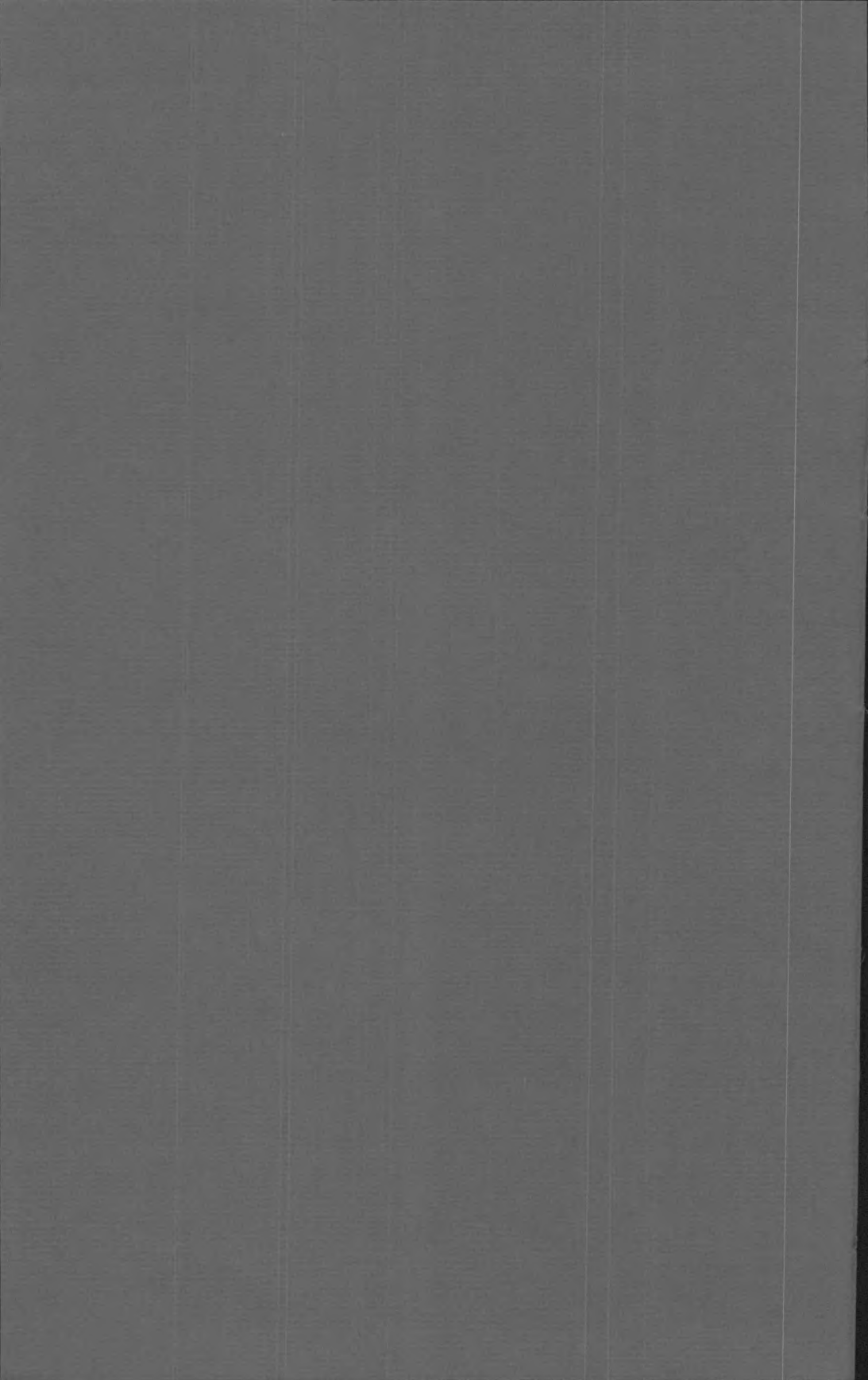


Cornell University  
Announcements  
New York State  
Veterinary College  
1971-72

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



# Cornell University

## New York State Veterinary College

### 1971-72

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

#### Cornell University Announcements

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# Cornell Academic Calendar

1971-72

Registration, new students	Thursday, September 2
Registration, continuing and rejoining students	Friday, September 3
Fall term instruction begins, 7:30 a.m.	Monday, September 6
Thanksgiving recess:	
Instruction suspended, 1:10 p.m.	Wednesday, November 24
Instruction resumed, 7:30 a.m.	Monday, November 29
Fall term instruction ends, 1:10 p.m.	Saturday, December 11
Independent study period begins, 2:00 p.m.	Saturday, December 11
Final examinations begin	Thursday, December 16
Final examinations end	Thursday, December 23
Christmas recess and Intersession	
Registration, new and rejoining students	Thursday, January 20
Registration, continuing students	Friday, January 21
Spring term instruction begins, 7:30 a.m.	Monday, January 24
Spring recess:	
Instruction suspended, 1:10 p.m.	Saturday, March 18
Instruction resumed, 7:30 a.m.	Monday, March 27
Spring term instruction ends, 1:10 p.m.	Saturday, May 6
Independent study period begins, 2:00 p.m.	Saturday, May 6
Final examinations begin	Monday, May 15
Final examinations end	Monday, May 22
Commencement Day	Friday, May 26

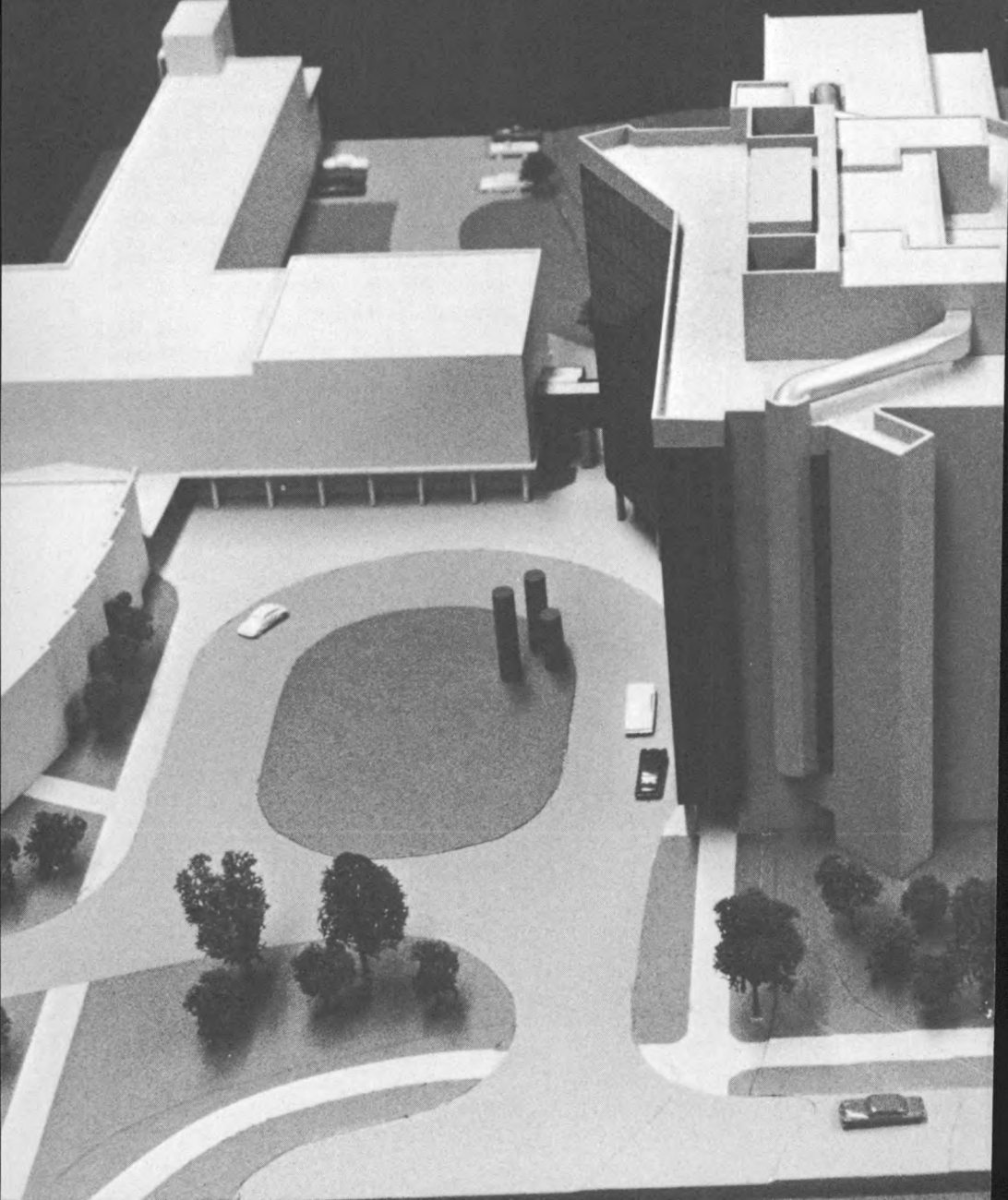
The dates shown in the Academic Calendar are subject to change at any time by official action of Cornell University.



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



# Cornell University

## The Veterinary College

### Facilities

The New York State Veterinary College, established by an act of the State Legislature in 1894, is on 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 north of New York City and 50 miles south of Syracuse.

In 1957 the Veterinary College moved into new buildings at the eastern edge of the Cornell campus along Route 366. The buildings occupy nearly twelve acres and constitute one of the finest physical plants possessed by any of the world's veterinary colleges. The equipment, of the most modern type, is ample for teaching and research in the basic and clinical sciences.

### The Veterinary College Library

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

The library contains over 53,300 volumes and regularly receives 1,186 periodicals and series titles. Represented there

is a worldwide selection of veterinary titles plus titles in the biomedical sciences designed to support undergraduate, graduate, and research programs. Through the various libraries on the campus more than 3,600,000 volumes and 53,000 journals and serials are made available to students. These collections, interlibrary loans, and photoduplication of materials supplement the research potential of the veterinary library. The library is rich in historical and basic research resources, as well as recent monographic works and especially selected government publications.

The library issues a monthly newsletter listing recent acquisitions. Information on library 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 special index to reference sources in the library is also available.

### Research Facilities

In addition to the research facilities on the campus, 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.

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.

*Scale model of the multicategorical research wing now under construction.*

## Poultry Disease Research

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

The Snyder Hill facilities consist of a two-story laboratory well equipped for research in the bacterial, virus, and parasitic diseases of chickens and turkeys. A disease-free flock of chickens is maintained for the production of chicks and embryos. There are 28 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. Facilities for housing investigators and graduate students are available.

## Diagnosis

The Veterinary College maintains and staffs regional veterinary laboratories for

poultry disease diagnosis at Ithaca, Kingston, and Eastport. The last is combined with the Duck Research Laboratory.

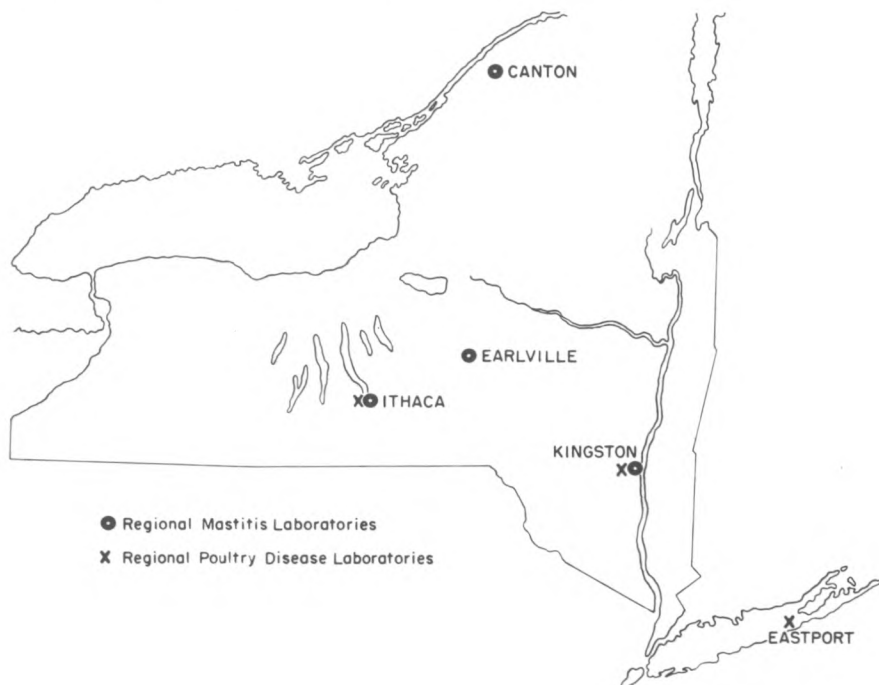
These diagnostic facilities serve the poultry industry needs in the surrounding area, and their staffs provide extension services and assist in the collection of materials and cases required for research in Ithaca.

## New York State Mastitis Control Program

Four laboratories, located in dairy areas of New York State, conduct work on mastitis control programs under the Department of Large Animal Medicine, Obstetrics, and Surgery in conjunction with local veterinarians.

Ithaca is the central laboratory where research and student training programs on mastitis control are conducted. The laboratory serves twenty-one counties with a cow population of about 390,000 in central and western New York.

Canton laboratory primarily conducts a control program for dairy owners, and serves eight counties of northern New



York with a cow population of about 224,000. The laboratory is located at the New York State Agricultural and Technical Institute where extension and some student teaching are practiced.

Earlville laboratory provides a control program for eleven counties with nearly 320,000 cows in central New York.

Kingston laboratory serves seventeen counties and 200,000 cows located in the mid-Hudson and eastern New York area.

### **The Veterinary Virus Research Institute**

In September 1950 the Board of Trustees of Cornell University established a new unit in the New York State Veterinary College: the Veterinary Virus Research Institute. Formation of the Cornell Research Laboratory for Diseases of Dogs was approved as a section of the Institute.

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

After consideration of the many technical difficulties involved in work with viruses and other living organisms that may be airborne or transferred accidentally in other ways, a building complex was begun in 1950 and has been added to from time to time. In this complex are twelve modern and fully equipped laboratories designed specifically for research and graduate teaching of virology, nutrition, biochemistry, and electronmicroscopy as well as a library, offices, and a tissue culture laboratory. There are twenty-six animal isolation units constructed to avoid unplanned infections. They can be cleaned and decontaminated efficiently. Specific pathogen-free dogs produced in a separate kennel building while in an additional isolation building other disease-free animals including pigs, chickens, guinea pigs, rabbits, and mice are housed.

### **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 a flock of sheep. On this tract a ten-acre pasture is irrigated artificially to maintain a natural infestation of internal parasites under controlled conditions. A sheep barn including facilities for raising experimental animals under helminthologically sterile conditions is available.

Facilities are available for housing approximately one hundred heifers and thirty bulls, which are used for study of reproductive diseases of dairy cattle.

### **Radiation Biology**

A field laboratory including a radiation exposure facility, on-line computing facilities, and a whole body counter for fundamental studies in radiation biology has been constructed on a forty-two acre tract of land provided by the University. This facility is an integral part of the Department of Physical Biology.

### **Muenschner Poisonous Plants Garden**

Located north of the James Law Auditorium, this living collection of poisonous plants includes most of those found in the Northeast, and many from other parts of North America. It is maintained by the Veterinary College in cooperation with the Division of Biological Science 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.

## **Admission**

### **Entrance Requirements**

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

## 8 Admission

education may be admitted. This new minimum time requirement and prerequisite courses will be used as criteria for entrance effective with the class entering in 1972.

<i>Prerequisite Courses</i>	<i>Semester Hours</i>
Biology or zoology (with laboratory)	6
English (Must include substantial elements of English composition and public speaking. Applicants must provide evidence to this effect if the course name is not clearly indicative.)	6
Modern college mathematics (Must include elements of analytical geometry and calculus. Numerical methods, probability, sets, computer applications and the like are also desirable. Mathematics courses designed for biology majors are generally acceptable.)	6
Physics (with laboratory)	6
Chemistry (Must include a course in organic chemistry and its associated laboratory, and 4 semester hours of biochemistry.)	16
General microbiology (with laboratory)	3
Genetics	3
Basic nutrition*	3

\* If no course in basic nutrition is available at the candidate's undergraduate school, this requirement may be satisfied as an elective during the first year of Veterinary College.

If the undergraduate college or university has given advanced placement college credit for a course, the student is not required to repeat the course in fulfillment of the above prerequisites.

Since competition for admission to this College is very keen, it is recommended that the student choose an alternate career goal which will determine the choice of other courses taken. Applicants are urged to consult their undergraduate advisers for help in this regard.

### The Animal Practice Requirement

At least one summer, ten weeks, shall be spent working with large animals, preferably dairy cattle. This requirement will be met usually by working on a farm which deals with at least one of the large domesticated animal species.

At least one summer, ten weeks, shall

be spent working with some phase of small animal work. This requirement may be met by working for a small animal practitioner or through zoo, laboratory animal, poultry, or similar types of animal work.

For each of the above requirements the applicant must submit a brief report of his work and the employer will submit a letter of evaluation regarding his work to the Office of Student Administration of the Veterinary College.

The two summers of work shall be completed before the student's junior year at the Veterinary College. One summer must be completed by the end of the spring term of the year in which the student is applying for admission.

### Application Procedure

After September 1 of the year preceding the one in which admission is desired, the applicant should write to the Office of Admissions, Day Hall, Ithaca, New York 14850, requesting the application form for admission to the Veterinary College. The application form must be returned to the admissions office no later than January 15. Transcripts of all college work, through the fall semester of the year in which the application is made must be sent to the Office of Admissions, Day Hall, as soon as possible. All other material is to be sent to the New York State Veterinary College, Office of Student Administration, Ithaca, New York 14850.

If the applicant has applied at any time during the three preceding years he need only write to the Admissions Office, Day Hall, asking that his folder be reactivated; however, all information must be updated.

Although it is not required, applicants should request the Educational Testing Service, Princeton, New Jersey 08540, to send a report of their Scholastic Aptitude Test scores to the New York State Veterinary College, Office of Student Administration, Ithaca, New York 14850.

In addition, all applicants are required to take the Graduate Record Examinations Aptitude Test as administered by the Educational Testing Service. Arrangements should be made to take the Graduate Record Examinations in either October or December to allow sufficient time for the results to be received by the Veterinary College. (Applicants will enter Insti-



tution Code R 2549-4 00 New York State Veterinary College in item 10 of the GRE application.)

The number of students that can be admitted annually is limited, and the number of applicants who can meet the requirements exceeds the number that can be accepted. A Committee on Admissions of the faculty of the Veterinary College will select those to be admitted after considering not only the formal academic preparation but also the available evidence bearing on each applicant's character, seriousness of purpose, and fitness for the profession. After a preliminary review of the applicant's credentials, and if in the opinion of the Committee on Admissions that applicant merits serious consideration for admission, he will be required to come to the Veterinary College for a personal interview with the Committee on Admissions.

Priority of application is not necessarily a determining factor in the selection of students to be admitted. Nevertheless, the collection and review of the several documents require time. The Committee on Admissions begins its work early in the year. Therefore, it is advantageous to the candidate to file his application early. January 15 is the latest date for filing applications.

Foreign students are usually required to take at least one year of the preveterinary study in an approved college or university in the United States. The University maintains an International Student Office, 200 Barnes Hall, and foreign students are requested to write to that office for any information they may need, or to consult the staff about any problems they may have.

The obligation to understand and meet the requirements stated above rests solely with the applicants. Students who have not completed all the requirements for admission must do so by July 1 of the year in which they would like to matriculate.

## University Requirements

Applicants for admission must not only satisfy the entrance requirements but must also comply with the following rules of the University.

Every candidate for admission who receives a notice of approval of his application must pay a \$50 registration fee. Can-

didates are warned not to send cash through the mails. A check, draft, or money order should be made payable to *Cornell University* and should be sent to the Office of Admissions, Day Hall.

If the candidate matriculates, the fee is credited to his account to cover matriculation charges and certain graduation expenses and to establish a fund for undergraduate and alumni class activities.

If the candidate withdraws before the due date of his 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 trustees of Cornell University. Permission to register for a new semester will not be granted unless all health requirements pertaining to the previous semester have been fulfilled.

## Combined Courses

By judicious planning, students who do their preveterinary work in the College of Agriculture at Cornell, may be able to qualify for both B.S. and D.V.M. degrees in less time than would be required if the courses were taken consecutively. This can be done by double registration during the latter part of the period whereby certain course credits in the veterinary curriculum can be applied toward completing the requirements for the Bachelor's degree.

In these instances three years are ordinarily spent as a candidate for the baccalaureate degree before the application for veterinary medicine is filed. It should be clearly understood that no assurance can be given in the beginning that candidates will be permitted to complete this plan, since decision on admission to the veterinary course cannot be given until the admission requirements of the Veterinary College have been completed.

## Registration

Every student is required to register with the registrar of the University at the beginning of each term. (See the Academic

WEANED PUPPIES

7 WEEKS OLD

GOOD AGE FOR PURCHASE





Calendar for the day of registration.) After completing that registration, he must register with the director of Student Administration of the Veterinary College. This *must* be done before the close of the regular registration unless the student has received special permission from the director.

### Admission to Advanced Standing

Applicants for admission to advanced standing as members of the second-, third-, or fourth-year class must present the necessary educational qualifications for admission to the first-year class and must pass satisfactory examinations in all of the work for which they desire advanced credit. No person will be admitted to any advanced class except at the beginning of the college year in September.

### Admission to the Graduate School

Graduates of this College or other colleges may enter the Graduate School of Cornell University and pursue work for the degrees of M.S., Ph.D., or D.Sc. in Veterinary Medicine in the Veterinary College and allied departments of the University. A prospective graduate student should consult the *Announcement of the Graduate School* and apply to the dean of the Graduate School.

Applicants for graduate study from countries other than the United States and Canada are requested to include in their credentials the results of the Graduate Record Examinations Aptitude Test except in cases where this Examination is not given in reasonable proximity to the student's home. Where the Graduate Record Examinations are not available the student is requested to submit, instead, the results of the College Entrance Board Examination Scholastic Aptitude Tests.

The Veterinary College, 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 facilities for the prosecution of such work. It encourages graduate and advanced students to carry on independent investigations. Courses of study especially adapted to advanced work and research will be found among those listed in pp. 24-35 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 now transfer one year's residence credit for that work toward the Doctor of Philosophy degree whenever his Special Committee certifies that the work done in the years of professional study formed an integral part of the work required for the doctorate and was of equivalent quality.

### The Degree of Doctor of Science in Veterinary Medicine

Admission to candidacy for the degree of Doctor of Science in Veterinary Medicine (D.Sc. in V.M.) is a function of the Division 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. He must have demonstrated by published papers his ability to do independent meritorious research.

3. He must have offered to the Division satisfactory evidence of his ability to read accurately the French and German literature in his field.

Candidates who have no graduate credit beyond their D.V.M. degree must complete not less than four residence units to qualify for the degree. It is considered that at least two units of work leading to the degree of Doctor of Veterinary Medicine are an integral part of this professional degree. Those who have a Master of Science degree or its equivalent from an approved college or university may complete the minimum residence credit by acquiring at least two additional units.

After a candidate has been admitted, he will select a member of the faculty in veterinary medicine to serve as chairman of his Special Committee. The faculty of the Division 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 Division for supervising his work. The candidate's work must fall in the following categories:

1. Advanced courses in any of the sciences which have a relation to medicine. Selected courses which are part of the regular curriculum of the Cornell

## 12 Expenses

University Medical College may be accepted for not more than half of the total credit in this category. In no case shall credit be granted for courses which are part of the regular curriculum in veterinary medicine or for similar courses in the Medical College curriculum.

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

All candidates must take at least two-thirds of their work in courses that may 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 shall be deemed to have been satisfactorily completed only upon receipt of a regular transcript of credits. Following completion of his course work, each candidate for this degree shall present an acceptable monograph or thesis in the area of his special interest and shall submit to a general examination covering the subject matter of his work. The Special Committee shall set the time and place of his examination and invite all members of the Division and all members of the graduate faculty of other fields who have participated in his training to attend. They shall have the right to examine the candidate and to express to the Special Committee their opinions of the candidate's competence, but the Special Committee alone shall be responsible for recommending him for the degree. The recommendation shall be addressed to the faculty of the Division of Veterinary Medicine of the Graduate School, which then shall make recommendations to the Graduate School.

## Expenses

### Tuition and General Fee

Tuition is \$275 per term for each student in the Veterinary College who is a resident of New York State at the time of his registration for any term.

Tuition is \$450 per term for students who do not qualify as New York State residents.

Since physical presence in the state, especially for persons under age, by no means constitutes legal residence, applicants who are at all doubtful of their right to qualify as New York State resi-

dents should address inquiries to the Director, Student Administration, Veterinary College.

For certain services and privileges the University charges students who are not residents of New York State a General Fee of \$225 each term over and above tuition. For students who are residents of New York State, this Fee is \$200 each term over and above tuition.

This General Fee is paid by all students in the divisions at Ithaca, the amount varying in the different schools and colleges. It contributes toward the services supplied by the libraries, the Gannett Clinic, the Sage Infirmary, and the student unions, pays a portion of the extra costs of laboratory courses and general administration, and supports programs of physical recreation and student activities.

Tuition and fees become due before registration for each term. Any student who fails to pay tuition charges, fees, or other indebtedness to the University may be dropped from the University. For further information, consult the *Announcement of General Information*.

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

### Other Fees

Every student is held personally responsible for any injury done by him to any of the University's property.

Assessments, charged to the student's account and payable at the Treasurer's Office, are levied in certain circumstances, under the following rules of the University:

A matriculated student desiring to register after the close of registration day shall first pay a fee of \$10 and present a letter of permission from the director of student administration.

A student desiring to file his registration of studies after the date set by his college for filing shall first pay a fee of \$10.

A student desiring to take an examination or other test for the removal of a term mark of "incomplete" shall first pay a fee of \$10 for each examination or other test.

A student desiring to make an appointment for the required medical examination or conference after twenty days from the last registration day of the term shall pay a fee of \$2.

For reasons satisfactory to the proper authority any of the above mentioned assessments may be waived in any individual case if the student's failure to comply with the regulation was due to ill health or to other reasons beyond his control. Application for such a waiver should be made to the director of student administration.

## Living Costs

Living costs cannot be stated with the same degree of certainty as regular University charges, since they depend to a great extent upon the individual's standard of living. The cost of room and board is estimated at \$1,500. Laundry, done in Ithaca, may require \$30 to \$50 a term. Books, instruments, and supplies will cost \$100 to \$125 a term. Additional allowance must be made for clothing, travel and incidentals.

## Financial Aids

### Scholar Incentive Program

Applications for the New York State Scholar Incentive Program should be filed before July 1 for each academic year but will be accepted up to December 1. Applications for the spring semester only have an April 1 deadline. *Annual* application is required.

### Loan Funds

Sources of support available for loans to Veterinary College students are as follows: the Cornell Veterinary Alumni Association; the New York State Veterinary Medical Society; the family of David E. Wright, '12; the Dean W. A. Hagan Fund; the Health Professions Loan and Scholarship Program; the Munderback Veterinary Fund; the Sunderville Veterinary Fund; National Association of Federal Veterinarians Emergency Loan Fund; Student Emergency Loan Fund of the Women's Auxiliary to the New York State Veterinary Medical Society; and the Charles H. Webster Veterinary Fund. Veterinary students are also eligible to apply for loans from other funds held by the University. Most of these are administered through the Office of Student Aid. Students who

are in real need should not hesitate to apply for assistance. It is suggested that students discuss their needs with the director of student administration before applying.

## Undergraduate Scholarships

Needy undergraduate students who have done well scholastically may receive help from various scholarship funds. Discretion over the amount of money granted is vested in committees of the University who evaluate the merits of the applicants. Students interested in financial aid should speak with the director of student administration. There are many scholarships and grants-in-aid open to all University undergraduates, as well as several which are specifically for veterinary students. The scholarships and prizes for veterinary students are described here.

Applications are received at a time announced each spring and the awards are made for the following academic year. Payment is made by deduction of half the amount of the scholarship from University charges for each semester.

**Valentine Mott Knapp Scholarship.** This annual scholarship of the value of \$600 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 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 the Veterinary College. Six scholarships of \$600 each are available.

**Tuition Scholarships.** The trustees have authorized a limited number of scholarships, each of an annual value sufficient to cover the cost of tuition, to be awarded each year by the Veterinary College. The scholarships are awarded to undergraduate students who show promise of becoming outstanding veterinarians in the judgement of the faculty and who are not



residents of New York State. Each student holding a scholarship must maintain a standing satisfactory to the faculty.

**Yonkers Raceway Foundation Scholarship.** By action of the executive committee of the Yonkers Raceway Foundation, an endowed scholarship of \$500 was established at the Veterinary College to be awarded by the Committee on Scholarships of the College to a needy student who is 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.

**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.

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

**Women's Auxiliary to the New York State Veterinary Medical Society Scholarship.** This scholarship is to be awarded each year to a student at the end of the sophomore year. The awarding of this scholarship will be based on the applicant's financial need and his ability to do creditable academic work.

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

**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 to a third-year veterinary student, for use in the fourth year, 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 judgement of the faculty of the Department of Large Animal Medicine, Obstetrics, and Surgery.

**Merrimack Valley Kennel Club Scholarship.** The Club, of Derry, New Hampshire, sponsors an award of \$200 to a student to be selected on the basis of academic ability and financial need.

**Allen Products Company Scholarship.** This scholarship of \$1000 is awarded at the end of the first year and will be continued for three years, subject to review by the Committee on Scholarships. The original award and the annual renewal are based on academic performance and financial need.

## Prizes for Veterinary Students

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

**The Grant Sherman Hopkins Prize** of \$90 in veterinary anatomy was endowed by Mrs. Ann Ottaway Hopkins in 1955 in memory of her husband. Dr. Hopkins served Cornell University for forty-five years (1889-1934). Upon the opening of the Veterinary College in 1896, he became a member of the original faculty as assistant professor of veterinary anatomy and anatomical methods. He was made a full professor in 1903 and served in that capacity until his retirement in 1934. The prize will be awarded by the Veterinary College faculty upon the recommendation of the staff of the Department of Veterinary Anatomy. It will be awarded to a member of the graduating class on the basis of interest, ability, perseverance, and performance in the work in veterinary anatomy. Special consideration will be given to extracurricular work in animal morphology. Although scholarship is an important consideration, the award is not based wholly on that criterion.

**The Jane Miller Prize** of \$90 in physiology is awarded to the student or students



## 16 Financial Aids

doing the best work in this subject. The amount is usually divided into two prizes which are awarded at the end of the second year.

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

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

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

**The Mary Louise Moore Prize in Bacteriology** was established by a bequest of Dr. Veranus A. Moore in honor of his wife. Dr. Moore was a member of the original faculty of the Veterinary College. He was professor of pathology, bacteriology, and meat inspector from 1896 to 1926, and dean of the Veterinary College from 1907 to 1929. The income of the endowment (\$80) may be awarded each year, upon recommendation of the head of the Department of Microbiology and with the approval of the dean of the College, either as a prize to students who have done the best work in the department or as a subsidy to encourage individual research work of students by defraying expenses of their experiments.

**The Poultry Disease Prize** was established by Dr. Nathan Wernicoff '31, and Dr. Tevis Goldhaft '35 of Vineland, N.J., for the purpose of stimulating interest in diseases of poultry. The prize consists of \$50 for the best composition or essay, or the best original work reported by a member of the fourth-year class. Competing papers must be submitted not later than the first week of the second term of the college year to the dean, who will appoint a suitable committee to read them and make

recommendations on the award. The award will not be made if, in the judgment of the committee, none of the papers submitted is considered to be sufficiently meritorious.

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

**New York State Veterinary Medical Society Prizes** amounting to \$100, were established by the New York State Veterinary Medical Society. They are awarded to members of the fourth-year class who present and have approved the best case reports. The award extends from April 1 to March 31. All case reports to be considered must be received at the office of the chairman of the Committee of Senior Seminar Course 899, by March 31. Each case report must be reviewed and approved by the head or designated faculty member of the department in which the case was received, studied, and treated. The executive board of the New York State Veterinary Medical Society reserves the privilege of requesting any prize recipient to furnish either a copy of his paper or an abstract for publication in the organ of the society, *Veterinary News*.

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

**The Jacob Traum Student Award** was established by friends and colleagues at the time of Dr. Traum's retirement as chief scientist of the United States Department of Agriculture Plum Island Animal Disease Laboratory. Dr. Traum was graduated from Cornell University in 1905 and served the veterinary profession in a variety of capacities, particularly in the U.S.D.A. and at the University of California. The award

will be given annually to the senior student in the New York State Veterinary College who, in the judgment of the dean, has exhibited in his scholastic career superior interest and accomplishments in bacteriology, epizootiology, pathology, and virology, including aptitude for and expressed interest in research on infectious diseases. The prize is a cash award of \$60.

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

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

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

## Health Services and Medical Care

Health services and medical care for students are centered in two Cornell facilities: the Gannett Medical Clinic (out-patient department), 10 Central Avenue, and the Sage Infirmary. The Infirmary is on Sage Place, with the entrance 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 doc-

tors at the Clinic should be made by calling 256-4082 or coming in person to the Clinic. (An acutely ill student will be seen promptly whether he has an appointment or not.) Students are also entitled to most laboratory and x-ray examinations and initial consultation with a specialist when indicated for diagnosis and treatment and ordered by a staff physician. Hospitalization in the Sage Infirmary with medical care for a maximum of fourteen days each term and emergency surgical care is also provided without additional cost. The cost of these services is covered in the General Fee.

On a voluntary basis, insurance is available to supplement the services provided by the General Fee. Unless students have other insurance to supplement medical services provided by the University Health Services, they are *strongly* urged to take advantage of this plan. For further details, including health requirements and charges for special services, see the *Announcement of General Information*.

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

## Emergency Service

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

## Housing and Dining Facilities

### University Housing

#### Undergraduate Men and Women

The University provides a variety of residence halls accommodating approximately 5,200 students. These halls are located on both the North Campus and the West Campus, areas so designated because of their geographical relationship to the Fall Creek gorge. For detailed information on the various housing accommodations, students should consult the *General Information Announcement*.





During their first year, all freshman men and women must live in the University residence halls. Beyond the freshman year, students are free to choose between privately owned off-campus housing or University residences.

Students transferring from other colleges or universities are not subject to a residence requirement.

Freshmen who are married, who are twenty-one years of age, or who reside with their parents within commuting distance of the campus may request exemption from the residence requirement by writing to the Office of the Dean of Students, Cornell University, Ithaca, New York 14850. Requests for exemption on the basis of other special circumstances should also be made in writing to that Office.

Application forms for University residence halls will be mailed automatically by the Office of Admissions to each candidate for admission as a freshman or transfer student at the time of notification of provisional acceptance to the University.

#### **Graduate Students**

The University has two residence halls for graduate students. The Sage Graduate Center accommodates 190 men and women; Cascadilla Hall houses 155 men and women. The dining service in the Sage Graduate Center is available to all graduate students and faculty. Graduate Students who wish to apply for housing should write to the Housing Services Office, 223 Day Hall, when their plans to enter the University are complete.

#### **Married Students**

Unfurnished apartments for 420 married students and their families are provided by Cornell in the Cornell Quarters (81 apartments), Pleasant Grove (94 apartments), and Hasbrouck (245 apartments). For further information, inquiries should be directed to the Hasbrouck Housing Office, Pleasant Grove Road, Ithaca, New York 14850.

#### **Off-Campus Housing**

Because changes of available accommodations occur daily, it is not practical to prepare lists, but students may find it helpful to check the bulletin board in the

Housing Services Office, 223 Day Hall. If possible, a student should make at least one trip to Ithaca to look over the available apartments and houses before he plans to take up residence.

Detailed Information on all types of housing for students may be obtained by writing to the Housing Services Office, 223 Day Hall.

#### **Dining Facilities**

Cornell has no formal dining requirements for its students; they may eat where, when, and what they choose whether or not they live in University residence halls. The University maintains a number of public dining units in various convenient places on the campus.

Optional dining plans are offered for students who may wish to prepay some of their board costs rather than paying cash for each meal. The plans are designed with flexibility, taking into account students' habits and schedules as well as convenience and economics. Further information on dining arrangements will be distributed before the opening of the fall term.

### **Conduct of Students**

At all times and in relationships a Cornell student is expected to conduct himself in a decent and respectable manner and in accordance with the obligation recognized by the student body of unfailing respect for the integrity of the individual and the best interests of the community.

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

In the Veterinary College a 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 grad-

uate student at the time of registration, and it is the student's duty to familiarize himself with the contents of the Code and observe them during his four years in the Veterinary College.

Two faculty consultants and the Veterinary Faculty Committee on Student Conduct are available to veterinary students for consultation and guidance and in occasional instances for referral of disciplinary cases beyond the jurisdiction of the Student Honor Code.

## **Careers for Veterinarians**

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

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

### **Private Practice**

Veterinary practice is a wide field with excellent opportunities for well-qualified persons. For several years the need for veterinarians in private practice has exceeded the supply. Practice may be general in which the individual offers his service for all species of animals. There is a trend toward restricted practice in which the veterinarian limits his 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. Recently, over 90 percent of Veterinary College graduates have gone into private practice generally in the employment of an experienced veterinarian for at least one year to gain experience.

### **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 from the ranks of private practitioners. Very few recent graduates have accepted salaried positions except in the armed forces.

### **Private Corporations**

Many veterinarians are employed by the large milk companies, by large stock and poultry farms, and by industrial laboratories that produce biologicals and pharmaceuticals for the prevention and treatment of diseases.

### **Federal Governmental Agencies**

The Agricultural Research Service of 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 also is 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 this Service are engaged in full-time research programs on diseases of animals of economic importance in well-equipped laboratories under the direction of the Animal Disease and Parasite Research Division.

Veterinarians who are physically qualified men 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 first lieutenant 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 diseases of animals transmissible to man. The Service cooperates extensively with international disease control agencies as well as with our state governments. In addition, to maintaining active programs in research laboratories of its own, the Service engages in diversified contractual research programs with numerous academic institutions.

### State Governments

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

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

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

### Municipal Governments

Most cities employ graduate veterinarians on a full-time basis, and many towns and villages on a part-time basis, as members of their health departments. The duties of these men usually are connected with the sanitary control of meat and milk.

### Legal Requirements

Before one can practice veterinary medicine in the United States he must obtain

a license from the state or states in which he locates his practice. This license generally is issued by the Department of Education or the Department of Agriculture on the basis of an examination set by a veterinary licensing board. Some states issue licenses without examination, by reciprocity when the applicant has been licensed in other states.

In New York the licensing agency is the State Education Department. All inquiries should be addressed to the Secretary of the State Board of Examiners, Room 1841, Twin Towers, 99 Washington Avenue, Albany, New York 12210. Examinations are given twice a year. Applicants are required to furnish evidence of adequate preprofessional as well as professional education, of good moral character, and of being at least twenty-one years of age. Application for the examination must be filed at least thirty days before the scheduled date and must be accompanied by a fee of \$40.

## Requirements for Graduation

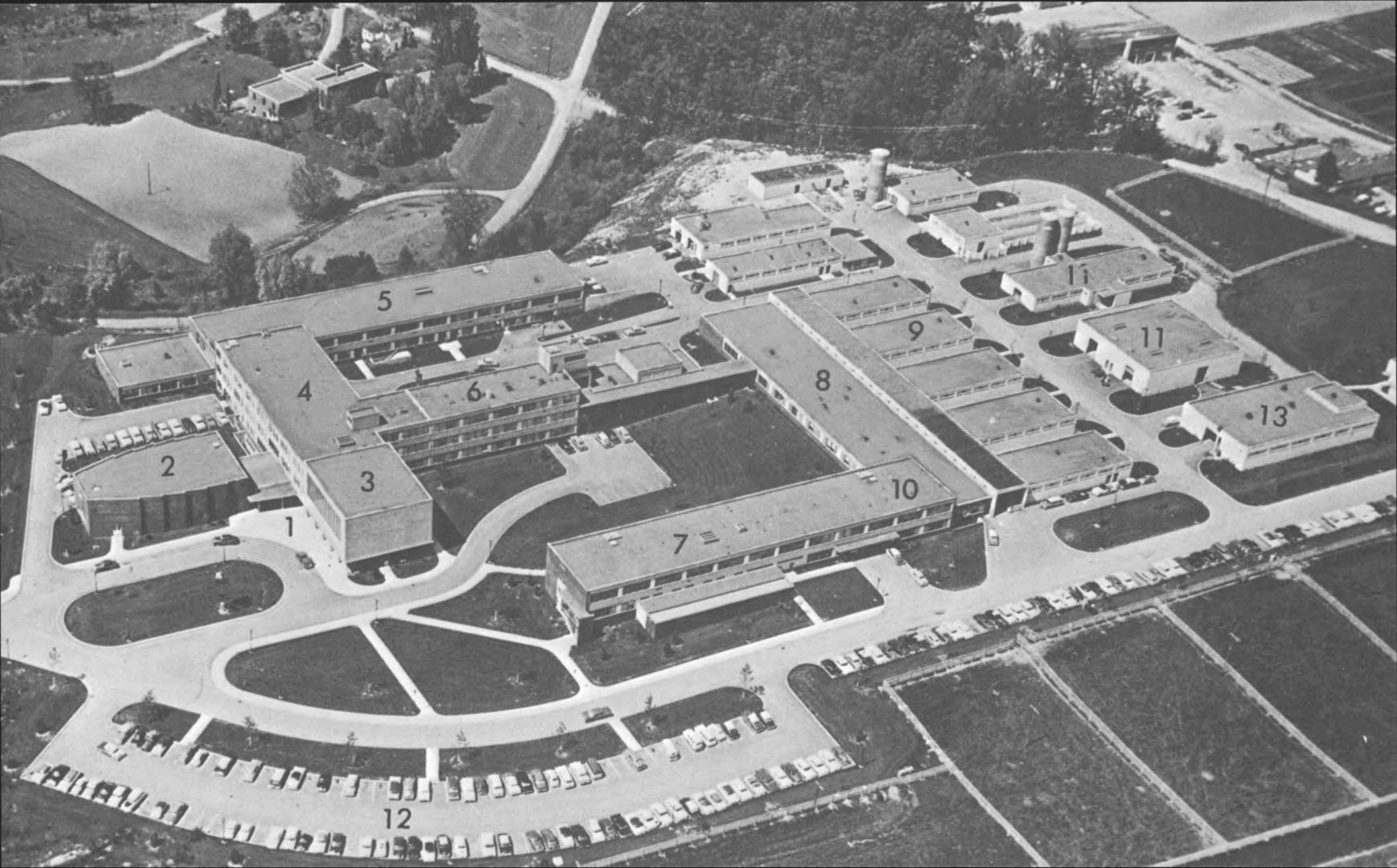
The prescribed four-year curriculum leading to the degree of Doctor of Veterinary Medicine (D.V.M.) is summarized in the section below. To receive this degree candidates must satisfy all the entrance requirements (pp. 7-9), must successfully pursue the courses named in the curriculum below, must have paid all fees due, and must have spent at least one year in residence.

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

At the conclusion of each term the Veterinary College faculty will review the records and conduct of students. Unsatisfactory students will be dropped from the College.

### The Curriculum

In the following summary of the curriculum, the abbreviation "Req." indicates that a course, or its equivalent, is required for graduation but that no formal credit is given for the course.



	Fall Term Credit Hours	Spring Term Credit Hours		Fall Term Credit Hours	Spring Term Credit Hours
<b>First Year</b>			<b>Third Year</b>		
101 Livestock Management.	3	—	703 Applied Anatomy . . . . .	1	—
501 Anatomy . . . . .	7	—	730 Food Quality Control . . .	2	—
507 Developmental Anatomy and Histology . . . . .	4	—	731 Applied Parasitology . . .	3	—
510 Mammalian Biochemistry . . . . .	6	—	740 Epidemiological Methods . . . . .	2	—
590 Clinical Orientation . . .	1	—	760 Small Animal Medicine .	3	—
311 Animal Feeding . . . . .	—	3	770 Obstetrics . . . . .	3	—
502 Anatomy . . . . .	—	6	771 Diseases of Large Animals . . . . .	4	—
505 Neuroanatomy . . . . .	—	2	773 General Surgery . . . . .	4	—
508 Microscopic Anatomy . .	—	4	774 Surgical Exercises . . . .	1	—
511 Physiology . . . . .	—	5	776 Roentgenology . . . . .	1	—
591 Clinical Orientation . . .	—	1	704 Applied Anatomy . . . . .	—	1
	—	—	741 Infectious Diseases . . .	—	3
Total . . . . .	21	21	750 Diseases of Poultry . . .	—	3
<b>Second Year</b>			761 Small Animal Medicine .	—	3
424 Animal Genetics . . . . .	2	—	762 Small Animal Surgery . .	—	4
611 Physiology . . . . .	4	—	763 Surgical Exercises . . . .	—	1
621 Applied Radiation Biology . . . . .	1	—	772 Diseases of Large Animals . . . . .	—	2
630 General Pathology . . . .	2	—	775 Special Surgery . . . . .	—	5
631 General Pathology Laboratory . . . . .	2	—	777 Roentgenology . . . . .	—	1
640 Bacteriology and Immunology . . . . .	4	—	791 Clinical Orientation . . .	—	1
641 Bacteriology and Im- munology Laboratory . . . .	5	—	Total . . . . .	24	24
612 Pharmacology . . . . .	—	6	<b>Fourth Year</b>		
613 Toxicology . . . . .	—	1	860 Ophthalmology . . . . .	1	—
632 Special Pathology . . . .	—	2	870 Diseases of Large Animals . . . . .	4	—
633 Special Pathology Laboratory . . . . .	—	2	890 Small Animal Clinic . . .	4	—
634 Food Quality Control . .	—	3	892 Large Animal Clinic . . .	4	—
635 Animal Parasitology . . .	—	2	894 Ambulatory Clinic . . . .	4	—
636 Clinical Pathology . . . .	—	2	896 Ancillary Clinic . . . . .	4	—
671 Obstetrics . . . . .	—	3	898 Senior Seminar . . . . .	Req.	—
	—	—	871 Diseases of Large Animals . . . . .	—	4
Total . . . . .	20	21	872 Jurisprudence, Ethics, and Business Methods . . .	—	4
			891 Small Animal Clinic . . . .	—	4
			893 Large Animal Clinic . . . .	—	4
			895 Ambulatory Clinic . . . . .	—	4
			897 Ancillary Clinic . . . . .	—	4
			899 Senior Seminar . . . . .	—	Req.
			Total . . . . .	21	21

*The Veterinary College. (1) Main Entrance, Schurman Hall. (2) James Law Auditorium. (3) Library. (4) Microbiology. Physical Biology (5) Anatomy and Physiology. (6) Pathology. Avian Diseases. (7) Small Animal Clinic and Hospital. (8) Large Animal Clinic. (9) Large Animal Hospital Barns. (10) Medicine and Obstetrics. Ambulatory Clinic and Mastitis Control. (11) Ancillary Barns. (12) Visitor Parking. (13) Garage and Farrier Shop.*



# 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 curriculum; a few are elective to veterinary students or are given primarily for graduate students or students of other colleges of the University.

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

For courses in other colleges available to all Cornell students consult the appropriate college *Announcement*.

## Anatomy

Professors R. E. Habel, H. E. Evans; Associate Professors J. F. Cummings, A. de Lahunta, W. O. Sack; Assistants F. Wu, D. L. Robinson.

**501 Gross Anatomy.** First year, fall term. Credit seven hours. Prerequisite: course work equivalent to that required for admission to the Veterinary College. Lecture, M W 9:05. Laboratory, M W Th F 10:10-1:10. Professor Evans, Associate Professor de Lahunta, Assistant Wu.

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 a dissection of the parakeet and chicken, and the anatomy of laboratory animals is reviewed in appropriate species. The lectures, supplemented by demonstrations, consider the comparative and regional gross aspects of vertebrate organ systems, anatomical terminology, literature, and techniques.

**502 Gross Anatomy.** First year, spring term. Credit six hours. Prerequisite: Anatomy 501. Lecture, W 9:05. Laboratory M T W Th F 2-4:25. Associate Professor Sack, Assistant Wu.

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.

**505 Neuroanatomy.** First year, spring term. Credit two hours. T 9:05, W 10:10-12:35. Associate Professor de Lahunta.

The nervous system of domestic animals is studied by functional systems. Clinical cases with pertinent lesions are demonstrated with each system.

**507 Developmental Anatomy and Histology.**

First year, fall term. Credit four hours. Prerequisite: course work equivalent to that required for admission to the Veterinary College, plus completion of or concurrent registration in Veterinary Anatomy 501 or 900. A limited number of nonveterinary students will be admitted by permission of the instructor. Lectures, T Th 9:05. Laboratory, W F 2-4:25. Associate Professors de Lahunta and Cummings, Assistant Robinson.

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.

**508 Microscopic Anatomy.** First year, spring term. Credit four hours. Prerequisite: Veterinary Anatomy 507, plus completion of or concurrent registration in Veterinary Anatomy 502 or 900. A limited number of nonveterinary students will be admitted by permission of the instructor. Lectures, M F 9:05. Laboratory, M F 10:10-12:35. Associate Professor Cummings, Assistant Robinson.

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.

**605-606 Advanced Anatomy.** Fall term. Hours and credit to be arranged. Spring term. Hours and credit to be arranged. Prerequisites: Anatomy 501, 502, 507, and 508 or similar preparation in comparative anatomy and histology. Professors Habel and Evans, Associate Professors Sack, de Lahunta, and Cummings. An opportunity for advanced study under personal direction.

**703-704 Applied Anatomy.** Third year, fall term. Credit one hour. Laboratory, T 10:10-12:35 or W 2-4:25 or Th 10:10-12:35. Professor Habel. Third year, spring term. Credit one hour. Laboratory, M 2-4:25 or T 2-4:25 or Th 2-4:25. Professor Habel. An opportunity for practice in the recognition of the anatomical features that are essential to diagnostic, surgical, obstetrical, and post-mortem procedures. The approach is topographical, comparative, and clinical. The emphasis is on the study of living animals, supplemented by dissections, serial transections, models, and radiographs.

**900 Vertebrate Morphology.** Fall term. Credit three hours. Prerequisite: zoology or biology. Laboratory, W F 2-5:00. Professor Evans. Designed for graduate students in Animal Science, Biological Science, Nutrition, and Conservation. 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 fetal and adult cow. Other species of interest to the class can also be presented.

**901 Comparative Anatomy of the Digestive Tract.** Fall term. Credit one hour. Prerequisite: Veterinary or Comparative Anatomy or Vertebrate Morphology 900. Embryology and histology are recommended. Hour to be arranged. Professor Habel. A general knowledge of the gross anatomy of each organ will be assumed, and emphasis will be placed on the micro-macroscopic muscular and vascular architecture, and innervation, and the functional cytology of the epithelium.

## Physiology, Biochemistry and Pharmacology

Professors A. F. Sellers, A. L. Aronson, E. N. Bergman, C. E. Stevens, A. Dobson, T. R. Houpt, J. F. Wootton; Assistant Professors W. J. Arion, W. S. Schwark; Assistants P. Carlson, C. F. Kaufman.

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

**510 Mammalian Biochemistry.** First year, fall term. Credit six hours. Prerequisite: course work equivalent to that required for admission to the Veterinary College. A course in quantitative analysis, and additional hours of organic chemistry would be helpful. Lectures and recitations, M W 8, Th 2-4:25, F 9:05. Laboratories, M T 2-4:25. Professor Wootton, Assistant Professor Arion, and assistants.

This course in general biochemistry emphasizes the mammalian system. The laboratory is devoted to study of the chemical properties of biological materials and also to instilling a working knowledge of the elements of quantitative analysis, which is necessary for the performance of clinical biochemical determinations.

**511 Physiology for Veterinary Students.** First year, spring term. Credit five hours. Prerequisite: Physiology 510, Anatomy 501 and 502, or Anatomy 900 or Zoology 311 and Biochemistry 433. Lecture, T Th F 8. Laboratory, Th 9:05-12:35, Professor Houpt and assistants.

**611 Physiology for Veterinary Students.** Second year, fall term. Credit four hours. Prerequisite: Physiology 511. Lecture, T Th F 8. Laboratory, Th 9:05-12:35. Professors Bergman, Sellers, and Stevens.

**612 Pharmacology.** Second year, spring term. Credit six hours. Prerequisite: Anatomy 501, 502, 505, 507, 508; Physiology 510, 511, 611; Pathology 630 and 631 or consent of the instructors. Lectures, T 8, W 9:05, F 9:05, Laboratory, M 11:15-4:25. Conference, M 8. Professor Aronson, Assistant Professor Schwark.

The primary emphasis of this course is on the physiological disposition and mechanism of action of drugs.

**613 Toxicology.** Second year, spring term. Credit one hour. Prerequisites: same as for Pharmacology 612. Lecture, M 9:05. Professor Aronson, Assistant Professor Schwark. The basic aspects of some of the more common poisonings that affect domestic animals will be considered. Emphasis will be placed on heavy metal poisonings, chelation phenomena, selected organic poisonings, pesticide poisonings, and forensic considerations.

**910 Special Problems in Physiology.** Fall term. Hours to be arranged. Registration by permission.

**911 Special Problems in Physiology.** Spring term. Hours to be arranged. Registration by permission. Laboratory work, conferences, collateral reading, and reports, adapted to the needs of students.

## 26 Physical Biology

**912 Research.** Fall term. Graduate students only. Hours to be arranged.

**913 Research.** Spring term. Graduate students only. Hours to be arranged.

**915 Methods in Physiological Research.** Spring term. Alternate years. Credit four hours. Prerequisite: Biological Sciences 414 and a course in biochemistry, or Veterinary Medicine 611, or equivalent, and consent of the instructor. Enrollment limited. Two lectures and one six-hour laboratory per week, time to be arranged. Professor Sellers and staff.

Emphasis will be on the principles and application of physiological methods for measurement of organ and tissue functions related to digestion, absorption, distribution, metabolism, and excretion.

**916 Physiologic Disposition of Drugs and Poisons.** Spring term. Offered in 1973. Credit three hours. Prerequisite: a course in biochemistry and consent of the instructor. M W F 10:10. Professor Aronson, Assistant Professor Schwark.

Lectures on the absorption, distribution, metabolism, excretion, and selective toxicity of drugs, as well as consideration of environmental aspects of the problem of toxicology.

**917 Physiology.** Spring term. Credit three hours. Graduate students. Prerequisite: Physiology 510, Anatomy 501 and 502, or Anatomy 900 or Zoology 311, and Biochemistry 433. T Th F 8. Professor Houpt and assistants. Lectures and demonstrations on cellular physiology, muscle, nervous system, digestive system, urine secretion, blood, and lymph.

**918 Physiology.** Fall term. Credit three hours. For graduate students. Prerequisite: Physiology 917. T Th F 8. Professors Bergman, Sellers, and Stevens.

Lectures and demonstrations on circulation, respiration, endocrine organs, temperature regulation, and reproduction.

**919 Comparative Gastroenterology.** Fall term. Credit three hours. Prerequisite: Courses in general mammalian physiology, biochemistry, and nutrition and consent of instructor. Drs. Stevens, Dobson, Hintz, Krook, Lutwak, Sellers, Visek, and Wasserman. Lectures will emphasize (1) functional comparison of digestion and absorption in the carnivore, herbivore, and avian species, (2) examination of various *in vivo* and *in vitro* preparations and procedures used to study the function or malfunction in this system, and (3) digestive tract diseases.

## Physical Biology

Professors C. L. Comar, E. L. Gasteiger, F. W. Lengemann, D. N. Tapper, R. H. Wasser-

mann; Associate Professors A. P. Casarett, P. H. Craig, L. L. Nangeroni, J. C. Thompson, Jr.; Assistant Professor F. A. Kallfelz; Senior Research Associates F. L. Hiltz, H. Moraff, A. N. Taylor, R. A. Wentworth; Research Associate R. A. Corradino, Graduate Assistants J. Balaban, J. Faull, L. Lippiello, F. Jacobsen, E. Parker; Postdoctoral Fellow P. B. Brown.

The Department is well equipped for advanced work in the applications of radiation and physical methods to problems of animals and biological research.

**310 Elementary Animal Physiology.** Spring term. Credit three hours. Prerequisite: one year of biology or zoology and college courses in chemistry. M W F 10:10. Associate Professor Nangeroni.

Lectures and demonstrations arranged especially for students of agriculture but open to others: intended for students who do not plan to continue in physiology or allied fields.

**311 Introductory Physical Biology.** Fall term. Offered in 1972. Credit three hours. Prerequisite: basic biology, chemistry, and calculus or permission of the instructor. M W F 10:10. Professors Comar and Wasserman. A basic treatment of the application of physical principles to physiological problems. Coverage includes: mathematical approach to physiological problems; principles of tracers; kinetics; systems analysis and control theory; physicochemical principles; flow of energy in living systems; flow of mass in living systems; contractility.

**312 Introductory Animal Physiology.** Spring term. Credit three hours. Prerequisite: one year of biology and zoology, college courses in chemistry, and basic college mathematics. M W F 11:15. Associate Professor Craig and others.

The course deals especially with the identity and functions of the organ—systems of mammals, ruminant and non-ruminant, with general comparisons to other forms. Particular emphasis is given to circulation, respiration, digestion, excretion, metabolism, and endocrine controls. The lectures, demonstrations, and exercises are intended to serve as a basis for subsequent work in the physiological sciences.

**427 Sensory Function.** Fall term. Credit three hours. Prerequisite: Biology 320 or equivalent. One hour lectures, T Th 10:10. Given cooperatively with Cornell's Division of Biological Sciences. Professors Halpern (Arts and Sciences) and Tapper (Physical Biology).

Sensory receptors and the central nervous system transformation of afferent activity will be considered in relation to human and animal psychophysical data and to the adaptive significance of behavior. The receptor



will be examined in terms of anatomy, biochemistry, biophysics to transduction, and the central nervous system control of peripheral input. Information and signal detection theories will be applied.

**621 Applied Radiation Biology.** Second year, fall term. Credit one hour. W 9:05. Assistant Professor Kallfelz.

Lectures and demonstrations on the nature of radiation, biological effects, veterinary applications, and monitoring procedures.

**921 Radioisotopes in Biological Research Principles and Practice.** Spring term. Credit four hours. Prerequisite: a course in quantitative chemistry and permission of the instructor. Lectures, T Th 11:05. Laboratory, M T or W 1:30-5. Professor Lengemann and staff.

Lectures, demonstrations, and laboratory on the fundamentals of atomic energy procedures and applications to biological research.

**922 Biological Effects of Radiation.** Fall term. Credit three hours. T Th 10:10. Laboratory, Th 1:30-4:25. Associate Professor Casarett.

Lectures and demonstration on radiation physics, radiation chemistry, radiation effects at the cellular level, radiation effects in multicellular organisms, genetic effects of radiation, and radioprotective and radiomimetic substances.

**923 Biological Membranes and Nutrient Transfer.** Spring term. Offered in alternate years. Credit two hours. Prerequisite: animal or plant physiology, quantitative and organic chemistry, physics and consent of the instructor. Cellular physiology and elementary physical chemistry desirable. Lectures (time to be designated). Professor 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.

**924 Functional Organization of the Mammalian Nervous System.** Fall term. Credit six hours. Given in alternate years. Not given in 1973-74. Prerequisite: two years of biological science. Courses in biochemistry, physics, and neural anatomy are desirable. Lectures, M W F 10:10. Laboratory, W 1:25. Professor Gasteiger.

Cellular, sensory, central integrative, and motor aspects of the nervous system will be considered with an emphasis on the electrophysiological approach. Laboratory studies will include electrical activity of cells, reflexes, decerebrate rigidity, acoustic microphonic response, subcortical stimulation, and evoked and spontaneous cortical activity.

**925 Physical Biology. Physiology, Biochemistry, and Biophysics of Mineralized Tissue (Special Topics).** Fall term. Credit two hours.

Prerequisite: animal physiology, biochemistry, and elements of physical biology, or the permission of the instructor. Anatomy and histology recommended. M F 11:15. Instructors: Comar, Corradino, Craig, Taylor, and Wasserman.

Introduction to the histology, anatomy, and pathology of bones and teeth, kinetics of bone and bone minerals, biochemistry of calcification, factors affecting calcium and bone metabolism (parathyroid hormone, calcitonin, vitamin D, trace elements, etc.), bone-seeking radionuclides, and calcium homeostatic mechanisms.

**926 Physical Biology Graduate Seminar.** Fall and spring terms. Credit one hour. Professor Comar and staff.

**927 Seminar—Special Topics in Physical and Radiation Biology.** Fall and spring terms. Credit hours variable. Associate Professor Casarett.

**928 Experimental Physiology for Graduate Students.** Fall term. Credit three hours. Prerequisite: 510, 501, and 502, or 900, or Biological Sciences 321-322 and Biochemistry 401. Coregistration in 610 and consent of the instructor are required. Registration limited. Associate Professor Nangeroni.

## Pathology

Professors C. G. Rickard, J. H. Whitlock, C. I. Boyer, Jr.; L. P. Krook, F. Noronha, J. R. Georgi; Associate Professors J. E. Post, L. Coggins, J. M. King, J. M. Shively; Assistant Professor L. T. Pulley; Senior Research Associates W. J. Sickles, F. E. Waterman, E. Dougherty, III, A. L. Britt, R. W. Dellers, M. J. Kemen, G. A. Maylin; Research Associate B. A. Coote; Director of the Diagnostic Laboratory S. R. Nusbaum; Interns J. M. Armstrong, J. M. Inhelder; Assistants T. T. Brown, Jr., L. S. Uhazy, C. Hong, T. Ubertini; also R. Ochoa, J. O. Hincapie.

The Department is well equipped with modern facilities to provide opportunity for advanced work in necropsy and surgical pathology, immunopathology, parasitology, nutritional pathology, laboratory animal pathology, laboratory diagnostic methods, oncology, and electron microscopy. The Department maintains a general diagnostic laboratory, 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, and numerous serum samples for epidemiological work. Clinical cases which have been ade-

quately examined by clinical methods are available for necropsy study.

The following courses are given particularly for veterinary students. Courses in the 600 and 700 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 in each case.

Each veterinary student is expected to provide his own microscope suitable for the study of histological slides in Courses 631, 633, 635, and 731. A compound microscope which has objective lenses with magnifications of approximately 2.5 or 3.5X, 10X, 40X, and 97X is required. A lockable cabinet is available in the laboratory for storage of these microscopes when they are not in use.

**630 General Pathology Lectures.** Second year, fall term. Credit two hours. Prerequisite: Anatomy 507 and 508 or equivalent histology courses. In addition, it is desirable that the student shall have at least one year's work in anatomy and physiology. In special cases of students who are majoring in biology and expect to take no further work in pathology, these prerequisites may be waived in part. When this is done, the course will not be accepted as a prerequisite for other courses. M F 9:05. Professor Rickard.

The course consists of a study of disease processes, including congenital anomalies, circulatory diseases, degenerations, necrosis, inflammation, and neoplastic diseases (tumors). The gross and microscopic features are discussed in relation to the effects on the host animal.

**631 General Pathology Laboratory.** Second year, fall term. Credit two hours. Prerequisite: 630, taken previously or concurrently. Section I, M F 10:10-12:35. Section II, T 10:10-12:35, S 9:05-11:30. Professor Rickard.

**632 Special Pathology Lectures.** Second year, spring term. Credit two hours. Prerequisite: 630. T Th 9:05. Associate Professor King. A systematic study of the diseases in each organ system, with emphasis on differential diagnostic features. Veterinary pathologists who are specialists in several aspects of the course participate in teaching the areas of their specialization.

**633 Special Pathology Laboratory.** Second year, spring term. Credit two hours. Prerequisite: 632, taken previously or concurrently. T 2-4:25, F 10:10-12:35. Associate Professor King.

**634 Food Quality Control.** Second year, spring term. Credit three hours. Lecture, M 10:10, Th 8. Laboratory, T 10:10-12:35. Professors White and Baker.

**635 Animal Parasitology.** Second year, spring term. Credit two hours. Prerequisite,

zoology or biology. Lecture, Th 10:10. Laboratory, Th 2-4:25. Professor Whitlock.

A systematic study of the helminth and arthropod parasites of domestic animals with particular emphasis on the identification and bionomics of the forms of veterinary importance.

**Clinical Pathology.** Professors Bentinck-Smith and Tasker.

See Clinical Courses, course 636.

**730 Food Quality Control.** Third year, fall term. Credit two hours. Lecture, F 11:15. Laboratory, F 2-4:25. Professors White and Baker.

Veterinary inspection to control quality and wholesomeness of meat, meat food, dairy, fish, and poultry products; and to study dairy farms and plants in which these products are produced, processed, manufactured, stored, etc. Certain parts of the course are given by members of the Departments of Poultry Husbandry, Dairy and Food Science, and Animal Husbandry of the College of Agriculture, and the Department of Large Animal Medicine, Obstetrics, and Surgery of the Veterinary College.

**731 Applied Parasitology.** Third year, fall term. Credit three hours. Prerequisite: 635 or equivalent. Lecture, M 10:10, T 1:10. Laboratory, Section A, W 2-4:25; Section B, T 2-4:25; Section C, Th 10:10-12:35. Professor Georgi.

An organized study of the features of domestic animals with particular emphasis on the features of diagnostic importance. Special attention will be given to the laboratory and postmortem techniques that are of value in applied parasitology.

**930 Pathology Seminar.** Fall and spring terms. No credit. Required of all graduate students in pathology. Undergraduate students are admitted.

**931 Pathology of Nutritional Diseases.** Spring term of even-numbered years. Credit three hours. Lecture and laboratory. Prerequisite: 630 and 631. Hours to be arranged. Designed primarily for graduate students of nutrition. Professor Krook.

**932 Advanced Work in Animal Parasitology.** Fall term. Credit one to three hours, by arrangement.

**933 Advanced Work in Animal Parasitology.** Spring term. Credit one to three hours, by arrangement. Prerequisite: 635. For advanced undergraduate and graduate students. Professor Whitlock and Georgi. Special problems concerned with the parasites of domestic animals.

**934 Laboratory Methods of Diagnosis.** Fall term. Credit one to three hours, by arrangement.

**935 Laboratory Methods of Diagnosis.**

Spring term. Credit one to three hours, by arrangement. Prerequisite: 632 and 641 or 340. Graduate students.

Instructions and practice in the application of pathological methods for the diagnosis of disease.

**936 Advanced Work in Pathology.** Fall term. Credit one to three hours, by arrangement.

**937 Advanced Work in Pathology.** Spring term. Credit one to three hours, by arrangement.

Properly prepared students may undertake special problems or receive special assignments.

**938 Reproductive Pathology.** Fall term. Credit two hours. Lecture and laboratory. Prerequisite: 630, 631, 632, and 633. Hours to be arranged. Professor McEntee.

**939 Introduction to Laboratory Animal Medicine.** Spring term of even-numbered years. Credit two hours. Prerequisite: permission of the instructor. Lecture and demonstration, M 1-4:25. Professor Boyer and staff.

An introduction to management and disease control in the laboratory animal species used in biological research, including mice, rats, guinea pigs, hamsters, rabbits, poultry, and nonhuman primates. Disease control in experimental colonies of dogs and cats is discussed. The course provides a survey of preventive medicine, the common diseases, and important aspects of comparative anatomy, ecology, behavior, and genetics.

**940 Ultrastructural Pathology.** Fall term. Credit two hours. Prerequisite: biology courses at the advanced undergraduate or graduate level are required, and courses 630-633 are recommended. Two lectures per week, supplemented by demonstrations. Associate Professor Shively.

Study is directed toward development of capability in interpretation of electron micrographs of biological structures in health and disease. Techniques of electron microscopy of biological material will be briefly reviewed. The major part of the course will be directed toward alterations of specific organelles and subcellular systems in pathologic processes, such as inflammation neoplasia, and the ultrastructural pathology of selected organ systems, e.g., kidney, blood vasculature, and liver.

## Microbiology

Professors D. W. Bruner, G. C. Poppensiek, J. A. Baker, L. E. Carmichael, J. H. Gillespie, N. L. Norcross, B. E. Sheffy, A. J. Winter; Associate Professors M. J. G. Appel, S. G. Campbell, R. F. Kahrs, K. M. Lee; Assistant Professors G. Lust, F. W. Scott; Research

Associates G. D. Aguirre, C. G. Fabricant, D. F. Holmes, R. D. Schultz; Assistants D. A. Bemis, J. A. Carlson, D. H. Davies, J. M. Gaskin, L. W. George, D. A. Higgins, A. B. Judkins, D. C. Mills.

Courses 640, 641, 740, and 741 are required in the curriculum of the Veterinary College 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 and to undergraduate students who have obtained the proper prerequisite training. Permission to register must be obtained.

**340 Basic Immunology Lectures.** Fall term of even-numbered years. Credit two hours. Prerequisite: a course in basic microbiology or special permission of the instructor. T Th 9:05. Professor Winter.

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

**341 Pathogenic Microbiology.** Spring term of odd-numbered years. Credit four hours. Prerequisite: a course in basic microbiology and course 340 or special permission of the instructors. T Th 1-4:25. Professor Gillespie and Mrs. Fabricant.

Includes microbiology, virology, and serology.

**640 Microbiology and Immunology.** Second year, fall term. Credit four hours. M T W Th 1:10. Professors Bruner, Baker, Carmichael, and Associate Professor Campbell. Includes general and pathological microbiology, virology, and immunology.

**641 Microbiology and Immunology Laboratory.** Second year, fall term. Credit five hours. M T W Th F 2-4:25. Associate Professor Campbell, Professor Carmichael, and assistants.

Open to students who have taken or are taking course 640 or its equivalent.

**740 Epidemiological Methods.** Third year, fall term. Credit two hours. W F 10:10. Associate Professor Kahrs.

A lecture course dealing with health and disease from a herd, flock, community, or population standpoint and emphasizing the use of knowledge about etiology, transmission, and distribution of disease in the development of preventive measures and control programs.

**741 Infectious Diseases.** Third year, spring term. Credit three hours. Prerequisite: courses 632 and 640. M W F 10:10. Professor Poppensiek and Associate Professor Kahrs.

### 30 Small Animal Medicine

**941 Advanced Immunology Lectures.** Spring term of even-numbered years. Credit three hours. Prerequisite: an elementary immunology course or permission of the instructors. M W F 9:05. Professors Norcross, Winter, Associate Professor Campbell, and invited speakers.

The lectures are designed to cover the field of immunology at an advanced level. Lecture topics include phylogeny and ontogeny, immunoglobulins, antibody synthesis, hypersensitivity, antigen-antibody reactions, protective immunity, and immunologic disease. Detailed course outlines available from department secretary.

**942 Advanced Immunology Laboratory.** Spring term of even-numbered years. Credit three hours. Prerequisite: permission of the instructors. T Th 1:30. Professors Norcross, Winter, and Associate Professor Campbell. The course will consist of three major parts: (1) a comprehensive exercise in antibody production and analysis, (2) a series of individual exercises in modern immunological techniques, and (3) demonstrations of immunological instrumentation and techniques. Detailed course outlines are available for distribution from the Department of Microbiology and a copy is on file in the Veterinary Library.

**943-944 Advanced Work in Bacteriology, Virology, or Immunology.** Fall term. Credit one to three hours, by arrangement. Spring term. Credit one to three hours, by arrangement.

Properly prepared students may undertake special problems or receive special assignments.

**945 Animal Virology and Tissue Culture Methods.** Spring term of odd years. Credit one to four hours, by arrangement. Three credit hours for two lectures and one discussion section; one credit hour for one laboratory period. Courses 340 or 630 and 640 are considered prerequisites, except under special circumstances. Permission to register required. M W 1:10-4:25. Associate Professor Lee and Professor Carmichael.

Lectures will include the biology of animal viruses with emphasis on topics of general significance. Laboratory exercises emphasize methods of tissue culture preservation of cell lines, and the application of tissue culture methods to virology.

**946 Microbiology Seminar.** Fall and spring terms. No credit. Required of all graduate students. Undergraduate students are admitted. Th 11:15-12:05. Associate Professor Lee.

**947-948 Laboratory Methods of Diagnosis.** Fall term. Credit one to three hours, by arrangement. Spring term. Credit one to three hours, by arrangement. Prerequisite: 340 or 633 and 641.

Instructions and practice in the application of bacteriological and serological methods for the diagnosis of disease.

### Avian Diseases

Professors S. B. Hitchner, P. P. Levine, J. Fabricant, M. C. Peckham, B. W. Calnek; Assistant G. A. Berkhoff.

The Department maintains a poultry disease diagnostic clinic at the college and two regional diagnostic laboratories in different parts of the state. These laboratories supply fresh material for teaching and research purposes. Adequate facilities existing at the college and at the poultry disease research laboratory on Snyder Hill provide opportunity for advanced study for properly qualified students. A disease-free breeding flock and a poultry disease isolation building are available for studies on most infectious and other diseases of poultry.

**750 Diseases of Poultry.** Third year, spring term. Credit three hours. Required of veterinary students. T Th 10:10, F 2-4:25. Professor Levine.

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.

**450 Poultry Hygiene and Disease.** Fall term, alternate years. Credit two hours. Prerequisites: Biological Sciences 290 or 290A, and permission of the instructor. Lecture and laboratory. Th 2-4:25.

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.

### Small Animal Medicine and Surgery

Professor R. W. Kirk; Associate Professors G. E. Ross, Jr., T. H. Brasmer; Assistant Professors S. I. Bistner, G. A. Bolton, M. D. Lorenz; Resident E. J. Trotter; Interns M. A. Barnett, B. C. Brown, R. C. Riis, D. W. Scott.

The instruction consists of lectures, recitations, and laboratory work. The Small Animal Clinic furnishes abundant material for instruction in applied surgical and medical therapeutics of these animals. The clinic is run like a small animal practice. The students are assigned to the cases, assist in operations, and under close supervision have charge of the patients.

**760 Small Animal Medicine.** Fall term. Credit three hours. M W 11:15, Th 9:05.

Professor Kirk, Assistant Professors Bolton and Lorenz.

**761 Small Animal Medicine.** Third year, spring term. Credit three hours. Prerequisite: Special Pathology, Pharmacology, and Clinical Pathology. T W 11:15, F 9:05. Professor Kirk, Assistant Professors Bolton, Bistner, and Lorenz.

**762 Small Animal Surgery.** Third year, spring term. Credit four hours. Prerequisite: Special Pathology. M W Th F 8. Associate Professors Ross and Brasmer.

**763 Surgical Exercises.** Third year, fall term. Credit one hour. M T W or Th 2-4:25. Associate Professors Brasmer and Ross.

**773 General Surgery.** Third year, fall term. Credit four hours. Prerequisite: Special Pathology. Lecture, M W F 9:05. Associate Professor Ross.

**860 Small Animal Ophthalmology.** Fourth year, fall term. Credit one hour. W 8:00. Assistant Professor Bistner.

**960-961 Advanced Work.** Fall and spring terms respectively. Five or more hours a week throughout the term. Professor Kirk, Associate Professors Ross and Brasmer, Assistant Professors Bistner, Bolton, and Lorenz. Research in medicine and surgery of small animals.

## Large Animal Medicine, Obstetrics, and Surgery

Professors K. McEntee, S. J. Roberts, F. H. Fox, J. T. Vaughan, D. D. Delahanty, A. J. Winter, J. C. Geary, J. B. Tasker, J. Bentinck-Smith, N. L. Norcross; Associate Professors H. F. Schryver, N. B. Haynes, J. E. Lowe, D. S. Postle, R. F. Kahrs, C. E. Hall, H. F. Hintz; Assistant Professors R. H. Whitlock, R. K. Braun; Senior Clinician R. B. Hillman; Senior Research Associate H. O. Dunn; Instructor A. D. McCauley; Research Associate K. Burda; Supervising Veterinarian R. S. Guthrie; Field Veterinarians L. F. Field, W. Linquist; Surgical Residents T. S. Taylor, K. L. Twisselmann; Medical Interns L. D. Weaver, B. W. Johnston; Surgical Interns J. W. George, E. L. Reinertson; Farrier H. G. Mowers; X-Ray Lecturer G. D. Ryan.

### Classroom Work in Large Animal Medicine

The course in veterinary large animal medicine, principles and practice, extends over the last two years of undergraduate study, the subjects of the second year being distinct from, and complementary to, those of the first.

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

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

### Ambulatory Clinic

An ambulatory or out-clinic is conducted for the purpose of giving instruction to students under conditions identical with those encountered in private practice. Proper conveyances and equipment are provided, and an opportunity is afforded for observing such diseased farm and dairy animals as cannot be entered in the clinics of the College. The student thereby not only has an opportunity to see cases not readily brought to the College clinic but also assists in handling cases in the same manner and under the same environment as are required of the country practitioner. As the vicinity of Ithaca is largely devoted to dairying, valuable clinical material relating to obstetrics and the diseases of dairy cows is available and is extensively used. In addition, the supervising veterinarian and field veterinarians associated with the New York State Mastitis Program are resident in Ithaca, and senior students are required to accompany and assist them on many field trips dealing with all phases of bovine mastitis, including a study of various methods of milking and housing dairy cattle. In the senior year, field trips are made to study and observe management practices on large horse, sheep, dairy cattle, and swine farms, and these are a required part of courses 671, 770, 771, 772, 870, and 871.



## Classroom Work in Large Animal Surgery

Course 773 (General Surgery), course 630 (General Pathology), and course 774 (Large Animal Surgical Exercises) together constitute a group designed to impart a general knowledge of the principles of surgery, surgical pathology, therapeutics, and operative technique.

Course 775, a total of seventy-five lectures and recitations, is devoted to the surgery of the various regions of the body and includes horseshoeing.

## Laboratory Work in Surgery

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

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

## Clinical Surgery of the Farm Animal

A hospital is maintained with facilities for the hospitalization of approximately sixty-seven patients. There are two operating rooms equipped with operating tables, stocks, diagnostic and therapeutic x-ray equipment, and other equipment. There is also a farriery with a farrier in attendance. Fourth-year students are in the clinics for the entire day, Monday through Friday, also on Saturday and Sunday morning. Two classes of patients are admitted: special patients and clinic patients. Special patients are examined, diagnosed, and treated by the senior staff members. The students assist and observe. Clinic patients are examined, diagnosed, and treated by the residents and students. In the hospital, the student has an opportunity to see, examine, and treat many unusual cases that are referred to the College by practitioners. Furthermore, the student has an opportunity to study the progress of cases, which is often

impossible when treating patients on the farm. The cooperation between the clinical staff and the laboratories provides the student an opportunity to study the patient critically and to correlate clinical with both physiological and pathological findings. Every possible opportunity is given to the student to participate in the examination and treatment of patients because the student will learn more from doing than from observing.

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

The causes and the nature of the common diseases of livestock are discussed. Emphasis is placed on the prevention and control of animal diseases.

**671 Obstetrics and Genital Diseases.** Second year, spring term. Credit three hours. Lectures, W F 8. Laboratory, F 2-4:25 or S 9:05-11:30. Professor Roberts.

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

**770 Obstetrics and Genital Diseases.** Third year, fall term. Credit three hours. Lectures, M 8, T 9. Laboratory, M or Th 2-4:25. Professor Roberts.

Applied physiology and endocrinology of the male and female reproduction tract; congenital, infectious, endocrine, and miscellaneous diseases of the genital organs causing infertility and sterility; and artificial insemination are presented. Further clinical instruction in obstetrics and infertility is given in the ambulatory clinic, and in the College dairy barn in the third and fourth years.

**771 Diseases of Large Animals.** Third year, fall term. Credit four hours. T W Th F 8. Professor Fox.

**772 Diseases of Large Animals.** Third year, spring term. Credit two hours. T Th 11:15. Professor Fox.

Lectures or recitations covering physical diagnosis, therapeutics and some diseases of large animals.

**774 Large Animal Surgical Exercises.** Third year, fall term. Credit one hour. M T W Th 2-4:25.

Three hours a week of laboratory work in surgical operations upon anesthetized large animals.

**775 Special Surgery of Large Animals.** Third year, spring term. Credit five hours. M T W Th 9:05, F 11:15. Professor Delahanty.

**776-777 Fundamentals of Roentgenology.** Third year, spring term. Credit one hour. M 12:20. Professor Geary and staff.

Technique of operation of modern equipment, x-ray protection, darkroom procedure, and fundamentals of diagnosis.

**870 Diseases of Large Animals.** Fourth year, fall term. Credit four hours. M T Th F 8. Professor Fox and Senior Clinician Hillman.

**871 Diseases of Large Animals.** Fourth year, spring term. Credit four hours. M T W Th 8. Professor Fox and Senior Clinician Hillman. In addition to the instruction provided by the Departmental staff, Professor Kingsbury of the Department of Botany gives lectures and field trips concerning poisonous plants.

**872 Jurisprudence, Ethics, and Business Methods.** Fourth year, spring term. Credit one hour. Associate Professor Haynes and associates.

Lectures on the principles of veterinary medical ethics; veterinary medical organization and various practiced topics related to veterinary practice management.

**970 Advanced Work in Reproductive Pathology and Bacteriology, Medicine, Obstetrics, and Surgery.** Fall term. Open to graduate students. Hours and credit to be arranged.

**971 Advanced Work in Reproductive Pathology and Bacteriology, Medicine, Obstetrics, and Surgery.** Spring term. Open to graduate students. Hours and credit to be arranged. Professors McEntee, Roberts, Fox, Delahanty, Winter; Associate Professors Schryver, Hintz and Senior Research Associate Dunn. Properly prepared students may undertake special problems or receive special assignments.

**972 Urogenital Surgery of the Horse.** Fall term. Credit two hours.

Surgical diseases of the urogenital system of the mare and stallion. Fourteen lectures will be presented in seminar-discussion form. The anatomy laboratory is planned to utilize the prosected specimens and video-tape, in collaboration with the Anatomy Department. The surgical pathology laboratories will be taught with the help of Reproductive Pathology. The surgical laboratories will also utilize cadaver dissections.

**973 Surgery of the Digestive System of the Horse.** Spring term. Credit two hours.

Surgical diseases of the digestive system including the oral cavity, pharynx and esophagus, and gastro-intestinal tract. Special consideration will be given to problems arising from diseased teeth and obstructive disease of the esophagus and intestine. Laparotomy techniques will be covered in depth. Fourteen lectures will be presented in seminar-discussion form. Laboratories will also take advantage of dissected specimens.

Collaboration with the Anatomy Department and the Pathology Department will be utilized in both lecture and laboratory presentations.

**Reproductive Pathology.** Professor McEntee, See Department of Pathology, course 938.

**Epidemiological Methods.** Associate Professor Kahrs. See Department of Microbiology, course 740.

## Special Lectures

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

## Opportunities for Research

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

## The Clinical Courses

Professors McEntee, Roberts, Fox, Delahanty, Kirk, Vaughan, Bentinck-Smith, Tasker, Geary, Rickard, Hitchner, Peckham, Fabricant; Associate Professors Ross, King, Brasmer, Lowe, Postle; Assistant Professors Braun, Bistner, Whitlock, Bolton, Lorenz; Senior Clinician Hillman; Instructor McCauley; Residents Twisselmann, Taylor, Trotter; Interns Barnett, Riis, Brown, Scott, Reinertson, George, Weaver, Johnston; Supervising Veterinarian Guthrie; Field Veterinarians Field, Linquist.

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

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

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

The Poultry Clinic is conducted by the Department of Avian Diseases.

### 34 Courses in other Divisions

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

Information about the respective Clinical divisions will be found under the course announcements of the departments concerned. Only students who have completed the first two years of the veterinary curriculum will be admitted to any one of the clinical courses.

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

**636 Clinical Pathology.** Second year, spring term. Credit two hours. Prerequisite: courses 632 and 633 in the Department of Large Animal Medicine, Obstetrics, and Surgery, taken previously or concurrently. Students from other Colleges may be admitted by special permission without these prerequisites. Lecture, Th 11:15. Laboratory, Section I, W 10:10-12:35; Section II, W 2-4:25. Professors Bentinck-Smith and Tasker.

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; the study of pathological alterations in clinical cases.

**790 Clinical Orientation.** Third year, fall term. W 12:20.

**791 Clinical Orientation.** Third year, spring term. M 11:15 and M T W or Th 2-4:25.

Methods of clinical examination will be demonstrated and selected cases from all the clinics will be presented and discussed.

**898 Senior Seminar.** Fourth year, fall term. F 12:20-1:10. Associate Professor Lowe in charge.

**899 Senior Seminar.** Fourth year, spring term. F 12:20-1:10. Associate Professor Lowe in charge.

These conferences will be attended by all members of the fourth-year class and by staff members representing not only the clinical but the preclinical or basic sciences as well. Students will be required to present reports on their studies of selected cases from the clinics, and these will be criticized and discussed by the students and faculty members. In this way special knowledge and viewpoints of the anatomist, biochemist, physiologist, pathologist, bacteriologist, and parasitologist, as well as those of the clinicians, will be brought to bear on problems of diagnosis and therapy.

**890 Small Animal Clinic.** Fourth year, fall term. Credit four hours.

**891 Small Animal Clinic.** Fourth year, spring term. Credit four hours.

**892 Large Animal Clinic.** Fourth year, fall term. Credit four hours.

**893 Large Animal Clinic.** Fourth year, spring term. Credit four hours.

**894 Ambulatory Clinic.** Fourth year, fall term. Credit four hours.

**895 Ambulatory Clinic.** Fourth year, spring term. Credit four hours.

**896 Clinics Ancillary.** Fourth year, fall term. Credit four hours.

**897 Clinics Ancillary.** Fourth year, spring term. Credit four hours.

These clinics operate daily by assignment, including nights and Sundays when necessary. Professors Kirk, Vaughan, Fox, Bentinck-Smith, respectively.

During his fourth and final year the veterinary student is required to spend his time, after 9:00 a.m. daily, studying and ministering to the ailments of patients. He is on call, night and day, during the entire year. For this reason he is not permitted to carry extra academic courses, and outside part-time employment is not accepted as a valid excuse for failure to meet his full responsibilities in these courses.

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

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

## Courses in the Veterinary Curriculum Given by the College Of Agriculture

### Animal Science

**101 Livestock Management.** First year, fall term. Credit three hours. Lectures, T Th 8. Morrison 163. Laboratory, T 10:15-12:35. Livestock Pavilion. Professor Elliot. Distribution, significance, problems, and practical management of commercially important classes of farm animals.

### Animal Nutrition

**311 Principles and Practice of Animal Feeding.** First year, spring term. Credit three hours. Lectures, M W 8. Morrison 163. Labora-



tory, T 10:10-12:35. Morrison 164. Associate Professor Hogue.

Consideration is given to the basic principles of animal nutrition, nutritive requirements for various body functions; the identification, composition, and nutritive value of feeds, and the formulation of animal rations. The species covered include dairy cattle, beef cattle, sheep, swine, and horses; and there is some consideration of dogs, cats, and other small animals. Special emphasis is given to nutritional problems relating to animal health.

## Animal Breeding and Physiology

**424 Animal Genetics.** Second year, fall term. Credit two hours. For veterinary students only. Lecture, M 8, Morrison 163. Laboratory, W 10:10-12:35, Morrison 164 and 174. Associate Professor Van Vleck.

Principles of genetics; sex determination and sex linkage; inheritance of characteristics in domestic animals with special reference to lethal genes, genetic resistance to disease and quantitative characters; progeny testing, genetic relationships and inbreeding.

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Kenneth McEntee, Associate Dean, Clinical Studies

Charles G. Rickard, Associate Dean, Pre-Clinical Studies

William H. Johndrew, Director of Student Administration

Howard E. Evans, Secretary of the College

Lindley C. Kent, Administrative Assistant

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### Emeritus Professors

Baker, Donald W., B.S., D.V.M., Ph.D., Professor of Veterinary Parasitology, Emeritus

Danks, A. Gordon, B.S., D.V.M., Professor of Veterinary Surgery, Emeritus

Dukes, H. Hugh, B.S., D.V.M., M.S., D.H.C., D.Sc., Professor of Veterinary Physiology, Emeritus

Fincher, Myron G., D.V.M., M.S., Professor of Veterinary Medicine, Emeritus

Gilman, Herbert L., D.V.M., M.S., Ph.D., Professor of Veterinary Bacteriology, Emeritus

Leonard, Ellis P., B.S., D.V.M., Professor of Small Animal Surgery, Emeritus

Olafson, Peter, D.V.M., M.S., Professor of Veterinary Pathology, Emeritus

Stephenson, Hadley C., B.S., D.V.M., Professor of Veterinary Therapeutics and Small Animal Diseases, Emeritus

### Professors

Aronson, Arthur L., B.S., D.V.M., M.S., Ph.D., Professor of Veterinary Pharmacology

Baker, James A., B.S., M.S., Ph.D., D.V.M., Professor of Veterinary Virology, and Director of the Veterinary Virus Research Institute

Bentlnck-Smith, John, A.B., D.V.M., Professor of Clinical Pathology

Bergman, Emmett N., B.S., D.V.M., M.S., Ph.D., Professor of Veterinary Physiology

Boyer, Clyde I., Jr., V.M.D., M.S., Professor of Laboratory Animal Medicine

Bruner, Dorsey W., B.S., Ph.D., D.V.M., Professor of Veterinary Microbiology, and Chairman of the Department of Veterinary Microbiology

Calnek, Bruce W., D.V.M., M.S., Professor of Avian Diseases

Carmichael, Leland E., A.B., D.V.M., Ph.D., John M. Olin Professor of Virology

Comar, Cyril L., B.S., Ph.D., Professor of Physical Biology, and Head of the Department of Physical Biology

Delahanty, Donald D., D.V.M., M.S., Professor of Veterinary Surgery

Dobson, Alan, B.A., M.A., Ph.D., Professor of Veterinary Physiology

Evans, Howard E., B.S., Ph.D., Professor of Veterinary Anatomy, and Secretary of the College

Fabricant, Julius, B.S., V.M.D., M.S., Ph.D., Professor of Avian Diseases

Fox, Francis H., D.V.M., Professor of Veterinary Medicine and Obstetrics, and Director of the Ambulatory Clinic

Gasteiger, E. L., Jr., A.B., M.S., Ph.D., Professor of Physical Biology

Geary, Jack C., D.V.M., Professor of Radiology and Director of Radiology in the Department of Large Animal Medicine, Obstetrics, and Surgery

Georgi, Jay R., D.V.M., Ph.D., Professor of Veterinary Parasitology

Gillespie, James H., V.M.D., Professor of Veterinary Bacteriology

Habel, Robert E., D.V.M., M.Sc., M.V.D., Professor of Veterinary Anatomy, and Head of the Department of Anatomy

Hitchner, Stephen B., B.S., V.M.D., Professor of Avian Diseases, and Head of the Department of Avian Diseases

Haupt, Thomas R., V.M.D., M.S., Ph.D., Professor of Veterinary Physiology

Kirk, Robert W., B.S., D.V.M., Professor of Small Animal Medicine, Chairman of the Department of Small Animal Medicine and Surgery, and Director of the Small Animal Clinic

## 38 Faculty and Staff

- Krook, Lennart P., D.V.M., Ph.D., Professor of Veterinary Pathology, and Graduate Field Representative
- Lengemann, Fred W., B.S., M.N.S., Ph.D., Professor of Radiation Biology
- Levine, P. Philip, B.S., D.V.M., M.S., Ph.D., Professor of Avian Diseases (on leave)
- McEntee, Kenneth, D.V.M., Professor of Veterinary Medicine and Pathology, and Associate Dean for Clinical Studies
- Norcross, Neil, A.B., M.S., Ph.D., Professor of Immunochimistry
- Noronha, Fernando M., D.V.M., Professor of Veterinary Virology
- Peckham, Malcolm C., B.S., D.V.M., Professor of Avian Diseases
- Poppensiek, George C., V.M.D., M.S., Professor of Veterinary Microbiology, and Dean of the College
- Rickard, Charles G., D.V.M., M.S., Ph.D., Professor of Pathology, Chairman of the Department of Veterinary Pathology, and Associate Dean for Preclinical Studies
- Roberts, Stephen J., D.V.M., M.S., Professor of Veterinary Medicine and Obstetrics, and Chairman of the Department of Large Animal Medicine, Obstetrics, and Surgery
- Sellers, Alvin F., V.M.D., M.S., Ph.D., Professor of Veterinary Physiology, and Head of the Department of Physiology, Biochemistry, and Pharmacology
- Sheffy, Ben E., B.S., M.S., Ph.D., Professor of Nutrition, and Assistant Director of Cornell Research Laboratory for Diseases of Dogs
- Stevens, Charles E., B.S., D.V.M., M.S., Ph.D., Professor of Veterinary Physiology
- Tapper, Daniel N., B.S., V.M.D., Ph.D., Professor of Physical Biology
- Tasker, John B., D.V.M., Ph.D., Professor of Clinical Pathology
- Vaughan, J. Thomas, D.V.M., M.S., Professor of Veterinary Surgery, and Director of the Large Animal Hospital
- Wasserman, Robert H., B.S., M.S., Ph.D., Professor of Radiation Biology (on sabbatical leave, second term)
- Whitlock, John H., D.V.M., M.S., Professor of Veterinary Parasitology
- Winter, Alexander J., B.S., D.V.M., M.S., Ph.D., Professor of Veterinary Microbiology
- Wootton, John F., B.S., M.S., Ph.D., Professor of Physiological Chemistry
- Coggins, Leroy, B.S., D.V.M., Ph.D., Associate Professor of Veterinary Virology
- Craig, Peter H., B.S., V.M.D., M.S., Associate Professor of Pathology in the Department of Physical Biology
- Cummings, John F., B.S., D.V.M., M.S., Ph.D., Associate Professor of Veterinary Anatomy
- de Lahunta, Alexander, D.V.M., Ph.D., Associate Professor of Veterinary Anatomy
- Hall, Charles E., A.B., D.V.M., Associate Professor of Reproductive Studies
- Haynes, N. Bruce, B.S., D.V.M., Associate Professor of Veterinary Science, and Extension Veterinarian
- Hintz, Harold F., B.S., M.S., Ph.D., Associate Professor of Animal Nutrition
- Kahrs, Robert F., D.V.M., M.S., Ph.D., Associate Professor of Veterinary Epidemiology (on sabbatical leave, second term)
- King, John M., D.V.M., Ph.D., Associate Professor of Veterinary Pathology
- Lee, Kyu M., M.D., Ph.D., Associate Professor of Virology
- Lowe, John F., D.V.M., M.S., Associate Professor of Veterinary Surgery
- Nangeroni, Louis L., B.S., D.V.M., M.S., Associate Professor of Veterinary Physiology
- Post, John E., B.S., D.V.M., Ph.D., Associate Professor of Veterinary Pathology
- Postle, Donald S., D.V.M., M.S., Associate Professor of Veterinary Science
- Ross, George E., Jr., B.S., D.V.M., M.S., Associate Professor of Small Animal Surgery
- Sack, Wolfgang O., D.V.M., M.R.C.V.S., Ph.D., Associate Professor of Veterinary Anatomy
- Schryver, Herbert F., B.A., D.V.M., Ph.D., Associate Professor of Pathology, and Director of Equine Research Program
- Shively, James N., D.V.M., M.P.H., M.S., Ph.D., Associate Professor of Veterinary Pathology
- Thompson, John C., Jr., B.S., M.S., Ph.D., Associate Professor of Environmental Radiation Biology

## Associate Professors

- Appel, Max J., D.V.M., Ph.D., Associate Professor of Veterinary Virology
- Brasmer, Timothy H., D.V.M., Ph.D., Associate Professor of Small Animal Surgery
- Campbell, S. Gordon, B.V.M.S., M.V.Sc., Ph.D., Associate Professor of Veterinary Microbiology
- Casarett, Alison P., B.S., M.S., Ph.D., Associate Professor of Radiation Biology

## Assistant Professors

- Arion, William J., B.S., M.S., Ph.D., Assistant Professor of Physiological Chemistry
- Bistner, Stephen I., B.S., D.V.M., Assistant Professor of Comparative Ophthalmology
- Bolton, Gary R., D.V.M., Assistant Professor of Small Animal Medicine-Cardiology
- Braun, R. Kenneth, B.S., D.V.M., Assistant Professor in the Department of Large Animal Medicine, Obstetrics, and Surgery
- Duncan, J. Robert, B.S.A., D.V.M., M.Sc., Assistant Professor of Reproductive Pathology
- Kallfelz, Francis A., D.V.M., Ph.D., Assistant Professor of Physical Biology

- Lesser, George V., B.S., D.D.S., Adjunct Assistant Professor in the Department of Veterinary Pathology
- Lorenz, Michael D., B.S., D.V.M., Assistant Professor in the Department of Small Animal Medicine and Surgery
- Lust, George, B.S., Ph.D., Assistant Professor of Biochemistry
- Pulley, Leamon T., D.V.M., Ph.D., Assistant Professor of Veterinary Pathology
- Scott, Frederic W., B.S., D.V.M., Ph.D., Assistant Professor of Veterinary Microbiology
- Whitlock, Robert H., D.V.M., Ph.D., Assistant Professor in the Department of Large Animal Medicine, Obstetrics, and Surgery

### Senior Research Associates

- Britt, Alfred L., D.V.M., M.P.H., Ph.D., Senior Research Associate in the Department of Veterinary Pathology
- Dellers, Robert W., D.V.M., Ph.D., Senior Research Associate in the Department of Veterinary Pathology
- Dougherty, Ellsworth III, B.S., V.M.D., M.S., Ph.D., Senior Research Associate in the Department of Veterinary Pathology
- Dunn, Henry O., B.S., M.S., Ph.D., Senior Research Associate in the Department of Large Animal Medicine, Obstetrics, and Surgery
- Gries, Christian L., D.V.M., Ph.D., Senior Research Associate in the Department of Veterinary Pathology
- Hillman, Robert B., A.B., D.V.M., M.S., Senior Clinician in the Department of Large Animal Medicine, Obstetrics, and Surgery
- Hiltz, Frederick L., B.S.E.E., M.S.E.E., Ph.D., Senior Research Associate in the Department of Physical Biology
- Kemen, Mathias J., Jr., D.V.M., M.S., Senior Research Associate in Department of Veterinary Pathology
- Maylin, George A., D.V.M., M.S., Ph.D., Senior Research Associate in the Department of Pathology
- McCauley, Alan D., D.V.M., Instructor in the Department of Large Animal Medicine, Obstetrics, and Surgery
- Moraff, Howard, A.B., B.S., M.S., Ph.D., Senior Research Associate in the Department of Physical Biology
- Sickles, Walter J., B.S., D.V.M., Senior Research Associate in the Department of Veterinary Pathology
- Taylor, Alan N., A.A.S., B.S., M.S., Ph.D., Senior Research Associate in the Department of Physical Biology
- Waterman, Fausto E., D.V.M., Senior Research Associate in the Department of Veterinary Pathology
- Wentworth, Richard A., B.S., M.S., Ph.D., Senior Research Associate in the Department of Physical Biology

### Professional Service—Laboratories

- Angstrom, Clement I., D.V.M., Director of Laboratory, Avian Disease Program (Kingston)
- Field, Lincoln E., D.V.M., Field Veterinarian (Ithaca)
- Fritz, Albert C., D.V.M., Field Veterinarian, Mastitis Program (Kingston)
- Grout, Alan J., D.V.M., Director of Laboratory Animal Standards, and Assistant to the Dean
- Guthrie, Richard S., D.V.M., Supervising Veterinarian, Mastitis Program (Ithaca)
- Hayes, Gerald L., D.V.M., Field Veterinarian (Earlville)
- Leibovitz, Louis, B.A., B.S., V.M.D., Field Veterinarian (Eastport)
- Linquist, Wesley, D.V.M., Field Veterinarian (Ithaca)
- Nusbaum, Sidney R., D.V.M., Director of the Diagnostic Laboratory
- Price, Jessie I., B.S., M.S., Ph.D., Research Specialist in Avian Diseases (Eastport)
- Urban, William D., V.M.D., Director of Duck Research Laboratory (Eastport)
- Wager, Leslie A., D.V.M., Field Veterinarian, Mastitis Program (Canton)

### Library

- Reinap, Mia, B.S., B.S. (Library Science), Librarian of the Flower Veterinary Library
- Miller, Pearl S., B.S., M.Ed., M.L.S., Associate Librarian

### Research Associates and Specialists

- Aguirre, Gustavo D., V.M.D., M.Sc., Research Associate in Department of Veterinary Microbiology
- Argenzio, Robert A., B.S., M.Sc., Ph.D., Research Associate in Department of Physiology, Biochemistry, and Pharmacology
- Burda, Karina, B.S., M.S., Research Associate in the Department of Large Animal Medicine, Obstetrics, and Surgery
- Coote, Beverly A., B.V.Sc., Research Associate in the Department of Veterinary Pathology
- Corradino, Robert A., B.S., M.S., Ph.D., Research Associate in the Department of Physical Biology
- Cowen, Barrett S., B.S., M.S., Research Specialist in the Department of Veterinary Avian Diseases (on leave)
- Fabricant, Catherine G., B.S., M.A., Research Associate in the Department of Veterinary Microbiology
- Fuerst, William F., Jr., B.S., M.S., Teaching Associate in the Department of Physiology, Biochemistry, and Pharmacology

## 40 Standing Committees

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- McLeod, Francis D., Jr., B.S., Research Specialist in the Department of Physiology, Biochemistry, and Pharmacology
- Schultz, Ronald D., B.S., M.S., Ph.D., Research Associate in the Department of Veterinary Microbiology
- Silverstein, Spencer J., A.B., Research Specialist in Department of Veterinary Physiology, Biochemistry, and Pharmacology
- Steiner, Harvey, B.A., M.A., Ph.D., Research Associate in the Department of Veterinary Pathology
- Tagari, Jona Haim, M.Sc., Ph.D., Visiting Lecturer in the Department of Physiology, Biochemistry, and Pharmacology
- Talisayon, Serafin D., B.S., M.S., Ph.D., Research Associate in the Department of Physical Biology

### Internes

- Armstrong, James M., B.S., D.V.M., Intern in the Department of Veterinary Pathology
- Barnett, Michael A., A.S., B.S., D.V.M., Intern in the Department of Small Animal Medicine and Surgery
- Brown, Barry C., B.S., D.V.M., Intern in the Department of Small Animal Medicine and Surgery
- George, Jeanne W., A.B., D.V.M., Intern in the Department of Large Animal Medicine, Obstetrics, and Surgery
- Inhelder, James L., B.S., D.V.M., M.S., Intern in the Department of Veterinary Pathology
- Johnston, Bruce W., B.S., D.V.M., Intern in the Department of Large Animal Medicine, Obstetrics, and Surgery
- Reinertson, Eric L., D.V.M., Intern in the Department of Large Animal Medicine, Obstetrics, and Surgery
- Riis, Ronald C., B.S., D.V.M., Intern in the Department of Small Animal Medicine and Surgery
- Scott, Danny W., B.S., D.V.M., Intern in the Department of Small Animal Medicine and Surgery
- Taylor, Tex S., D.V.M., Resident in the Department of Large Animal Medicine, Obstetrics, and Surgery
- Trotter, Eric J., B.S., D.V.M., Resident in the Department of Small Animal Medicine and Surgery
- Twisselmann, Kenneth L., V.S., D.V.M., Resident in the Department of Large Animal Medicine, Obstetrics, and Surgery

Weaver, Leon D., B.A., V.M.D., Intern in the Department of Large Animal Medicine, Obstetrics, and Surgery

### Specialists and Technicians

Ames, Claude K., Livestock Superintendent

Best, Robert N., X-Ray Technician

Mowers, Harold, Farrier

Newson, Marion, R.N., Medical Illustrator

Reidemanis, Alfreds, Anatomical Specialist

Ryan, Gerald D., X-Ray Lecturer

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Kemler, Arden G., Texas A. & M.

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A. Dobson  
J. Fabricant  
K. McEntee  
C. G. Rickard  
F. W. Scott  
J. T. Vaughan

† Student representatives are elected from each class.

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C. G. Rickard

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S. B. Hitchner  
R. F. Kahrs  
R. W. Kirk

## College Library

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L. Coggins  
C. L. Comar  
R. E. Habel

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H. E. Evans (1970-73)  
R. E. Habel (1970-74)

## Class Advisory Committee

W. H. Johndrew, Chairman

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S. G. Campbell  
A. de Lahunta  
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J. R. Georgi  
D. S. Postle  
W. O. Sack

### Class of 1974

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C. E. Hall  
J. M. King  
J. B. Tasker

### Class of 1973

J. F. Cummings  
J. E. Lowe  
G. E. Ross, Jr.

### Class of 1972

A. L. Aronson  
J. Bentinck-Smith  
J. C. Geary

## Students, Veterinary College

### Graduate Students, Fall 1970-71

Addinger, Hans K., D.V.M., Munich, W. Germany (Leave of absence)  
Al-Aubaidi, Jawad M., B.V.M.S., M.S., Ph.D., Baghdad, Iraq  
Al-Khayyat, Ali Aziz, B.V.Sc., M.S., Baghdad, Iraq  
Balaban, Jerry G., A.B., M.A., Cherry Hill, New Jersey  
Bartholomew, Richard C., D.V.M., Benson, Vermont (Leave of absence)  
Bemis, David A., B.S., Ithaca  
Berkhoff, German A., D.V.M., Santiago, Chile  
Braide, Victor B.C., D.V.M., Ibadan, Nigeria  
Brautigam, Fred E., D.V.M., Managua D.N., Nicaragua  
Bredderman, Paul, B.S., M.S., Greenville, New York  
Brown, Talmage T., D.V.M., B.S., Raleigh, North Carolina  
Bubar, Richard H., A.B., D.V.M., Urbana, Illinois  
Carlson, Pamela, B.S., West Hatfield, Massachusetts  
Cowen, Barrett S., B.S., M.S., Lebanon, New Hampshire (Extramural)  
Davies, D. Hugh, B.V.Sc., Patea, New Zealand  
Dellers, Robert W., D.V.M., New York  
Dore, Michael A., M.V.B., M.R.C.V.S., Dublin, Ireland  
Duncan, J. Robert, B.S.A., V.M.D., M.S., Guelph, Ontario, Canada  
El-Attar, Abdallah F., B.V.Sc., Cairo, Egypt  
Erickson, Eric D., D.V.M., Qualicum Beach, British Columbia, Canada  
Fathalla, Mahmood A. R., B.V.M.S., F.R.V.A., Baghdad, Iraq  
Galera-Garcia, Cesar, B.S., M.S., Av Revolucion, Mexico  
Gaskin, Jack M., D.V.M., Watertown  
Gerwirth, Myrna, B.S., M.S., Brooklyn  
Higginbotham, Ronald L., D.V.M., Almira, Washington  
Hincapie, Jose O., D.V.M., Mosquera, Colombia  
Hirabayashi, Doris L., B.S., M.S., Youngstown, Ohio (Leave of absence)  
Holmes, Dorothy F., D.V.M., Groton (Leave of absence)

## 42 Students

- Hong, Chuen-Bin, B.V.Sc., M.S., Taipei, Taiwan, China  
Hoover, Toby Roy, B.S., D.V.M., Ardmore, Oklahoma  
Jacobson, Frederick L., B.S., M.S., North Bend, Oregon  
Jones, William O., B.S., D.V.M., Westminster, South Carolina  
Jenkins, Ann B., A.A.S. *in grad, nurse.*, Provo, Utah  
Kaufman, Charles F., A.B., D.V.M., M.S., New York  
Keen, James, B.A., Forest Hills  
LaFauce, Norman A., B.S., D.V.M., Eureka, California  
Lippiello, Louis, A.A.S., B.S., M.S., Newfield  
Mann, Michael, B.A., Los Angeles, California  
Maylin, George A., D.V.M., M.S., Elmira Ontario, Canada  
Menegus, Marilyn A., B.S., Clifton, New Jersey  
Mills, Daniel C., B.S., Penn Yan  
Molt, James, A.B., Plainfield, New Jersey  
Morgan, Robert A., B.A., M.A., Kalamazoo, Michigan  
Munnell, John F., B.A., V.M.D., M.S., Ames, Iowa (Leave of absence)  
Ocal, Günsu, D.V.M., Ankara, Turkey  
Ochoa, Ricardo, D.V.M., Palmira, Colombia  
Parker, Edward J., B.S., M.S., Oswego  
Russell, Harold, B.S., M.S., Atlanta, Georgia  
Sagan, Cyril E., B.S., M.Ed., M.S., Detroit, Michigan  
Schaubhut, Charles, D.V.M., Indianapolis, Indiana  
Smith, Maurice W., D.V.M., Lloydminster, Alberta and Saskatchewan, Canada  
Snipes, Morris B., B.S., M.S., Albuquerque, New Mexico  
Talisayon, Serafin, M.S., Laguna, Philippines  
Twisselmann, Kenneth L., D.V.M., Bakersfield, California  
Ubertini, Tito, D.V.M., Brescia, Italy  
Uhazi, Leslie S., M.S., Edmonton, Alberta, Canada  
Wallin, Bruce, B.A., Mansfield, Pennsylvania  
Wilkie, Bruce N., B.S.A., D.V.M., Vancouver, British Columbia, Canada  
Wolff, John E., B.S., M.S., Hamilton, New Zealand  
Wright, Joseph, B.S., D.V.M., Alpine, Texas (Leave of absence)  
Wu, Fu-Ming, B.V.M., Taipei Taiwan, China  
Yost, Carlson W., B.A., Candor
- Becker, Edward Irving, Guilderland  
Benjamin, Richard Nathan, Yonkers  
Blessing, Calvin Edgar, Ashbury, New Jersey  
Bush, Avery David, Morrisville  
Carlson, Paul Kenneth, Dewittville  
Chamberlain, Dennis Clyde, East Lebanon, Maine  
Cortesi, Paul Joseph, Falls Village, Connecticut  
Dickey, Kenneth Marion II, Port Deposit, Maryland  
Dirnberger, David Andrew, Tonawanda  
Dougherty, Roderick Bodine, Ithaca  
Eckert, Richard Howard, Manlius  
Fisch, Harvey, Brooklyn  
Foley, Robert Henry, Jr., Winchester, Massachusetts  
Friedland, Todd Brian, Plainview  
Gluckman, Stuart Irwin, Brooklyn  
Goldstein, Damon Robert, Merrick  
Guild, Phillip Vernard, Honeoye Falls  
Hahn, Edward George, Claymont, Delaware  
Harris, Alan Michael, New Rochelle  
Higgins, William Paul, Jackson Heights  
Horowitz, Martin Saul, New York  
Howard, David James, Endwell  
Johnson, Robert Howard, Shrewsbury, Massachusetts  
Kazmierczak, John Julian, Dunkirk  
Kerbin, Priscilla Lee, Millbrook  
Kessler, Matthew Jay, White Plains  
Knight, Walter Franklin, Milford, New Jersey  
Krasuski, Frank Anthony, Mechanicville  
Krepp, James Charles, Bayside  
Kross, Steven Harris, Ellenville  
Letchworth, Geoffrey Josiah III, East Aurora  
McGee, David Lee, New Canaan, Connecticut  
McMillen, Thomas Blair, Massapequa  
Miller, Daniel Kade, Rohrerstown, Pennsylvania  
Miller, Jeffrey Richard, Danbury, Connecticut  
Moss, Kenneth Jay, Seaford  
Pease, Clinton Linn, Jr., Princeton, New Jersey  
Pettee, James Thomas, Chelmsford, Massachusetts  
Pijanowski, Gerald James, Lackawana  
Pinckney, John Ederle, Rockville Centre  
Prussner, Harry Frederick, Jr., North Babylon  
Rand, James Albert, Amesbury, Massachusetts  
Reeve, Laurence Halsey, Riverhead  
Smith, Mary C., Ithaca  
Speciale, John, Plainview  
Tangredi, Basil Peter, Manhasset  
Tucker, Allen James, Jr., Vergennes, Vermont  
Tulman, Michael Jonas, Hartford, Connecticut  
Wallach, Marc S., Franklin Square  
Washington, Lawrence Dowdell, Stanford, Connecticut  
West, Roger Louis, Hadley, Massachusetts  
Wilson, John Anthony, Elmhurst  
Wolf, David Alan, Buffalo  
Wright, James Michael, Dobbs Ferry

## Fourth year, Class of 1972

- Ahlers, Robert Alan, Delmar  
Allen, Timothy Arthur, Westbury  
Almstrom, David Howard, W. Boylston, Massachusetts  
Armitstead, Thomas Eugene, Fort Plain  
Baker, George James, Lindenhurst

### Third Year, Class of 1973

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 Adams, Robert John, Little Neck  
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 Ansley, James Rawlings, Killarney, Florida  
 Baldwin, Charles Alexander, Northfield,  
 Massachusetts  
 Bandes, John David, Valley Stream  
 Barra, Michael Joseph, Catskill  
 Berman, Eli Michael, Brooklyn  
 Bird, Richard John, Spencer, Massachusetts  
 Brown, Kerry Lee, Berwick, Pennsylvania  
 Butterfield, Timothy James, Windham, New  
 Hampshire  
 Carlson, David Jon, W. Hatfield,  
 Massachusetts  
 Coley, David Sherwood, Weston, Connecticut  
 Cooke, Gary Stephen, Bridport, Vermont  
 De Boer, Henry, Jr., Tallman  
 Ecklund, Thomas Todd, Bellmore  
 Ford, Donald Eugene, Scarsdale  
 Gardner, Charles Edward, Elmer, New Jersey  
 Gerber, William Andrew, Niagara Falls  
 Goldstein, Martin Gene, New Hyde Park  
 Haggerty, George Francis, Holtsville  
 Hopek, Stanley Frank, Syosset  
 Kanter, Peter Maurice, New York  
 Kester, Richard Arthur, Boston, New York  
 Killewald, William R., N. Tonawanda  
 Korol, Constance, Wappingers Falls  
 Krause, Jon Don, Hancock  
 La Porte, Michael Andrew, Kenmore  
 Leiby, Kent Dean, Tamaqua, Pennsylvania  
 Lyman, Stuart Creighton, Middlefield,  
 Connecticut  
 Lynch, Kevin Gerard, Huntington Station  
 MacDonald, James Allen, Albany  
 Maier, William Joseph, Batavia  
 Nirschl, David Lee, Sharon Springs  
 Nolan, Thomas Edward, Genoa  
 Olson, James Koenig, Jamestown  
 Parver, Edward, Laurelton  
 Pekala, Stanley John, Burlington, Vermont  
 Powers, Timothy Curtis, Madison, Maine  
 Rink, Douglas Bruce, Huntington  
 Robertson, Nils Walter, Foster, Rhode Island  
 Rogoff, Jay Howard, New York  
 Ross, Gary Sterling, Rome, Pennsylvania  
 Rothstein, Howard William, Merrick  
 Ruksznis, Dennis Alan, Sangerville, Maine  
 Sammons, Lenora Y., Union City, Pennsylvania  
 Sammons, Myrl Lynn, Union City,  
 Pennsylvania  
 Schalk, William K., Rochester  
 Scherline, Eugene Dexter, Wantagh  
 Schweitzer, Denise Monica, Grand Island  
 Simon, Allan Bruce, Franklin Square  
 Sprague, Edward Lee III, Versailles  
 Stinga, Adrian, Clifton, New Jersey  
 Thompson, Ross William, Buffalo  
 Tisdale, Robert J., Canaseraga  
 Witter, Larry Willis, Richmond, Virginia  
 Wright, John Jerome, Hamburg

Yartz, Franklin Henry, Jamestown  
 Zagraniski, Michael Joseph, New Haven,  
 Connecticut

### Second Year, Class of 1974

Arnold, Stephen Alfred, Seaford  
 Aylesworth, Chris, Johnson City  
 Barsanti, Jeanne Ann, Minoa  
 Bluvas, Peter Jan, Amsterdam  
 Brooke, Gregory Paul, Baldwin, Wisconsin  
 Campbell, Bruce Carter, Fort Collins,  
 Colorado  
 Chamberlin, Mark Elton, Waverly  
 Cochran, Jack Alan, Ripley  
 Deans, Margaret Alice, Alfred Maine  
 Dykes, Nathan Leonard, Teaneck, New Jersey  
 Evans, David Allen, Springville  
 Evans, Douglas Edward, Georgetown  
 Fagan, Richard Howard, Rochester  
 Fisher, James Lee, Glens Falls  
 Glauberg, Aaron Frank, Hewlett  
 Gonzalez, Theodore R., E. Brentwood  
 Grossman, Jeffrey Eliot, Flushing  
 Harris, Robert Lee, Norman, Oklahoma  
 Hodsden, Wayne Kenneth, Dryden  
 Holden, Matthew Elden, West Paris, Maine  
 Jagar, John Eugene, Charleston, South  
 Carolina  
 Jones, Cody Luther, Wauseon, Ohio  
 Kent, Frederick Howe, Rumford, Maine  
 Kernahan, James William, Nunda  
 Kneen, Timothy Arthur, Armonk  
 Koslow, Gary Lee, Massapequa Park  
 Kram, Malcolm Alexander, Bronx  
 Lee, John William, Jr., Wilmington, Delaware  
 Lemieux, Gerald Philip, Middlebury, Vermont  
 Lemieux, Lynda Beattie, Middlebury, Vermont  
 MacDonald, John Milner, Plymouth, New  
 Hampshire  
 MacNeil, Bradley Patton, Fayetteville  
 Medic, David V., Irwin, Pennsylvania  
 Meuten, Donald John, Sharon, Connecticut  
 Morena, Craig Thomas, Massapequa  
 Muller, Henry Otto, Northport  
 Myers, Bernard Samuel, Orlando, Florida  
 Naef, Henry Milford J., Woodhaven  
 Nelson, Gary Howard, Pearl River  
 Nelson, Thomas Philip, Webster  
 Nichols, Robert W., Jr., Skaneateles  
 Nugent, Martin Francis, Westfield, New Jersey  
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 Rees, Roger Elliot, Morgan, Utah  
 Rosenfeld, Irv Steven, Island Park  
 Rowe, Donald Lawrence, Vassalboro, Maine  
 Russo, Elizabeth A., Staten Island  
 Schlafer, Donald Hughes, Oxford  
 Seader, Richard Paul, Merrick  
 Seleen, William Arvid, DeWitt  
 Sherman, Bruce Aner, Woodstock,  
 Connecticut  
 Shriro, Alan G., Mt. Vernon  
 Tedeschi, Mitchell J., Little Neck

## 44 Students

Terry, Charles Miles II, Huntington Station  
Travis, Henry Joseph, Huntington  
Weinstein, Susan Jane, Cobleskill  
Westfall, Geoffrey James, Cazenovia  
Winn, Kenneth Frank, Hamburg  
Yancey, Samuel P., Lowville  
Zambito, Michael J., Newburgh

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Adams, Stephen B., Hector  
Aspros, Douglas G., Flushing  
Balonek, Gerald J., Rochester  
Breen, Robert E., Pleasantville  
Brondum, Jack, Brewer, Maine  
Brownie, Cecil, F. G., Jamaica, West Indies  
Bruzgul, Joseph B., Jr., LaGrangeville  
Burton, David D., Chappaqua  
Charlebois, Andre, Redwood  
Cogar, John D., Fairport  
Cohen, Steven Jay, Rochester  
Cole, John F., Sherrill  
Collier, Linda, Caribou, Maine  
D'Amura, Thomas, East Hampton  
Dattner, Leslie B., Brooklyn  
Deitsch, Philip O., Freeville  
DeJong, David, Coram  
Deutsch, David E., East Orange, New Jersey  
Dewey, Elizabeth A., Ithaca  
DiRusso, Nicholas, Pelham  
DuBato, George A., Amityville  
Efron, Robert F., Douglaston  
Epstein, Allen W., New York City  
Fish, Stanley G., New Hyde Park  
Geasling, Jay W., Sagaponack  
Gray, James H., Wilmington, Delaware

Greene, Jerry A., Brooklyn  
Hancock, David H., Carthage  
Hulslander, Ronald, Elmira Heights  
King, Linda R., Madison, Wisconsin  
King, Michael J., Madison, Wisconsin  
Kryger, Michael, Centerport  
Langweiler, Marc, Bayside  
Leventhal, Rita S., Albany  
Linderman, Ira A., Brooklyn  
Manning, Thomas O., Floral Park  
McCarthy, Walter K., Kenmore  
Mindlin, Douglas S., New Rochelle  
Mirro, Elmer J., Monroeville, Pennsylvania  
Moffa, John V., Blenheim, New Jersey  
Morris, Alan S., New Haven, Connecticut  
Mroz, Sharon M., New City  
Olender, Steven, Great Neck  
O'Neil, John W., Lancaster  
Pane, Robert T., Tonawanda  
Pollak, William, New York City  
Rotondo, Kenneth, Franklin  
Rubin, Nolan P., Freeport  
Russell, Donald E., Ogdensburg  
Schatz, Howard R., Brooklyn  
Tangorra, Lewis, Flushing  
Tanneberger, Thomas, Westport  
Tausz, Alan M., Flushing  
Truelove, Robin, Bethany, Connecticut  
Vail, David G., Lagrangeville  
Valinsky, Victor, Commack  
Vukman, Gerald, Batavia  
Van Wie, Stephen A., Middletown  
Wallace, Lee A., Rockville Centre  
Walter, Mark K., Delanco, New Jersey  
White, Maurice E., Pine Bush  
Wilcox, Leigh T., Fulton  
Zwart, James, Washingtonville

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