two- to four-week periods.

The teaching hospital is equipped with modern surgical and diagnostic services, including sophisticated radiologic facilities and diagnostic capabilities involving nuclear medicine. The clinical pathology laboratory is equipped with an automated analyzer for blood and other body fluids.

The teaching hospital consists of three clinics. The Small and Large Animal Clinics are both hospitals with complete facilities for intensive patient care. These clinics receive both out-patients and patients that are hospitalized. Patients come directly from local clientele or are referred to the teaching hospital from veterinary practitioners in New York State and predominately the surrounding states of New England, New Jersey, and Pennsylvania. Students are assigned to the patients in the hospital where their activities are closely supervised by the clinical faculty. Students participate in the selection and evaluation of diagnostic and therapeutic procedures and assist in surgery. Although the final decision on all diagnostic and therapeutic procedures is made by the head of each service, active student participation is encouraged and essential for optimum patient care and student education.

Proximity to an urban community and an agricultural college and well-stocked farming community offer the necessary variety of patients for study.

The Ambulatory Clinic provides veterinary service on the premises of the patient under conditions identical with those encountered in private large animal practice. Students perform physical examinations and treatment under the supervision of a clinical faculty member. The farming community adjacent to the veterinary college is largely devoted to dairy farming, providing ample material related to obstetrics and diseases of dairy cows. In addition, the New York State Mastitis Control Program maintains a central field laboratory at the College. Fourth-year students accompany and assist veterinarians in field trips that deal with all phases of bovine mastitis and related dairy management procedures.

Courses

475 Health and Diseases of Animals Spring term. Credit three hours. For students in undergraduate colleges. 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 and guest lecturers from veterinary college faculty.
Diseases of domestic animals, chiefly those related to food and fiber production, are discussed with specific examples and models. Causes, prevention and control, and importance to human health are emphasized.

560 Clinical Methods Second year, fall term. Credit two hours. Lecture, M 8. Laboratory, M, T, W, or F 2:05-4:25. R. P. Hackett and faculty of surgery and medicine sections.
Restraint methods and clinical techniques used in physical examinations for diagnosis and therapeutics of small and large domestic animals. The laboratories 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 R 2:05-4:25. Fee, $15. N. A. LaFaunce.
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 R 10:10. Laboratory, W or R 2:05-4:25. Fee, $15. D. H. 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 R F 9:05. F. H. Fox, R. B. Hillman, E. G. Pearson, W. C. Rebhun, M. C. Smith, B. C. Tennant, M. E. White.
Lectures or recitations covering physical diagnosis, therapeutics, and some diseases of large animals. In addition to the instruction provided by the department staff, M. C. Smith will give lectures concerning poisonous plants.

564 Large Animal Medicine Third year, spring term. Credit four hours. M T W R 9:05. F. H. Fox, R. B. Hillman, E. G. Pearson, W. C. Rebhun, M. C. Smith, B. C. Tennant, M. E. White.
A continuation of 563.

565 Large Animal Surgery Third year, spring term. Credit three hours. Lectures, M W F 11:15. R. P. Hackett, C. M. Koch, D. B. Koch, J. E. Lowe, D. F. Smith, K. K. White.
Lectures designed to impart a general knowledge of the principles of surgery, surgical pathology, therapeutics, operative techniques, and lameness of large domestic animals.

566 Radiology Third year, spring term. Credit two hours. M 9, F 10:10. V. T. Rendano, Jr., B. J. Watrous, G. D. Ryan.
Fundamentals of radiographic diagnosis, radiation therapy, and radiation safety.

567 Clinical Nutrition Third year, spring term. Credit two hours. Required of veterinary students. T 11:15, R 1:05. F. A. Kallfelz.
Lectures and demonstrations reviewing basic principles of nutrition and covering nutritional and metabolic disease problems of domestic animals. The use of nutritional principles in the prevention, treatment, and management of diseases of domestic animals is stressed. Case material from the teaching hospital is used whenever appropriate.

568 Veterinary Medical Orientation (also Preventive Medicine 568) First year, fall term. Credit two hours. T R 8. A. deLahunta, R. H. Cypess, and guest lecturers from Cornell faculty and other institutions.
This course exposes 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 and discussion of veterinary medical ethics; veterinary jurisprudence; the organization, function, and goals of the College of Veterinary Medicine; and topics related to the interaction of the veterinarian in today's society.

569 Veterinary Medical Orientation First year, spring term. Credit one hour. M 8. W. C. Rebhun.
This course exposes the student to clinical large animal medicine as it relates to material simultaneously studied in the basic sciences of anatomy, histology, physiology. Physical examination of large animals, basic restraint of large animals, and regional anatomy of specific clinical entities are discussed. Examples of histology versus histopathology are used to illustrate some discussions.

571 Clinical Pathology Third year, fall term. Credit two 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. Laboratory omitted when Friday lecture is given. J. Bentinck-Smith.
This course is concerned with the application of the techniques of hematology, urinalysis, cytology, semen examinations, and other laboratory procedures in 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. Fourth-year students are required to attend these conferences. First-, second-, and third-year students and all staff members are also invited to attend. F 7:45. D. W. Scott, chairman.
The aim of this course is 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.

579 General Medicine Second year, spring term. Credit two hours. F. A. Kallfelz and faculty of section of medicine.
An introduction to veterinary internal medicine with emphasis given to the comparative aspects of disease and to the pathophysiologic basis of the cardinal clinical manifestations of organ system dysfunction.

581 Nutrition First year, fall term. Credit two hours. Lecture, M 10:10-11. Laboratory, T 2:05-4:25. H. F. Hintz.
Function of nutrients, sources of nutrients, and identification and evaluation of feedstuffs and feeding programs for livestock and companion animals will be discussed.

582 Large Animal Surgical Techniques Third year, spring term. Credit one hour. M T W R 2:05–4:25 (divided in groups A-D). D. F. Smith, R. P. Hackett, C. M. Koch, D. B. Koch, J. E. Lowe, K. K. White, C. E. Short.
This course is designed to impart fundamental skills in preoperative and postoperative care, anesthesia, aseptic technique, and surgical technique by closely supervised operations on the large domestic animals.

583 Small Animal Medicine and Surgery Third year, fall term. Credit three hours. Prerequisites: Pathology 536, Clinical Pathology 571, Pharmacology 528. T R F 11:15. R. W. Kirk and faculty of the medicine, surgery, and anesthesiology sections.
A 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 and faculty of the medicine, surgery, and anesthesiology sections.
A continuation of 583.

586 Small Animal Surgical Exercises Third year, spring term. Credit one hour. M T W or R 2:05–4:25. D. M. MacCoy and faculty of the surgery and anesthesiology sections.

587 General Surgery and Anesthesiology Third year, fall term. Credit three hours. Prerequisite: Pathology 536. Fee, $75. M T R 8. E. J. Trotter and faculty of the surgery and anesthesiology sections.
The principles of surgery are given, including aseptic technique, tissue considerations and healing, indications for surgery, types of wounds, and prevention and treatment of surgical complications. The general principles of anesthesia are presented, including the various techniques and pharmacological agents, as well as treatment of shock and preoperative and postoperative patient support.

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. E. G. Pearson, M. E. White.
The objective of this course is to teach veterinary students who are interested in dairy-oriented practice the common causes of cattle disease and 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. Elective course for third- and fourth-year veterinary students who have special interest in horses. W 8. R. B. Hillman.
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. W 8. B. C. Tennant. Not offered 1979-80.
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.]

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 7. M. C. Smith.
Common nutritional, reproductive, medical, and surgical problems of goats will be emphasized.

687 Diseases of Swine Spring term. Credit one hour. Elective course for fourth-year veterinary students. R 8. F. H. Fox.
Detailed consideration of most diseases affecting swine. There will be more in-depth discussion than is possible in Diseases of Large Animals. Guest lecturers will discuss their specific areas of concern and the field problems that may be encountered in New York State.

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.

690 Veterinary Dermatology Fall term. Credit one hour. W 8. D. W. Scott.
This course will emphasize dermatologic conditions of small and large animals *not* covered in the core curriculum, along with dermatopharmacology. Course grade will be based on a paper or final examination.

[778 Gastroenterology Conference Fall and spring terms. Credit one hour. R 1:05. B. C. Tennant. Not offered 1979-80.]

[**779 Veterinary Gastroenterology** Spring term. Credit two hours. W 8-9; F 2-3. B. C. Tennant and others. Not offered 1979-80.
Pathogenesis, diagnosis, and treatment of the major medical diseases of the gastrointestinal tract of domestic animals.]

780 Veterinary Research Methods Spring term. An elective and graduate course. Credit two hours. Hours to be arranged. H. O. Dunn.
Elementary to advanced statistical methods, including sampling, statistical inferences, and publication procedures.

781 Advanced Work Fall and spring terms. Five or more hours a week throughout the term. Hours to be arranged. By permission of instructor only.
Research in medicine and surgery of small animals.

782 Ophthalmology Spring term. Credit one hour. W. C. Rebhun, R. C. Riis, T. J. Kern.
This is an elective course for students who have completed the basic course. Special lectures include bovine ophthalmology, equine ophthalmology, keratopathies, retinopathies, special diagnostics.

Reproductive Pathology K. McEntee. See Pathology 740, p. 32.

Clinical Service Courses

Fall term—required rotation. Fourth-year students work in groups of four to five for three-week periods on the various services in the following clinical areas.

573 Large Animal Clinic Credit three hours. 2 surgical and 1 medical service. K. K. White.

575 Ambulatory Clinic Credit three hours. One-week periods in 3 ambulatory services and 1 mastitis service. M. C. Smith, R. B. Hillman.

577 Diagnostic Services Credit three hours. Clinical Pathology, Pathology, Radiology. J. Bentinck-Smith.

589 Small Animal Medical Clinic Credit three hours. 2 medical service and 1 ophthalmology-dermatology service. G. R. Bolton.

591 Small Animal Surgical Clinic Credit three hours. 2 surgical services and 1 anesthesiology service. E. J. Trotter.

Spring term—elective blocks. Fourth-year students may select from the following courses. Each course consists of a two- or four-week period of intensive study in that subject. The term is divided into five periods of four weeks duration. Each student must select courses for four of these time periods. A course may also be selected for the fifth period or it may be used as a free period. Only in special circumstances may a course be repeated.

540 Clinical Pathology Credit two hours. J. Bentinck-Smith, F. J. Drazek, J. D. Henion, G. A. Maylin, J. E. Post, S. J. Shin, D. W. Webert.

541 Postmortem Pathology Credit two hours. R. M. Lewis.
This course is designed to introduce the student to necropsy technique, observation and recording of lesions associated with disease processes, and the commonly employed diagnostic procedures utilized to provide final diagnosis. Emphasis is placed both on achieving correct diagnoses as well as understanding the pathophysiology of disease processes encountered in veterinary medicine.

570 Theriogenology Credit four hours. R. B. Hillman.

574 Large Animal Surgical Clinic Credit four hours. E. J. Trotter.

576 Ambulatory Clinic Credit four hours. M. C. Smith.

578 Anesthesiology Clinic Credit two hours. C. E. Short.

580 Radiology Clinic Credit two hours. V. T. Rendano, Jr., B. J. Watrous.

590 Small Animal Medical Clinic Credit four hours. G. R. Bolton.

592 Small Animal Surgical Clinic Credit four hours. E. J. Trotter.

593 Ophthalmology Clinic Credit two hours. R. C. Riis.

594 Large Animal Medical Clinic Credit four hours. W. C. Rebhun.

595 Rotating Clinic Credit sixteen hours. A. deLahunta.

596 Opportunities in Veterinary Medicine Credit four hours. Curriculum Committee.

598 Dermatology Clinic Credit two hours. D. W. Scott.

Diagnostic Laboratory

Professor R. H. Cypess, director; Associate Professors G. A. Maylin (head, Division of Toxicology), P. J. Timoney; Assistant Professors L. T. Glickman (head, Division of Epidemiology), J. D. Henion, R. H. Jacobson, T. J. Reimers (director, Endocrinology Laboratory); Research Associates E. A. Dewey, S. J. Shin, D. W. Webert; Research Assistant J. Fairbrother; Joint Appointee J. R. Georgi

The Diagnostic Laboratory consists of three divisions: Epidemiology, Toxicology, and Acute and Chronic Diseases. The mission of the laboratory is the prevention and control of the diseases of animals with particular emphasis on diseases of food and fiber species and the zoonoses. The Diagnostic Laboratory serves as a resource center whose concerns are diagnostic service for the veterinary profession and animal industry, epidemic investigation, development and

evaluation of new diagnostic tests, preventive medicine, and continuing education functions. Its faculty participate collaboratively in the teaching, service and research activities in the various departments throughout the college.

The Diagnostic Laboratory maintains laboratories of virology, bacteriology, parasitology, immunology, epidemiology, immunopathology and toxicology. Last year over 700,000 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 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, x-ray fluorescence, 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 prerace blood test. Over 151,000 tests were done last year, 75% of them prerace tests.

Preventive Medicine

Professors R. H. Cypess, chairman; J. R. Georgi, J. H. Whitlock (emeritus); Associate Professor D. G. Lindmark, Adjunct Associate Professor R. Fayer; Assistant Professors J. G. Babish, H. N. Erb, L. T. Glickman, R. H. Jacobson, M. Marmor, T. J. Reimers; Joint Appointees G. C. Poppensiek, E. W. Cupp, R. D. Smith; Research Associates J. N. Davidson, D. R. Downing, R. R. Grieve; Visiting Fellow M. E. Georgi.

This department was organized in the fall of 1977 to emphasize three areas of study: (a) epidemiology, biostatistics, and public health, (b) animal health management, and (c) environmental health.

330 Introductory Parasitology and Symbiology Spring term. Credit three hours. Elective. Prerequisite: one year of biology. Lecture, T R 11:15. Laboratory, T 2-4:30. 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.

520 Preventive Medicine in Animal Health Management Third and fourth year, fall term. Credit two hours. Lectures: third year, M W 1:05-1:55; fourth year, T R 8-8:50. H. N. Erb and J. N. Davidson.
Topics will include: critical evaluation of the literature, economics, record keeping, monitoring production and disease, and preventive herd health including quarantine, vaccination, animal management, and physical environment.

537 Veterinary Parasitology (also Pathology 537) Second year, fall term. Credit four hours. Prerequisite: zoology or biology. Lectures, M R 9:05. Laboratories, M R 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.

545 Principles of Epidemiology First year, spring term. Credit two hours. Lectures, R F 1:05-1:55. L. T. Glickman.
This course includes a review of the basic concepts of acute and chronic disease epidemiology utilizing descriptive, analytical and experimental techniques. The application of epidemiologic methods to the investigation of disease outbreaks and to the prevention and control of diseases will be discussed.

568 Veterinary Medical Orientation (also Clinical Sciences 568) First year, fall term. Credit two hours. T R 8. A. deLahunta, R. H. Cypess, and guest lecturers from Cornell faculty and other institutions.
This course exposes 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 and discussion of veterinary medical ethics, veterinary jurisprudence, the organization, function, and goals of the College of Veterinary Medicine; and topics related to the interaction of the veterinarian in today's society.

660 Safety Evaluation in Public Health Spring term. Credit two hours. Elective for veterinary students (all years) and graduate course. Prerequisites: an introductory to intermediate level course in biology, biochemistry, or physiology; a concurrent or prior course in toxicology would be helpful. T R 1:05-1:55. J. G. Babish.
The application of toxicologic methods for assessing chemical hazards to populations has become a major role of toxicologists in industry and government today. In this course, current methodologies in risk assessment will be presented with emphasis on the interpretation of data in terms of public health effects. Topics covered will include (i) the concept of a safe level, (ii) standards for acceptable testing, (iii) good laboratory practices and government regulations, (iv) testing procedures used in safety evaluation, and (v) monitoring human populations. Students will be evaluated on their ability to interpret data from animal studies and to estimate risks of human exposure.

661 Data Processing in Preventive Medicine Spring term. Credit two hours. Elective for third- and fourth-year veterinary students and also a graduate course. Prerequisite: some exposure to statistics helpful. F 2:05-4:25. J. G. Babish and J. M. Lewkowicz.

Students will be introduced to computer techniques in the creation and management of large data bases as well as procedures in exploratory and confirmatory data analysis. Topics will include data coding, collection and organization, definition of basic organizational elements; numerical and graphic forms of data display, plotting relationships; smoothing sequences; and algorithmic approaches to basic searching and sorting techniques. Actual research data bases will be used for laboratory assignments as well as a term research project.

662 Advanced Epidemiology Spring term. Credit two hours. Elective for third- and fourth-year veterinary students and also a graduate course. Prerequisites: Vet M 545, Principles of Epidemiology, and ALS 601, Statistical Methods I. M W 1:05-1:55. M. Marmor.

Concepts introduced in Principles of Epidemiology are further developed. Topics will include design and analysis of case-control and cohort studies, adjustment for confounding variables, sample size determinations, clinical trials, and medical geography. Recent articles in environmental health, cancer, nutrition, and infectious diseases will be used as illustrations. Students will be expected to prepare term papers for delivery in class.

Schedules 1979-80

These schedules are subject to change.

First Year

First Term

September 3-December 11, 1979

Examination Period: December 16-23, 1979

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*
8:00-8:50	502 Developmental and Microscopic Anatomy lecture	568 Veterinary Medical Orientation	Elective *or* free period	568 Veterinary Medical Orientation	572 Senior Seminar
9:05-9:55	525 Vertebrate Biochemistry lecture	525 Vertebrate Biochemistry lecture	525 Vertebrate Biochemistry lecture	525 Vertebrate Biochemistry lecture	525 Vertebrate Biochemistry lecture
10:10-12:05	*10:10-11:* 581 Nutrition lecture *11:15-12:05:* 500 Gross Anatomy lecture	500 Gross Anatomy laboratory	502 Developmental and Microscopic Anatomy laboratory	500 Gross Anatomy laboratory	500 Gross Anatomy laboratory
1:05-1:55					
2:05-4:25	500 Gross Anatomy laboratory	581 Nutrition lecture or laboratory	Elective	502 Developmental and Microscopic Anatomy laboratory	Elective *or* free period

Second Term

January 21-May 3, 1980

Examination Period: May 12-20, 1980

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*
8:00-8:50	569 Veterinary Medical Orientation	504 Neuroanatomy lecture	Elective	501 Gross Anatomy lecture	572 Senior Seminar
9:05-9:55	526 Physiology lecture	503 Microscopic Anatomy lecture	526 Physiology laboratory; Section I	526 Physiology laboratory; Section II	526 Physiology lecture
10:10-12:35	504 Neuroanatomy laboratory	501 Gross Anatomy laboratory			503 Microscopic Anatomy laboratory
1:05-1:55		526 Physiology lecture		545 Epidemiology lecture	545 Epidemiology lecture
2:05-4:25	501 Gross Anatomy laboratory	503 Microscopic Anatomy laboratory	501 Gross Anatomy laboratory	501 Gross Anatomy laboratory	Elective

Second Year

First Term

September 3-December 11, 1979

Examination Period: December 16-23, 1979

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*		*Friday*
8:00-8:50	560 Clinical Methods lecture	516-518 Microbiology lecture	Elective	Elective		572 Senior Seminar
9:05-9:55	537 Parasitology lecture	535 General Pathology lecture	*9:05-11:30:* 516-518 Microbiology laboratory; Section I *or* *9:05-12:35:* 527 Physiology laboratory Section II	537 Parasitology lecture		535 General Pathology lecture
10:10-12:35	537 Parasitology laboratory	535 General Pathology laboratory		537 Parasitology laboratory		535 General Pathology laboratory
1:05-1:55	527 Physiology lecture	515 Immunology lecture	527 Physiology lecture	527 Physiology laboratory Section I		527 Physiology lecture
2:05-4:25	560 Clinical Methods laboratory; Section A *or* 515 Immunology laboratory; Section I	516-518 Microbiology laboratory; Section II *or* 560 Clinical Methods laboratory; Section C	515 Immunology laboratory; Section II *or* 560 Clinical Methods laboratory; Section D		516-518 Microbiology laboratory; Section II	516-518 Microbiology laboratory; Section I *or* 560 Clinical Methods laboratory; Section B

Second Term

January 21-May 3, 1980

Examination Period: May 12-20, 1980

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*
8:00-8:50	528 Pharmacology lecture	561 Obstetrics lecture	Elective	528 Pharmacology lecture	572 Senior Seminar
9:05-9:55	579 General Medicine lecture	536 Special Pathology lecture	579 General Medicine lecture	536 Special Pathology lecture	517 Virology lecture
10:10-12:35	519 Infectious and Zoonotic Diseases laboratory	536 Special Pathology laboratory	*10:10-11:00:* 561 Obstetrics lecture *11:15-12:05:* 536 Special Pathology lecture	536 Special Pathology laboratory	555 Avian Diseases laboratory
1:05-1:55	555 Avian Diseases lecture	528 Pharmacology lecture	519 Infectious and Zoonotic Diseases	545 Epidemiology lecture	545 Epidemiology lecture
2:05-4:25	517 Virology laboratory	528 Pharmacology laboratory	561 Obstetrics laboratory; Section I *or* Elective; Section II	561 Obstetrics laboratory; Section II *or* Elective; Section I	Elective

Third Year

First Term

September 3-December 11, 1979

Examination Period: December 16-23, 1979

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*
8:00-8:50	587 General Surgery	587 General Surgery	Elective	587 General Surgery	572 Senior Seminar
9:05-9:55	571 Clinical Pathology lecture	563 Large Animal Medicine	563 Large Animal Medicine	563 Large Animal Medicine	563 Large Animal Medicine
10:10-11:00	550 Nuclear Medicine	562 Obstetrics lecture	*10:10-12:35:* Clinical Pathology laboratory; Section B *or* Elective; Section A	562 Obstetrics lecture	571 Clinical Pathology lecture
11:15-12:05	539 Laboratory Animal Medicine	583 Small Animal Medicine and Surgery		583 Small Animal Medicine and Surgery	583 Small Animal Medicine and Surgery
1:05-1:55	520 Preventive Medicine in Animal Health Management	529 Clinical Pharmacology	520 Peventive Medicine in Animal Health Management	529 Clinical Pharmacology	
2:05-4:25	Elective *or* free period	Elective *or* Clinical Pathology laboratory; Section A *or* Applied Anatomy; Section II	Elective *or* Applied Anatomy; Section III *or* Obstetrics laboratory; Section C	Applied Anatomy; Section I *or* Obstetrics laboratory; Section D *or* Elective	Elective *or* free period

Second Term
January 21-May 3, 1980

Examination Period: May 12-20, 1980

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*
8:00-8:50	564 Large Animal Medicine	564 Large Animal Medicine	Elective	564 Large Animal Medicine	572 Senior Seminar
9:00-11:00	584 Small Animal Medicine and Surgery	584 Small Animal Medicine and Surgery	9:05-9:55 564 Large Animal Medicine 10:10-11:00 566 Radiology	584 Small Animal Medicine and Surgery	584 Small Animal Medicine and Surgery
11:15-12:05	565 Large Animal Surgery lecture	567 Clinical Nutrition	565 Large Animal Surgery lecture	566 Radiology	567 Clinical Nutrition
1:05-1:55					565 Large Animal Surgery lecture
2:05-4:25	582 Large Animal Surgical Technique; Section C *or* 586 Small Animal Surgical laboratory; Section D *or* 506 Applied Anatomy; Section II *or* Elective	582 Large Animal Surgical Technique; Section B *or* 586 Small Animal Surgical laboratory; Section C *or* 506 Applied Anatomy; Section I *or* Elective	582 Large Animal Surgical Technique; Section A *or* 586 Small Animal Surgical laboratory; Section B *or* Elective	582 Large Animal Surgical Technique; Section D *or* 586 Small Animal Surgical laboratory; Section A *or* 506 Applied Anatomy; Section III *or* Elective	Elective

Fourth Year

First Term

September 3-December 11, 1979

Examination Period: December 16-23, 1979

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
8:00-8:50		520 Preventive Medicine in Animal Health Management		520 Preventive Medicine in Animal Health Management	572 Senior Seminar	*Clinics* 573 575 577 589 591
9:05-12:35	Clinics 573, 575, 577, 589, 591	Clinics 573, 575, 577 589, 591	Clinics 573, 575, 577 589, 591	Clinics 573, 575, 577 589, 591	Clinics, 573, 575, 577 589, 591	
1:05-1:55						
2:05-4:25	Clinics 573, 575, 577, 589, 591	Clinics 573, 575, 577, 589, 591	Clinics 573, 575, 577, 589, 591	Clinics 573, 575, 577, 589, 591	Clinics 573, 575, 577, 589, 591	

Second Term

January 21-May 3, 1980

Examination Period: May 12-20, 1980

Hour	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
8:00-8:50	Elective	Elective	Elective	Elective	572 Senior Seminar	Clinic blocks*
9:05-12:35	Clinic blocks*	Clinic blocks*	Clinic blocks*	Clinic blocks*	Clinic blocks*	
1:05-1:55						
2:05-4:25	Clinic blocks*	Clinic blocks*	Clinic blocks*	Clinic blocks*	Clinic blocks*	

* Clinic blocks include major blocks, which last for four-week periods, and minor blocks, which each last two weeks. See p. 39 for a listing of these courses. A lottery system of selection is employed.

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Lennart P. Krook, Associate Dean for Postdoctoral Education
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Dukes, H. Hugh, B.S., D.V.M., M.S., D.H.C., D.Sc.; Veterinary Physiology
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Geary, Jack C., D.V.M.; Physical Biology
Gilman, Herbert L., D.V.M., M.S., Ph.D.; Veterinary Bacteriology
Habel, Robert E., D.V.M., M.Sc., M.V.D.; Veterinary Anatomy
Leonard, Ellis P., B.S., D.V.M.; Small Animal Surgery
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Roberts, Stephen J., D.V.M., M.S.; Veterinary Medicine, Obstetrics
Whitlock, John H., D.V.M., M.S.; Parasitology

Professors

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Slauson, David O., D.V.M., Ph.D.; Veterinary Pathology
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Timoney, John F., B.Sc., M.V.B., M.S., Ph.D.; Veterinary Bacteriology (on leave)
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Assistant to Director: A. Cheney
Pharmacy: L. Rivkin
Medical Records: E. Vellake
Animal Care Personnel: C. Ames
Small Animal Clinic Director: E. J. Trotter
Large Animal Clinic Director: K. K. White

Sections

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Faculty: G. R. Bolton (cardiology, internal medicine), A. deLahunta (neurology), F. H. Fox (internal medicine, obstetrics), R. B. Hillman (internal medicine, obstetrics), W. E. Hornbuckle (internal medicine), K. A. Houpt (animal behavior), F. A. Kallfelz (clinical nutrition, internal medicine), R. W. Kirk (dermatology, internal medicine), E. G. Pearson (internal medicine), W. C. Rebhun (internal medicine, ophthalmology), R. C. Riis (ophthalmology), D. W. Scott (dermatology), M. C. Smith (internal medicine), G. L. Spaulding (internal medicine, cardiology), M. E. White (internal medicine), J. F. Zimmer (internal medicine, gastroenterology)

Instructors: R. DiFruscia, T. J. Kern

Staff: W. Linquist (mastitis control)

Residents: S. G. Dill, T. O. Manning, P. A. Meyer, N. S. Moise, R. P. Wickenden

Surgery: E. J. Trotter, Chief (orthopedics)

Faculty: R. Dueland (orthopedics), R. P. Hackett, H. J. Harvey (soft tissue), D. B. Koch, J. E. Lowe, D. M. MacCoy (soft tissue), D. F. Smith, K. K. White

Instructor: C. M. Koch

Residents: D. R. Gilmore, M. S. Haggerty, P. E. Howard

Anesthesiology: C. E. Short, Chief

Residents: D. B. DiFruscia, B. J. Stewart, S. B. Watkins

Theriogenology: K. McEntee, Chief

Faculty: P. W. Concannon, D. O. Cordes, R. H. Foote, C. E. Hall, N. A. LaFaunce, W. Hansel, D. H. Lein, A. J. Winter

Staff: H. O. Dunn

Clinical Pathology: J. Bentinck-Smith, Chief

Radiological and Physical Diagnostics: F. A. Kallfelz, Chief (nuclear medicine)

Faculty: E. L. Gasteiger (electrodiagnostics), V. T. Rendano, Jr. (radiology), J. R. Stouffer, D. N. Tapper, B. J. Watrous

Lecturer: G. D. Ryan

Pathology: R. M. Lewis, Chief

Interns

Ambulatory Clinic: T. A. Dickinson, E. S. Stem III

Large Animal Clinic: H. P. Davidson, N. G. Ducharme, J. A. Robbins, T. D. Wilson

Small Animal Clinic: L. D. Homco, L. S. Jorgensen, R. C. Penwick, R. P. Pitts, D. K. Walton

Radiological and Physical Diagnostics: A. E. Dietze

Library

Whitaker, Susanne K., A.B., M.L.S.; Associate Librarian
Sherwood, Charlene C., Assistant Librarian

Specialists and Technicians

Ames, Claude K., Livestock Superintendent
Conklin, Marshall E., Farrier
Hamilton, William P., Medical Illustrator

Hinman, H. Donald, Manager, Biomedical Electronic Service
Johnson, Richard C., Assistant Pharmacist
Lauber, John, Visual Aids Technologist
Reidemanis, Alfreds, Research Technician
Rivkin, Lawrence S., Pharmacist
Ryan, Gerald D., X-ray Lecturer
Smith, Robert F., Director, Biomedical Communications

Standing Committees of the College Faculty

General Committee

S. B. Hitchner (1977-80), Chairman
S. G. Campbell (1978-81)
L. Coggins (1978-81)
D. H. Lein (1979-82)
K. K. White (1979-82)

Graduate Field Executive Committee

L. Coggins, Chairman
F. A. Kallfelz
L. P. Krook
R. R. Minor
N. L. Norcross

Admissions Committee

F. W. Scott, Chairman
G. R. Bolton
J. F. Cummings
D. F. Holmes
F. A. Kallfelz
J. E. Lowe
D. S. Postle

Committee on Curriculum*

W. J. Arion
R. A. Corradino
J. Fabricant
L. T. Glickman
R. P. Hackett
F. A. Kallfelz
R. N. Minor
E. G. Pearson
T. J. Reimers
C. G. Rickard, ex officio
W. O. Sack
D. W. Scott
B. E. Sheffy

Subcommittee (Class Schedule)

J. Fabricant, Chairman
C. G. Rickard

* Student representatives are elected from each class.

Committee on Deficient Students

J. Bentinck-Smith, Chairman
R. Dueland
R. Riis
J. F. Wootton

Committee on Student Conduct

S. G. Campbell, Chairman
W. J. Arion
J. C. Carlisle
R. H. Jacobson
G. Lust

Class Advisory Committees

Class of 1983

E. N. Bergman
A. deLahunta
J. R. Georgi
R. W. Kirk
E. G. Pearson
R. C. Riis
C. E. Short
M. C. Smith
G. L. Spaulding
D. N. Tapper
M. E. White
J. F. Wootton

Class of 1982

W. J. Arion
J. L. Berzon
J. C. Carlisle
L. Coggins
J. H. Gillespie
L. T. Glickman
R. B. Hillman
W. E. Hornbuckle
J. M. King
L. P. Krook
D. M. MacCoy
W. S. Schwark
D. F. Smith

Class of 1981

A. L. Aronson
G. L. Cockerell
J. F. Cummings
R. P. Hackett
R. H. Jacobson, pro-tem
D. H. Lein
D. S. Postle
W. C. Rebhun
V. T. Rendano
H. F. Schryver
F. W. Scott
D. O. Slauson
E. J. Trotter

Class of 1980

J. Bentinck-Smith
G. R. Bolton
C. E. Hall, pro-tem
S. B. Hitchner
D. F. Holmes

F. A. Kallfelz
R. M. Lewis
R. R. Minor
G. C. Poppensiek

Committee on Scholarships

J. C. Thompson, Jr., Chairman
R. W. Kirk
M. C. Peckham
D. S. Postle, ex officio
R. H. Wasserman
A. J. Winter

Committee on Animal Use and Care

R. M. Lewis, Chairman
G. R. Bolton
C. I. Boyer, Jr., ex officio
J. E. Gilmartin, ex officio
L. T. Glickman
D. D. McGregor

Committee on College Library

J. Fabricant, Chairman
J. R. Georgi
R. H. Jacobson
W. O. Sack

Faculty Council of Representatives

F. A. Kallfelz (1979-82)
F. W. Scott (1978-81)
B. E. Sheffy (1978-81)
A. J. Winter (1978-80)

Pharmacy and Therapeutics Committee

A. L. Aronson, Chairman
W. E. Hornbuckle
R. C. Johnson, ex officio
D. M. MacCoy
W. C. Rebhun
G. L. Spaulding
M. White

SUNY Senate

G. Lust, Senator

Special Committees 1979-80

Seventy-second Annual Conference for Veterinarians

January 16, 17, and 18, 1980

C. E. Short, Chairman
G. L. Cockerell, Vice Chairman
L. E. Carmichael
R. Dueland
W. E. Hornbuckle
J. E. Lowe
W. C. Rebhun
W. S. Schwark
D. F. Smith

Senior Seminar Committee

D. W. Scott, Chairman
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L. T. Glickman
R. B. Hillman
D. S. Postle
W. C. Rebhun

Committee on Equine Research Program

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J. G. Babish
R. Hackett
W. O. Sack
D. O. Slauson

Biohazard Safety Committee

G. L. Cockerell, Acting Chairman
W. J. Arion
C. I. Boyer, Jr.
R. A. Corradino
C. G. Rickard, ex officio
J. C. Thompson, Jr.

Computer Advisory Committee

A. deLahunta
L. T. Glickman
H. Moraff
C. G. Rickard
D. N. Tapper

Student/Faculty Liaison Committee

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

Graduate/Faculty Liaison Committee

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.C.A.V.M.A., 1979-80

President: Joe Kinnarney, Class of 1980
Vice President: Dennis Brewster, Class of 1981
Secretary: Dorothea DeHart, Class of 1980
Treasurer: Peter Davis, Class of 1982
President-Elect: Jon Patterson, Class of 1981
Faculty Advisers: Dr. Gary Bolton and Dr. Bud Tennant

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. The officers are Laurence Gleeson, president, and Robert Swanson, secretary-treasurer.

Students

Graduate Students, Spring 1979

Allhands, Roger Vernon, D.V.M.; Illinois
Anika, Sylvania, D.M.V., M.S.; Nigeria
Ashfaq, Mohammad K., B.V.M.S.; Pakistan
Baldwin, Charles A., D.V.M., B.S.; New York State
Bostick, Lucy J., B.S.; New York State
Brownie, Cecil, D.V.M., B.Sc.; New York State
Chang, Chyan-Chuu, B.V.M., M.S.; Taiwan
Chibuzo, Gregory, D.V.M., M.S.; Nigeria
Crowell-Davis, Sharon, D.V.M.; Tennessee
Desiderio, James V., B.S.; New York State
Dueland, David, B.A.; New York State
Edwards, John, B.A., D.V.M.; New York State
Elston, Ralph Arthur, B.S., M.S.; California
Fabisiak, James Paul, B.V.Sc.; Australia
Fairbrother, John, B.V.Sc.; Australia
Fasina, Solomon O., D.V.M.; New York State
Frelier, Paul Frank, D.V.M.; New York State
Gametchu, Bahiru, D.V.M., M.S.; Ethiopia
Gelberg, Howard B., D.V.M.; New York State *(in absentia)*
Gleeson, Laurence John, B.V.Sc., M.V.Sc.; Australia
Griffith, Irwin John, B.A., M.S.; New York State
Gunther, Roland, A.A., B.S., D.V.M.; New York State
Heit, Gary, B.A.; California
Hoshino, Yasutaka, D.V.M.; Japan
Jones, Kevin, B.S., M.S.; Pennsylvania
Kim, Myung Kyung, B.S.; Korea
Koos, Robert D., M.S.; New York State
Krishna-Murphy, Kesava, B.V.Sc., M.V.Sc.; India
Landicho, Elito F., A.B.; Philippines
Langweiler, Marc, II, B.S., D.V.M.; New York State
Letchworth, Geoffrey, B.S., D.V.M.; New York State
Lettieri, Gerard A., A.B.; New York
Levy, Danny, D.V.M.; Israel
Light, Deborah Elise, B.S.; New York State
Lucio, Englantina, D.V.M., M.S.; Mexico
Lucio, Martinez Ben, D.V.M., M.S.; Mexico
Lumsden, Winston F., Ed.S., B.S., D.V.M., MPH, M.Ed.; New York State
Maala, Ceferino P., D.V.M., M.V.Sc.; Philippines
Majiyagbe, Kehinde, D.V.M., M.S.; Nigeria *(in absentia)*
Meyer, Sharon A., B.S., M.S.; New York State
Meyers, Theodore R., A.A.S., B.S., M.S.; New York State
Miller, Richard, B.Sc., D.V.M.; Canada
Milvae, Robert A., B.S., M.S.; New York State
Mirro, Elmer Joseph, B.S., D.V.M.; New York State
Munkenbeck, Karen E., B.S.; New York State
Murphy, Christopher, B.S.; New York Sate
Murphy, Elizabeth Lee, B.S.; New York State
Opdebeeck, Joan P., M.R.C.V.S.; Ireland
Panangala, Victor S., D.V.M., M.S.; Ceylon
Papke, R., B.A., M.S.; New York State
Penello, Wayne F., B.A.; New York State
Pollack, Roy, B.A., D.V.M.; New York State
Rubin, Dale Sue, B.A.; New York State
Shek, William Robert, D.V.M.; New York State
Shull, Robert M., B.S., D.V.M.; New York State
Skrabalak, Dale S., B.S.; New York State
Southard, Laurel, B.S.; New York State
Sponenberg, D. Phillip, D.V.M., M.S., B.S.; Texas
Summers, Brian Alan, B.V.Sc., M.Sc.; Australia
Swanson, Robert Alan, B.S., M.S.; New York State
Tashjian, Joseph J., B.S.; New York State
Tsai, Shaw-Chien, D.V.M., M.S.; Republic of China
Tung, Ming-Chen, B.S., M.S.; Republic of China
Wade, Susan, B.A., M.A.; New York State
Watson, Alastair, B.V.Sc., B.Ag.Sc., M.Agri.Sc.; Australia
Weiss, Richard C., B.S., V.M.D.; New York
Wimberly, Harry C., D.V.M.; New York State
Wissler, R., B.S.; New York State
Wolski, Thomas Richard, D.V.M.; California
Youngren, Susan D., B.A.; Maryland
Zimmer, James, D.V.M.; New York State

Fourth Year, Class of 1980*

Arnold, Bette A., Pleasantville
Baker, Donald J., Ithaca
Boothby, Janet M., Alpine
Bristol, David G., Ithaca
Camann, Christine T. Syosset
Caravaty, Mark R., Loudonville
Chafetz, Eric P., New York
Cheever, Holly, Pittsburgh, Pennsylvania
Citek, Gerald J., Flushing
Coccari, Philip J., Babylon
Cohen, Marc, Ithaca
Cominsky, Deborah B., Flushing
Conway, Marion B., Massapequa
Coren, Alan M., Bellmore
Davies, Hannah, New York
DeHart, Dorthea A., Cortland
Duhamel, Ghislaine P., Columbus, Ohio
Durland, Robert W., Baldwinsville
Edwards, Allen H., Rochester
Ellmers, Gordon R., Old Westbury
Fettman, Martin J., Brooklyn
Gerstman, Buddy B., N. Woodmere
Gibson, Mark C., Youngstown
Griffin, Wayne, Augusta, Maine
Grodkiewicz, Jeffrey P., Bayonne, New Jersey
Guard, Charles L., III, Lebanon, Ohio
Guth, Daniel T., Yorktown
Hardie, Bradford, Weston, Massachusetts
Hays, James T., Plattsburgh
Huntley, John P., Utica
Huse, Jeffrey J., Warnerville
Irwin, Priscilla S., Storrs, Connecticut
Jacobson, Andrea E., New York
Johnson, Christine, Brookline, Massachusetts
Johnson, Margaret E., Ithaca
Kinnarney, Joseph H., Johnsburg
Kornheiser, Kenneth M., Boulder, Colorado

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

Kramer, Jeffrey M., Woodbury
Franz, Mark A., Clymer
Kross, Susan, Ellenville
Lacour, Anina, Newfield
Laczak, John P., Wakefield, Rhode Island
Law, Karen D., Nanuet
Lesser, Sue Ann, Elmira
Lodahl, Claire S., Ithaca
Maas, Jennifer, Boxborough, Massachusetts
McEntee, Michael F., Ithaca
Mackay, Marianne R., Albany
MacNamara, Brian S., Harriman
Mainville, Debra C., Spencer, Massachusetts
Marder, Brian, Bellmore
Marienberg, William H., Commack
Mattucci, Margurette V., Ithaca
May, Jonathan E., Mamaroneck
Meier, Roderick S., Rochester
Meyer, Robert E., Cheektowaga
Mills, Walter S., III, Chappaqua
Moran, Jamie J., Ithaca
Munson, Linda, Dennis, Massachusetts
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., Middleton Springs, Vermont
Sarfaty, Deborah, Wantagh
Schenkein, Ronnie L., New York
Scherr, Les J., New York
Schulman, David J., Richmond Hill
Siegler, Larry P., Franklin Square
Simoncini, Diane C., South River, New Jersey
Stockwell, David C., Fort Plain
Tintle, Kevin L., Piscataway, New Jersery
Walsh, Maureen A., Sunderland, Massachusetts
Wilkinson, John E., Louisville, Tennessee
Yanoff, Susan R., Delmar

Third Year, Class of 1981

Adsit, Jane C., Baldwinsville
Bachman, Diane, Huntington
Barta, Mary A., Washington, New Jersey
Bates, Wendy A., Rochester
Bloomquist, Charles R., Baldwinsville
Brewster, Dennis M., Ithaca
Brooks, Marjory B., Utica
Brothers, Sherry L., Ithaca
Bucki, Barbara M., West Seneca
Budik, Louis, Kenmore
Chase, Thomas H., Keene, New Hampshire
Christiansen, Daniel J., Warren, New Jersey
Clark, David M., Ithaca
Covell, Sally J., Granby, Connecticut
DeVinne, Charles D., Fairport
Edinger, Harold C., Trumansburg
Elbert, Oliver, Dobbs Ferry
Feldman, Jean F., Hamburg
Garry, Franklyn B., East Berne
Goldfarb, Iris L., Bronx
Gray, James A., Oakfield
Gutlaizer, Arnold S., Amityville
Hamilton, Robert D., Lockport
Hansen, Christopher H., Valhalla
Henry, Donna J., New Haven, Connecticut
Higgins, Florence M., Queens Village
Hoyns, Heather K., Wyckoff, New Jersey
Jensen, Lisa I., Mount Vernon
Kagan, Candace B., Bangor, Maine
Kates, Eric H., Kerhonkson
Kramek, Betty A., Staten Island
Lankenau, Cynthia J., Coxsackie
Lanza, Noreen D., Southington, Connecticut
Leiman, Daniel H., Elmont
Leja, Jo-Anne M., Chicopee, Massachusetts
Lesser, Frederick R., Big Flats
Levine, Susan A., Ithaca
Levy, Jeffrey, Yorktown Heights
Lovisa, Elise M., Pelham Manor
Lynk, Thomas W., Sharon Springs
McEvoy, Elizabeth O., Bangor, Maine
MacKellar, Ian J., Lyons Falls
Meixell, Sarah L., Trumansburg
Meyer, Linda J., Far Hills, New Jersey
Meyers, Claudia E., Syosset
Michaels, Ian C., Manhasset
Miller, Burton D., Great Neck
Norman, Susan, Saranac Lake
Ohm, Stephen P., Acra
Padilla, Mary, Pleasantville
Patterson, Jon S., Westwood, New Jersey
Perdrizet, John A., Bethel, Connecticut
Polak, Donna M., Briarcliff Manor
Powers, Michael S., Milford
Purdy, Stephen R., Ithaca
Radin, M. Judith, Johnson City
Richter, Keith P., St. James
Robb, Edward J., Massapequa
Ross, Michael W., Chestertown
Saloom, Helen G., Boxford, Massachusetts
Saltman, Roger L., Prattsburg
Schutzman, Howard, Elmont
Simons, John W., St. Johnsbury, Vermont
Stewart, V. Ann, Providence, Rhode Island
Tasillo, Susan A., Andover, Massachusetts
Thompson, Belinda S., Ithaca
Tintle, Dean G., Pompton Lakes, New Jersey
Tseng, Florina Sze-Fong, Silver Spring, Maryland
Valentine, Beth A., Northport
Wachter, Allen F., Callicoon
Watson, Lorraine A., New York
Weiss, Linda J., Hamden, Connecticut
West, Gerald A., Seneca Falls
Wickes, Mary Ann, Ithaca
Williams, Douglas A., New York
Wilson, Sheila A., Huntington Station
Wolfe, Eileen M., Rochester
Wygal, Barbara B., Ithaca
Yancey, Samuel P. Glenfield
Zdrojewski, Juliane, Marilla

Second Year, Class of 1982

Anderson, Karen B., Hartsdale
Bayan, Gregory P., New Brunswick, New Jersey
Bell, Jerold S., Teaneck, New Jersey
Bernbaum, Marjorie A., West Newton, Massachusetts
Black, Paul R., Pittsford
Bressett, John D., Dryden
Bulkley, Steven L., Norwich
Burroughs, Barbara J., Essex Junction, Vermont
Carberry, Carol A., New Milford, New Jersey

Cary, Michael F., Salem
Clauss, John S., Orchard Park
Corbisiero, Ann T., Cobleskill
Davis, Peter P., Augusta, Maine
DeTone, Karen R., Bronx
Diamond, Ted A., Clifton, New Jersey
Farrell, Peter W., Brooktondale
Feldman, Alan B., Smithtown
Feldman, Steve C., Rockaway Park
Fingeroth, James M., Forest Hills
Fischer, Andrew T., Short Hills, New Jersey
Fishman, Jane E., Cheshire, Connecticut
Freer, Ann M., Guilford
Gilkey, Alicia L., Ithaca
Gittelman, Howard J., Ithaca
Green, Alan, Valley Stream
Henninger, Richard W., Kirkwood
Ivin, Karen, Berkley Heights, New Jersey
Jamison, Jeffrey M., Canisteo
Johnson, Carl K., Troy
Johnson, Cricket, Hensonville
Johnson, Peter J., Bronx
Jordan, Mark T., Cortland
Kalaher, Kathleen M., New York
Kay, Alan D., Ithaca
Krasnoff, Jeffrey K., Syosset
Krick, David W., Baldwin
LaForte, Elaine M., Delmar
Lanfranchi, Ronald G., Brooklyn
Leids, Pepi F., Dix Hills
Lightcap, Priscilla A., Garden City
Lodge, Mary B., Wilmington, Delaware
McFarland, Marianne, Falmouth, Massachusetts
McNamara, Tracey S., Forest Hills
Maus, Richard W., New City
Meric, Susan M., Fairfield, Connecticut
Mix, Barbara L., Horseheads
Moll, Kerrie J., Greenlawn
Norris, Kerry S., Auburn
O'Horo, Mary T., Canton
Olkowski, William F., Fanwood, New Jersey
Olsen, Christopher W., Saratoga Springs
Orsini, Paul G., Eastchester
Paul-Murphy, Joanne R., Huntington Station
Payton, Alice J., Morris
Phillips, Thomas R., Ithaca
Pinello, Christine B., Hauppauge
Rach, Michael P., Wantagh
Robinson, Michael, Harrison
Rogatz, William P., Roslyn Heights
Ross, Christina N., Mountainville
Rowe, Robert H., Ithaca
Saslow, Neal J., Little Neck
Scavelli, Thomas D., Brooklyn
Seblink, Gregory L., North Clymer
Shakespeare, Anne L., Setauket
Sheldon, Helen C., Thompson, Pennsylvania
Silverman, Nancy D., Denver, Colorado
Stewart, Kay A., Washington, Connecticut
Teare, John A., Ithaca
Tomkiewicz, Donna J., South Grafton, Massachusetts
Tulis, Michele R., New Hyde Park
Vaughan, Corisse N., Ithaca
Wallingford, Susan R., West Nyack
Warner, Ann M., Wayland
Weinberg, Carolyn M., Weston, Massachusetts
Wentorf, Laine E., Schenectady
Williams, Jeffrey A., Ithaca
Winn, Steven S., New York
Zancope, Mark, North White Plains
Zola, Lawrence A., West Hartford, Connecticut

First Year, Class of 1983

Abells, Gail R., South Orange, New Jersey
Baldwin, Jay L., White Plains
Barnwell, Richard W., Bronx
Beilman, Wayne T., Ithaca
Bergman, Andrea, Brooklyn
Bertone, Joseph J., Ithaca
Bird, Jacqueline, Port Jefferson
Brooks, David W., Pittsford
Burton, Stephen C., Ithaca
Butler, Julie R., New Rochelle
Carls, Sheryl H., Liverpool
Clark, Evan R., Westbury
Cottrell, Colleen A., Orchard Park
Davies, Christopher J., Freeville
Davis, W. Bradley, Vestal Center
Dodge, Kenneth R., Ithaca
Doran, Richard E., East Brunswick, New Jersey
Doyle, Lorraine A., Massapequa
Dubensky, Richard A., Ithaca
Dwyer, Ann E., Manlius
Elwell, James T., Harwinton, Connecticut
Evans, Jean C., Albany
Factor, Donald C., Coram
Fahnestock, Glenn R., Ithaca
Faulkner, Lewis W., Sparrowbush
Flinkstrom, Carl, Fitchburg, Massachusetts
Fortner, Jay H., Baltimore, Maryland
Gex, Frances A., Greenwich, Connecticut
Haag, Ellen L., Sidney
Handelman, Caryl T., Westbury
Hartzband, Lori E., Westport, Connecticut
Hassig, David W., Ogdensburg
Hassig, Donald L., Ogdensburg
Heaney, Kathleen, Rutherford, New Jersey
Henrickson, Robert L., Manhasset
Hensen, Susan Ann, East Aurora
Jones, Lucy B., Ithaca
Jurgielewicz, Joseph L., Moriches
Kates, Maura E., Kerhonkson
Kibiuk, Alexandria V., Holland Patent
Kidney, Jay K., Clinton, Connecticut
Kirby, Timothy A., Sidney Center
Kirschner, Susan E., New York
Kraai, Peter M., Fairport
Krausman, Faith J., Binghamton
Leuchtenberger, Mary J., Islip
Light, Deborah E., North Chatham
Lovelock, Robin L., Rochester
Lumley, Charles E., Mannsville
Manobla, David W., New York
Marcella, Kenneth L., Watertown, Connecticut
Marean, Judith E., Groton
Morshuk, Donna M., Rochelle Park, New Jersey
Murphy, Christopher, Freeville
Neiley, Andrea A., Dryden
Paine, James L., Strafford, New Hampshire
Pankowski, Richard L., Jersey City, New Jersey
Peyrot, Louise M., Glastonbury, Connecticut
Phalen, David N., Wilmington, Delaware
Pion, Paul D., New Hyde Park
Pollack, Michael J., Jericho

Powell, Cynthia C., Stony Brook
Quintal, Barbara J., Pennellville
Ryan, Anne M., Dunellen, New Jersey
Sandefer, David G., Verona
Schott, Thomas F., Smallwood
Schulman, Alan J., New York
Schwirck, Charles, Somerville, New Jersey
Seitel, Kathleen R., Monticello
Shapiro, Ellen D., Wilmington, Vermont
Sheldon, Joan M., Fair Haven, Vermont
Simard, Alicia G., Winterport, Maine
Simpson, Daniel F., Tiverton, Rhode Island
Smith, Francis W., Lexington, Massachusetts
Socci, Lorraine A., Flushing
Sparanese, Patricia A., Bethpage
Watts, Peter D., New York
Whiteford, Anne L., Wassaic
Windecker, Debra A., Frankford
Woodworth, Norman C., Lyndonville

Cornell University

Index

List of Announcements

Following is a list of *Announcements* published by Cornell University to provide information on programs, faculty, facilities, curricula, and courses of the various academic units.

Agriculture and Life Sciences
College of Architecture, Art, and Planning
College of Arts and Sciences
Graduate School of Business and Public Administration
Engineering at Cornell
Graduate Study in Engineering and Applied Science
General Information*
Graduate School
School of Hotel Administration
College of Human Ecology
School of Industrial and Labor Relations:
ILR at Cornell
Graduate Study at ILR
Law School
Medical College (New York City)
Graduate School of Medical Sciences (New York City)
Officer Education (ROTC)
Summer Session
New York State College of Veterinary Medicine

* The *Announcement of General Information* is designed to give prospective students pertinent information about all aspects and academic units of the University.

In addition to the *Announcements* listed above, the University publishes a master catalog of University courses, *Cornell University: Description of Courses*, and a handbook for enrolled students, *Academic Information*.

Requests for the publications listed above should be addressed to

Cornell University Announcements
Building 7, Research Park
Ithaca, New York 14850.
(The writer should include a zip code.)

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