CORNELL COUNTRYMAN

BIOLOGICAL SCIENCE

RESEARCH ISSUE

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IN THIS ISSUE

Staff

STATEMENT

STATEMENT REQUIRED BY THE ACT OF OCTOBER 23, 1962; SECTION 4369, TITLE 39, UNITED STATES CODE SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF THE CORNELL COUNTRYMAN, a magazine published monthly, October through May, at 490 Roberts Hall, Cornell University, Ithaca, New York.

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The average number of copies each issue during the preceding 8 months was 3,000:

1) 1,600 of these are paid subscriptions sent to members of the College Alumni by mail.
2) 1,000 are sent by mail as complimentary copies to high school libraries in New York State.
3) The remainder are free distribution on the campus of Cornell University, Ithaca, New York.

I certify that the statements made by me above are correct and complete.

Signed: Charles C. Russell
Adviser

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EDITORIAL

RESEARCH — KEYSTONE OF A MODERN UNIVERSITY

There was a time when knowledge was constant. Our world was known to be made of the four elements earth, air, fire, and water. The speed at which a body dropped was proportional to its mass. The earth was flat.

The teacher of that day knew all these things and taught them to his students. They, in turn, became teachers and taught these unalterable facts to their students. In those early days a university was nothing more, nor needed to be more than a mentor and his students. The mentor would describe the world as he understood it, as he had learned from his tutor. His students would listen and learn the unquestionable truth.

But times have changed. Man has learned to question and to investigate. He has learned to question even the most universally accepted beliefs. He investigates with tools, ingenuity, and precision which would astound and confound the early scholar. Unlike the early teacher, scholars of today do not pretend to know all. In fact, perhaps the greatest advance of modern scholars over the scholars of the past is an appreciation of how little they do comprehend—of just how limited is the total of man's understanding.

These changed times have produced a new form and new goals for today's universities. No longer can a university be just a collection of teachers and students.

Cornell University President James A. Perkins, speaking to this year's orientation counselors, stated that the modern university must be strong in each of three areas: research, application and, of course, instruction. Instruction is the primary business of the university. But in today's rapidly changing times instruction cannot function without research. The professor entombed in his 'ivy' tower, in study with only his books, is an image of the past.

Today's effective professor must be active in his field. He must not be steeped in ideas from the past, but rather concerned with newest of concepts. To allow himself to slip from the frontiers of knowledge is to invite obsolescence and a deterioration of his ability to be an effective instructor. Active participation in research keeps him on these frontiers.

Research serves at least two additional functions at a modern university. An extensive, active, and exciting research program serves to attract to the campus the highest caliber professors and students. This promise of a unique education for students and an exceptional opportunity for continuing education for faculty draws to Cornell highly qualified personnel from literally every corner of the world.

In addition, funds made available to Cornell research groups and attracted to Cornell because of the quality of research already being done here, provide equipment which incidentally but tangibly aids in student instruction.

In building that intangible asset of the University —public image or reputation—research is an invaluable aid. The successful completion of English III by a freshman engineer, while it may make his parents happy, does not make headlines. But discoveries made with the world's largest parabolic reflector radio telescope, knowledge gained by a team of researchers working to determine the structure of a nucleic acid—these do make headlines. Constructive headlines build the reputation of the university.

Because of these and varied other reasons the University will see about $60 millions, more than 40 percent of its $138 million operating budget for 1965-66, spent on research at Cornell installations.

To one large phase of the research program at Cornell, studies in the biological sciences, the CORNELL COUNTRYMAN dedicates this, the October issue.

THE EDITOR

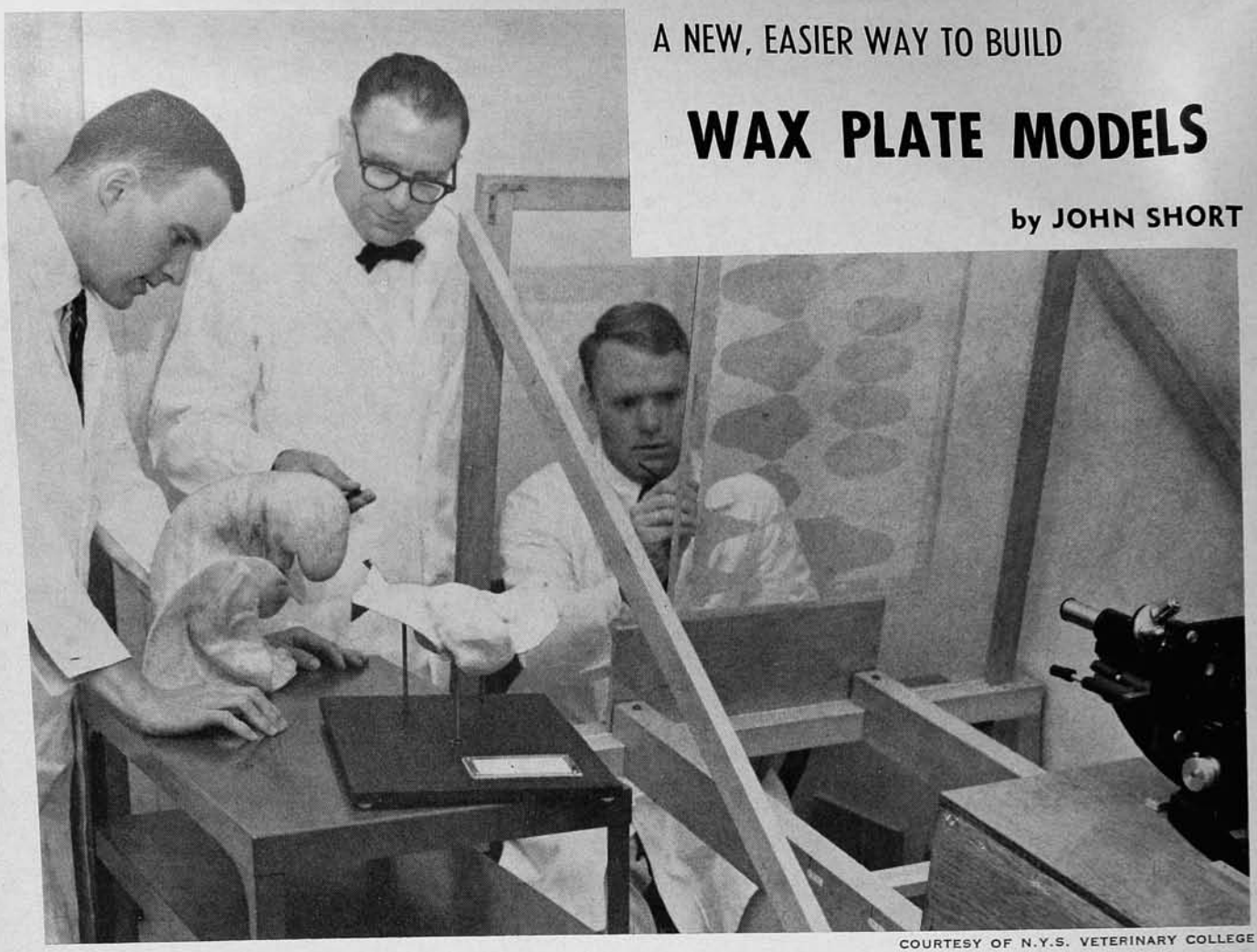
THE COVER

The COUNTRYMAN'S cover photograph was taken for Roger A. Morse, Cornell professor of entomology, by Elmer S. Phillips, professor of extension teaching and information, in connection with Professor Morse's study of the defense system of a bee colony at low temperature. The bees pictured were photographed on a cold (14° F.), sunny day five seconds after they were disturbed by the removal of the hive cover. Too cold to fly to attack the intruder, the bees on the outside of the cluster have raised their abdomens to expose their stingers and scent glands and have begun to beat their wings. The scent alarm produced by these bees on the outside of the cluster is soon carried to the warmer bees nearer the center of the cluster. Being warmer and able to fly, they will soon emerge ready to defend the colony.

A NEW, EASIER WAY TO BUILD

WAX PLATE MODELS

by JOHN SHORT



COURTESY OF N.Y.S. VETERINARY COLLEGE

Professor W. O. Sack (center) supervises the work of two veterinary students using his modeling apparatus.

Proper instruction in any field of biology requires detailed and accurate representations of biological specimens from semi-microscopic material, such as embryos, to fully developed organisms. Fairly accurate models of large organs such as the heart, the lungs, and the stomach exist in abundance in high school and college biology laboratories. However, detailed models of specimens such as a developing embryo or a portion of the brain of some small animal are not readily available.

For the past 80 years biologists and instructors have constructed such models of semi-micro and microscopic material from a series of thin layers of wax. However, the early methods used in the building of these models often resulted in many inaccuracies, were quite time consuming, and often required highly developed skills.

Professor W. O. Sack of the New York State College of Veterinary Medicine at Cornell University developed a greatly simplified model building process. In addition, his method removes much of the error involved in rendering a detailed, accurate and magnified representation of minute biological specimens.

The wax plate method of making models was introduced in the 1870's. The model builder would view a series of sections of the specimen through a microscope and attempt to make enlarged drawings of these sections. The drawing would then be transferred onto thin sheets of the model medium.

Eventually scientists found they could eliminate one drawing step by projecting the magnified images of the sections directly on paper, tracing the outlines and then incorporating the paper drawings into thin sheets of wax, usually by means of a heated metal roller. The paper and wax would then be cut simultaneously, producing a series of wax plates the shape of each respective section of the specimen. These plates were then fitted together to form the model.

This process, however, presented several difficulties. Errors were introduced with each successive step—tracing the image on paper, tracing it on wax and finally cutting the outline. Furthermore, since the image was projected from over the builder's shoulder his shadow was always getting in the way. Uniting the several thin wax plates also presented a problem because of the paper embedded in the wax.

Professor Sack's innovation has eliminated the need for tracings and other intermediate steps. He has found that the image can be projected directly through the wax, the model medium. The image is projected on the wax from one side of the wax plate while the model builder views it from the other side. There are two advantages to this positioning of the projector and operator. First, the image is sharper when viewed from the back. Secondly, no shadows can result. In-

stead of tracing the image, it is cut out directly as it is viewed with a sharp stiletto knife.

Professor Sack's apparatus consists of an inclined table about six feet long with a framed sheet of Plexiglass at the elevated end. The wax plate rests on this sheet of plastic. At the lower end of the incline is an assembly consisting of a microscope and a light source made from an ordinary slide projector minus the lens. The microscope is placed in front of the projector and tilted so that the eye piece lies in a line perpendicular to the plane of the Plexiglass. This assembly can be moved along the table to specific positions depending on the desired magnification.

The first step in this process involves a microtome, and mounting the sections on glass slides. The thickness of each section will depend on how much the specimen is to be magnified. For example, to produce a properly proportioned model from a specimen magnified 100 times using wax plate one millimeter thick, the specimen would be cut into sections each 10 microns thick (one one-hundredth of a millimeter). In other words the rate of the thickness of the actual section (10 microns) to the thickness of the corresponding wax plate (one millimeter) must equal the ratio of the length and width of the original section to the length and width respectively of the magnified image. Of course one can also alter the thickness of the wax plates. In any case, care must always be taken to correlate the desired magnification, the thickness of the plates, and the thickness of each section.

After the sections have been projected on the wax plates, the images are cut out with a sharp knife which permits the following of complicated outlines. When one section is completed the operator may move the slide in the microscope to another section without getting out of his seat. This is accomplished by a system of wooden dowels — rubber tubing attached to the knobs on the microscope. This system can be run by the operator from his position behind the wax plate.

One may wonder how the cut out wax replicas are placed in proper relation to each other. This problem is solved in the very beginning when the specimen is embedded in the paraffin block for slicing. Placed alongside the specimen in the block is a thin straight strand of some organic material which can be easily sectioned such as a piece of egg membrane. This strand should be placed parallel to the axis of the specimen. The specimen and reference material are sectioned together, both projected onto the wax, and both cut out. Hence, since the model builder knows the reference material forms a perfectly vertical structure, he can determine the correct placement of each wax plate.

The wax plates are held firmly together by driving several heated straight pins through them. The model is now ready to be smoothed out. This is done by melting the wax and shaping it where necessary with a heating coil placed in a lone pyrex glass tube. The finished model can now be painted if desired.

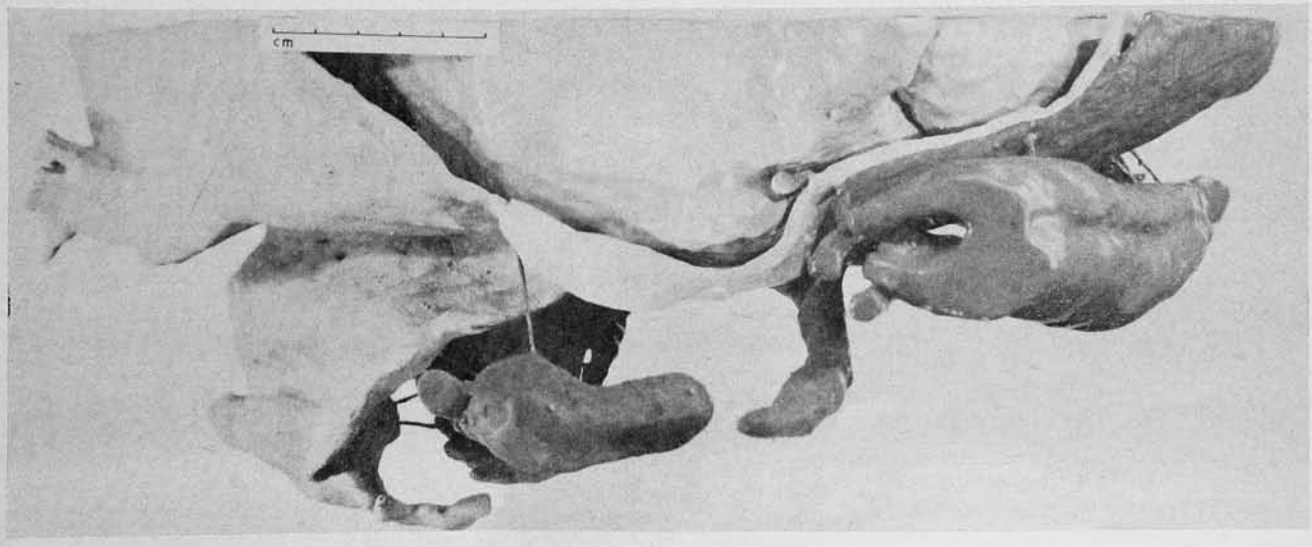
Though wax plates are available from dental supply companies, they can be produced by the builder himself with a minimum of materials. On two sides of a rectangular slab of polished marble are attached brass strips as thick as the desired thickness of the wax plates. Melted wax is poured into this "mold" and a heated metal bar that will extend over the brass strips is used to smooth the wax over the marble surface. The strips serve as a guide to the thickness of the plates. The hardened wax is carefully removed from the marble. A sheet of paper, placed between successive plates, prevents them from sticking to each other while in storage. The wax used is a mixture of beeswax and paraffin to give a mixture soft enough to be easily worked yet with a high enough melting point to prevent the model softening in excess.

The improvements which Professor Sack has introduced to the construction of these wax plate models will certainly make their use and production in the high school and college biology labs more plausible. The cost of the material needed for the models and the necessary apparatus are well within the budget of most science departments. In fact most of these materials are probably in the labs right now.

Professor Sack feels that the high school student and certainly their instructors, with time and a little practice, could construct fairly accurate wax plate models for use as valuable teaching aids.

A complex wax model built using Professor Sack's simplified technique.

COURTESY OF W. O. SACK



A VISIT TO THE N. Y. A. B. C.

by WILLIAM JARDINE

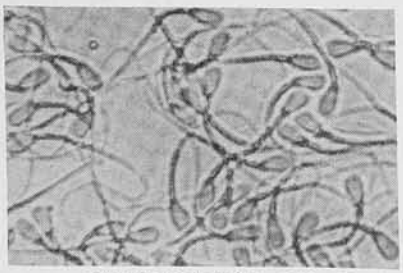
As we started down the steps from Mr. Bion Carpenter's office in the New York Artificial Breeders Cooperative, he began telling me about the unique business of artificial breeding.

For hundreds of years, wherever a cattle or dairyman cared about the quality of his stock, it was a major effort to arrange breeding with quality sires. Often these efforts were wasted, for the herd showed little improvement. In areas where good sires were scarce, the cattleman or dairyman had virtually no chance at all of improving his stock.

Finally, in Syracuse, a group of men devised a method of keeping semen alive for extended periods of time. They formed the New York Artificial Breeders Cooperative and began offering their services to the local dairymen.

Although the business had tremendous technical problems to overcome, it grew rapidly for the next four years. In 1944, the N.Y.A.B.C. moved to Ithaca to conduct research with the animal husbandry research department at Cornell University.

Mr. Carpenter showed me through a quiet swinging door into an immaculate white laboratory. Over in one corner, sitting in a straight-backed chair, a middle-aged man was mumbling busily to himself. I couldn't see just what he was doing. Before I had a chance to ask, Mr. Carpenter explained that he was checking the sperm count in a new vial of semen. Seeing that my mouth was hanging open in disbelief, for I knew that there were millions and millions of sperm in a single ejaculation, he chuckled and explained that they count only the sperm in a small drop. This count is to determine the number of live active sperm. If the percentage falls below 50%, they discard the entire sample.



COURTESY OF N.Y.S. COLL. OF AGR.

Bull sperm from highest quality sires — today a transportable, readily available product.

I asked him if he could determine the density of the semen this way. As he said "No," he took me over to a small black machine called a colorimeter. The semen, he explained, is placed in the machine between a light source and a photometer. The amount of light passing through the sample is graded against the light reading for a given density. Samples again are discarded if they are too thin.

After the sperm are counted, and the density of the semen is determined, the technician makes a careful notation of the results on the bull's record. The semen is then diluted so that there will be about 24 million live sperm in a breeding unit. Next the semen is cooled very slowly for the sperm are very easily damaged or killed by a sudden drop in temperature. At the end of a 75 minute cooling period, the semen is at 40 degrees Fahrenheit, and it can be fully diluted for frozen or liquid use.

The diluant, or extender as it is called, was developed by the animal husbandry research department at Cornell University. It contains antibiotics, and chicken egg yolk along with other chemicals. The amount of extension is determined by the bull's past record. Motility readings are taken every 24 hours and carefully recorded to keep an accurate account of all liquid samples.

The extender used in frozen semen is not as good as the liquid extender, but work is in progress on a better solution. Needless to say, it is difficult to make an extender that will work perfectly at -320 degrees Fahrenheit!

COURTESY OF N.Y.S. COLL. OF AGR.

Professor R. W. Bratton transfers frozen semen from bulk storage to a shipment container.

A day after the semen is frozen, an ampule for each bull is thawed and the motility checked. Any sample with less than 8 million live sperm is discarded. Although the sperm is much more highly concentrated in the frozen semen, the mortality rate for frozen sperm averages about 65 percent!

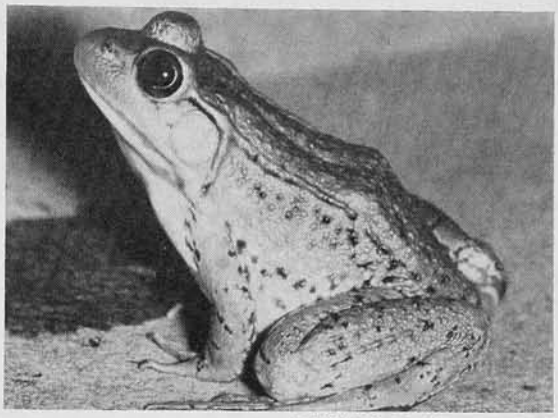
The liquid semen is collected and distributed six times per week except in the late summer and early fall when breeding is especially light. In these light breeding periods, liquid shipments go out four times per week. Frozen semen is shipped out every four weeks year-round in special N.Y.A.B.C. trailer trucks equipped with liquid nitrogen freezers. The agent in each community stores the semen until a dairyman needs it.

The N.Y.A.B.C. keeps accurate records on all of its bulls, rating their ability to produce various qualities in their offspring. The dairyman can easily see which bull he will want to use as a sire for any particular cow in his herd.

The N.Y.A.B.C.'s accurate and complete records have cut to a minimum the uncertainty involved in livestock breeding. The high quality of sires now available through artificial insemination to the farmers of the state is doing much to improve the quality of the state's dairy and cattle herds.

BLUE FROGS?

by ROBERTA BERNS



COURTESY OF MICHAEL BERNS

Cornell students are accustomed to seeing familiar things around campus being painted green, especially around the middle of March. At that time, students have been known to walk across Triphammer Bridge with green hair or green spots on their faces. Poor Ezra Cornell and Andrew Dickson White turn green every year. But if students saw familiar things in a blue hue rather than the usual green, there might be some surprise.

Dr. Lowell D. Uhler of the biology department was the first person at Cornell to get curious about some blue frogs he saw. Since he didn't find them on campus, he knew the architects weren't up to their usual spring mischief. So, he decided to advertise in some magazines asking whether anyone possessed a blue frog or knew the whereabouts of a pond which the frog might inhabit. Surprisingly enough, he got many responses.

He later interested one of his graduate students, Mike Berns, in doing some research on blue frogs. Mike wrote to the biological supply houses asking them to send him any blue frogs they might receive. Meanwhile, he began developing techniques for raising frogs and mating them in captivity. He knew that frogs don't normally mate once they've been captured. So he had to give the females injections of pituitary glands from other female frogs. This stimulated them to ovulate. Then, he killed the males and removed their testes.

Once the females ovulated, Mike squeezed out their eggs and put them in a solution with the sperm. This technique was practiced on the green frogs first. From his first "artificial" cross, Mike got about 150 tadpoles. He raised them on spinach because in the literature, an investigator reported that frogs raised on spinach reach metamorphosis more quickly than those raised on other diets.

After about three months, the tadpoles began to metamorphose. But, one by one they began to die. At first Mike thought something had gone wrong with his breeding technique. Dr. Uhler suggested he bring the dead frogs to the Veterinary College for an autopsy. Upon examination, the doctors confirmed Mike's suspicion of kidney stones (deposits of calcium oxalate). Since spinach has a high oxalic acid content, the frogs' diet was believed to be the cause of the kidney stones. The frogs died because they had so many kidney stones that their kidneys couldn't function.

So, Mike had to begin his breeding all over again. By this time, however, he had received five blue frogs from the supply houses. He repeated his breeding technique on the blue frogs as well as some green ones. This time though, he raised both groups of tadpoles on lettuce and egg yolks. To Mike's surprise, the blue frogs did not produce blue offspring as he had expected. Rather than attribute the blueness to environmental factors yet, he hypothesized that the blue pigment might be due to a more complicated genetic process than he had anticipated. He decided to mate the "blue" offspring with each other and with their parents to see whether he would get blue or green frogs before theorizing the cause of the blueness. However, frogs only ovulate once a year, so it will be another two years before Mike can attempt to postulate a genetic cause for blueness in frogs.

While Mike was waiting for his frogs to mature, he began performing some tests on the frogs' skins. He had to find solutions which would stain various substances in the skin so he could see what substance in the blue skin was different from that in the green skin. After many trials with different stains, he finally got results. He froze the skins and stained them with Sudan Black (a test for carotenoids). He found that the green skin stained black, but the blue skin didn't stain at all. This meant the carotenoids were not present in the blue skin.

Mike then wanted to see if another substance (the pteridines) present in the green skin was present in the blue skin. He ground up the skins and mixed them with ammonium hydroxide (dissolves pteridines). Then he ran a paper chromatography test on the solutions and found that the blue skins didn't have any pteridines.

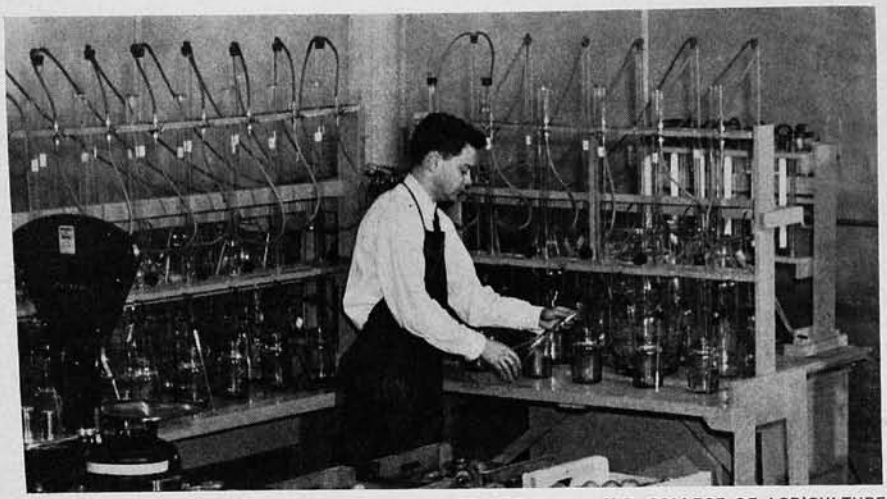
Mike thus concluded that blue pigmentation in frogs was due to an absence of pteridines and carotenoids. He is still working on the genetic reason for the absence of these substances.

The most important implication of Mike's research for man is that it may give some clues to the function of the pteridines in the human body. It is now known that the pteridines are needed for the production of melanin, a substance which causes pigmentation in the skin (e.g. tanning in the sun). There is a type of skin cancer which is due to an abnormal growth of melanin cells. Perhaps more knowledge about the pteridines may yield a clue to the cancer puzzle.

* * *

A SURVEY OF CORNELL
BIOLOGICAL RESEARCH

by MICHAEL WHITTIER



COURTESY OF N.Y.S. COLLEGE OF AGRICULTURE

Dr. G. D. Blanpied experiments with apple respiration at the Pomology Storage Laboratory.

The combination of research and teaching is the backbone of a great university today. Research discoveries, in addition to contributing to man's scientific knowledge, help maintain the reputation of a great institution of diverse studies by attracting an outstanding faculty and the highest caliber of student.

The New York State College of Agriculture at Cornell used about $7.5 million for biological research in 1964, approximately 80 per cent of the total spent for all research at the College.

Nearly 60 per cent of the research funds came from the State. An additional third of the money was obtained from federal agencies such as the National Institutes of Health and National Research Foundation and from funds under the Hatch Act. The remaining money was contributed by private organizations.

What are some specific examples of biological research in the College of Agriculture?

Earlier this year Robert Holley and his associates announced one of the most significant discoveries of this decade at Cornell. Dr. Holley, a member of the department of biochemistry of the College of Agriculture and the Division of Biological Sciences, determined the structure of a type of RNA (ribonucleic acid). This discovery represents the first determination of the complete structure of a nucleic acid — the class of compounds which make up the carriers of the genetic code, chromosomes.

F. V. Kosikowski, a professor in the department of dairy and food science, is the leader of research being conducted on cheddar cheese. The professor and his colleagues have removed spoilage bacteria from cheese milk physically through high-speed rotation. This new method differs radically from the other chemical or heating methods of destroying such bacteria. Work is continuing on this new concept in 1965.

In agronomy, Professor M. Alexander is trying to determine why certain pesticides are not broken down by organisms in the soil. Eventually he hopes to help develop chemicals which are effective in controlling pests and yet not persistent in soil to the detriment of beneficial plants.

In entomology and limnology several projects concerned with insecticides and their proper use are underway. For example, Professor Roger Morse heads research on honeybees and pesticide chemicals which affect them.

During 1964, in cooperation with federal and state agencies, a study was undertaken to test the toxicity of an insecticide, Sevin, to honeybees. A special sticker material was used in an attempt to make the Sevin adhere to the plant tissue without killing the bees walking over it. This experiment was successful and in 1965 it has been expanded. Dr. Morse and his associates plan to test other sticker materials so that insecticides can be attached more firmly to plant tissue.

In the department of animal husbandry, R. W. Bratton is the leader of a project focused in 1965 on studying the preservation of animal semen. The fertility of preserved ram, stallion, and boar semen is being researched.

G. H. Schmidt heads a study attempting to determine if mitosis takes place in the lactating mammary gland of the rabbit. The results of this animal husbandry project will give further evidence of the mammary gland's basic function.

In botany, the Laboratory for Cell Physiology, Growth and Development is working on the physiology of bud dormancy and development. In 1964, F. C. Steward and J. T. Barber, leaders of the research, studied the proteins of the pea and tulip. In the pea some proteins are found in all organs of the plant at all ages, while others only appear in certain organs at a specific stage of their development. Studies on tulips produced similar results. These findings suggest that cells grow and develop through successive phases which are accompanied by a succession of enzyme or protein states.

Those proteins appearing in all organs at every stage are associated with very basic enzyme systems, while those occurring in a specific

organ at a certain age are linked with the specialized function of that organ. In 1965, study is being continued in the Laboratory on the role proteins play in the growth and development of plants.

Professor H. B. Tukey, Jr., of the department of floriculture, is the leader of studies on the mineral uptake by roots of certain plants. In 1964 tests, the roots of dormant Forsythia and Taxus plants grew and absorbed important nutrients when the temperature was above 35 degrees F. These nutrients were transported into the plants' dormant tops. The growth in spring was influenced by the nutrient reserves of the plant prior to growth. Plants having the most nutrients in the dormant season produced the best growth in spring.

It was found that nutrients can be applied to dormant ornamental plants in late fall when the soil temperature is warm and the roots still growing. Applications at this time will increase the reserve of nutrients in dormant plants, thus enhancing growth the next spring.

In 1965 these experiments are being continued. The researchers are attempting to determine the effect of nutrient applications at various times during the dormant season.

Professors O. H. Hewitt and N. A. Case of the conservation department, in a project to be initiated this year, hope to determine how non-poisonous sterilants will control the population of starlings.

In vegetable crops, a study is being made by R. L. Sawyer and S.L. Dallyn on increasing quality and production of vegetables through chemically controlling the growing plant. Work in 1965 has centered around finding materials to kill potato vines and control potato foliage in the growing season.

Dr. R. M. Smock of the department of pomology, is probing the relationship of growing climate to apples' storage life. It was found that the cool nights and sunny days of 1964 led to good-keeping apples, although a hot period in early September helped reduce quality. The 1965 crop of apples will be analyzed to determine the effect of climate on keeping quality, brown core, and apple firmness.

In the poultry husbandry department, R. C. Baker and William Reinke continue to find factors influencing the market quality of eggs. The researchers learned in 1964 how to lessen the greenish black discoloration of the yolks in hard-boiled eggs. This discoloration, a source of concern for many housewives, is caused by the formation of ferrous sulfide. It was found that the greenish-black color can be reduced by using fresh eggs, cooking them at less than 200 degrees, not overcooking them, and cooling them rapidly after they are cooked.

In 1965 extensive work is being conducted on the problem of mottled yolks in eggs. Preliminary investigation has shown that poultry rations containing a new vegetable fat might cause the mottling.

The Division of Biological Sciences is the site of several genetic studies on the breeding of various species of plants. For example, Professor Adrian M. Srb and several graduate students are currently analyzing heredity in terms of the biochemistry gene action in plants. The results of this work will aid studies in plant pathology and practical genetics.

Researchers in the plant pathology department concentrate on the study of plant diseases. In this area, Professor A. W. Dimock heads a project that is studying the effects given climatic variables have on chrysanthemum diseases and their control. In 1964 the work centered around handling chrysanthemums in a controlled environment. Soil temperature control equipment was developed and a start made on creating devices for soil moisture control. In 1965 the effect of humidity on chrysanthemum disease development has been the focal point of research.

This, then, has been a glimpse at a few biological research projects being conducted at Cornell. The range of research is broad and the discoveries diverse.

The study of biology at the University extends into many departments and several colleges. Often these segments of Cornell collaborate in experiments by pooling their talent and resources for greater efficiency.

The departments of bacteriology, biochemistry, and botany of the College of Agriculture and the recently-formed Division of Biological Sciences are centrally concerned with research in biology.

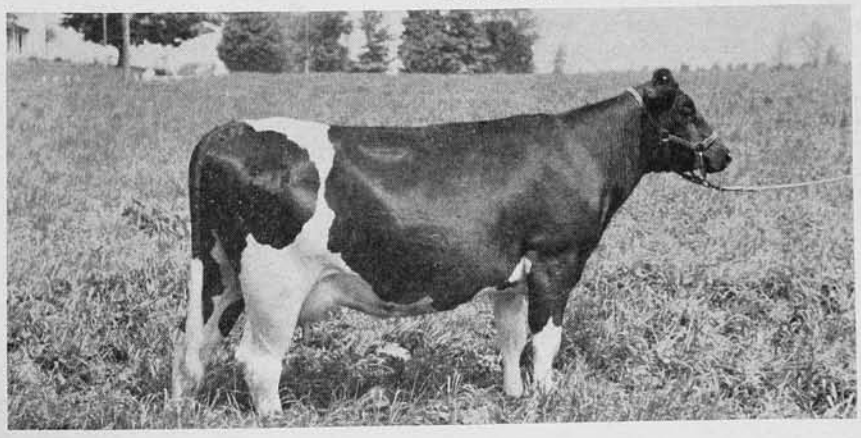
The departments of agronomy, animal husbandry, conservation, dairy and food science, entomology, floriculture and ornamental horticulture, plant breeding, plant pathology, pomology, poultry husbandry, and vegetable crops of the College of Agriculture all conduct biological research.

The Experiment Station at Geneva, the Veterinary College, the College of Home Economics, and the department of zoology in the College of Arts and Sciences and Division of Biological Sciences are other segments of the University that delve into the biology of life.

Regardless of how specialized or general biological findings are, they all become a part of Cornell's contribution to man's understanding of the complex world which surrounds him.

Biological research provided the artificial insemination methods which helped to breed this fine cow.

COURTESY OF N.Y.S. COLLEGE OF AGRICULTURE



GENES and *BEHAVIOR*

by JOAN SOLOMON

Why does man beget man, dog beget dog, fish beget fish? Why, generation after generation, does the human hand retain its characteristic shape? Why does a monkey's tail seem always to look the same?

These questions have been answered in the course of the age-old probing into the mysteries of heredity. Morphology has been intensively studied, and many of the riddles of structure have been solved. Now a number of geneticists are channeling their efforts into the study of behavior.

Professor William C. Dilger, of Cornell's biology department, is now at the critical stage of an experiment involving the interaction between genetic factors and experience on the behavior of African parrots of the genus *Agapornis*. Parrots of this genus are ideal subjects for the study, for they breed readily and are exceptionally intelligent.

The first stage of Professor Dilger's experiment involved careful investigation and description of behavior in the various species of *Agapornis*. Each species has its typical mode of acting. Distinctive differences among the species appear in what is known as cutting and tucking. The female rips materials for a nest into strips and carries the pieces to the site of building. In the species *A. roseicollis* the parrot carries the material in its rump feathers while in the species *A. personata* the material is transported in the mouth.

Another species-typical behavior is the type of sexual activity adopted. All species have in common the development of a permanent bond between mates. A male and female pair off for life. Yet different breeding customs prevail. Some species demonstrate a social arrangement. They are colonial breeders. In this type of organization the female is dominant. She initiates all behavior. She goes for food before the male does. She makes the first move toward sexual union. The other type of breeding practiced is solitary. The different mating pairs remain separated from each other. In this case the two sexes are on an equal basis.

After Professor Dilger completed his descriptive work, he became concerned with the acquisition of species-typical behavior in these animals, a problem on which he is presently working.

First he changes the genotype of the animals by cross breeding them. For instance, he crosses *A. roseicollis* with *A. personata*. The resulting bird has a different genotype than either of its parents, probably somewhere in between them. Then Dilger observes their behavior noting how genetic differences alter their action patterns.

Then he checks the factors involved. He alters their environment in some way. Their experiences become different than those of most parrots. How will the way they act be changed by these manipulations?

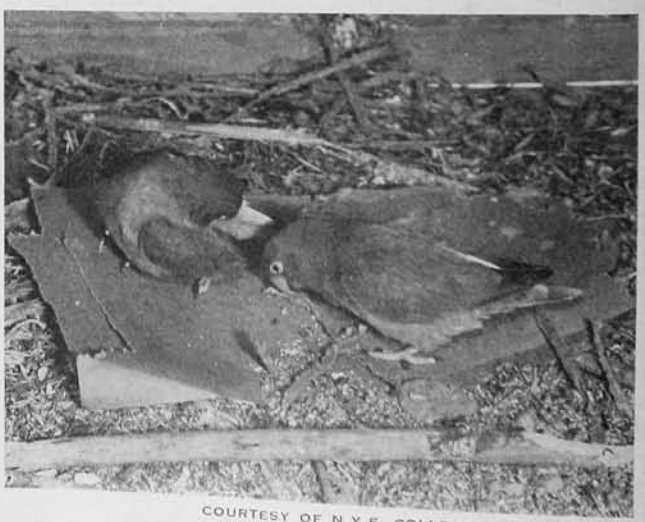
Professor Dilger found that in order to study behavioral changes he must break up each pattern into small, recognizable fragments of behavior. These components, or acts, "occur in definite combinations with respect to their sequences and timings." They cannot be analyzed into finer segments. There are several ways of measuring them: completeness of occurrence, speed, and the number of occurrences in a fixed period. Thus, change produced by differences in genetic constition, and those caused by unusual experiences can be accurately gauged.

The findings which Professor Dilger has thus far compiled point to the extreme importance of the genetic make-up of the animal in determining its behavior. Acts can be changed by experience, but the degree of change and the direction in which they can be altered are genetically controlled.

An example is the cutting and tucking behavior in the offspring of a cross between *A. roseicollis* and *A. personata*. The hybrid inherits the act of *A. roseicollis*, but certain components are missing or weakened so that the birds, even after years of trying, are never able to carry nest material in their feathers. Eventually they become proficient in carrying the material in their mouths, as the *A. personata* do.

The species behavior has shifted because of experimental influences. However, because of the limitation imposed on them by their genotypes, they find it impossible to ever successfully tuck the strips in their feathers.

According to Professor Dilger, all behavior is genetically influenced. "The evidence so far suggests that an animal's genotype provides the framework within which experimental influences are allowed to work." This genotype is the product of millions of years of selective pressures on a population. The range of activities of any organism can never exceed the boundaries set by long-evolved genotype.



COURTESY OF N.Y.S. COLLEGE OF AGRICULTURE

Two parrots cutting and tucking — one characteristic mode of behavior determined genetically.

RABIES:

A virus disease of warm blooded animals; transmitted with infected saliva, usually through the bite of a rabid animal; it attacks the central nervous system and is uniformly fatal when untreated.

by ROBERT FOREMAN

Known since ancient times, rabies is today of major concern. During the past 15 years, an average of 460 rabies cases per year have been recorded in New York State. Though preventative measures have been taken, the number of rabies cases reported is increasing. It has spread throughout wildlife populations, and has been communicated to man, his pets, and his farm animals. The cost of this disease in terms of animals lost is high (44% of reported rabies cases during the past 15 years were in cattle). In New York, an average of $96,000 annually has been spent on one form of rabies control alone — control of the fox population.

This disease has been known to man since before 300 B.C. when Aristotle recognized the relationship between hydrophobia in man to rabies in animals and recommended cauterization of wounds produced by rabid dogs. Since Aristotle's time, we have made significant advances in fighting this disease. It was shown that rabies was transmitted with infected saliva of a rabid animal in 1804, and by 1926 precaution had been taken in Norway, Sweden, and Denmark to eliminate rabid animals.

Even more important, however, was the work of Louis Pasteur. In 1881 he discovered that the infective agent causing rabies could be removed in a relatively pure state from the brain of a sick animal. By 1885, he had developed an effective vaccine which, if given to a person soon enough after a bite, would prevent the disease.

The disease is easily spread, and the consequences are horrifying and, unless treated, fatal. When bitten, and thereby infected, the disease will usually develop within four to six weeks, but the incubation period may vary from ten days to eight months. For man, death will ordinarily occur in three to seven days after the onset of symptoms, depending on the variety of the virus.

The characteristic symptoms—convulsive seizures, repeated episodes of muscle contraction in the throat when trying to swallow, and death by paralysis—are well known. But with Pasteur's vaccine, death in humans from rabies is no longer common. If treated in time, the disease is effectively prevented.

In the eastern U.S., the fox is the principal carrier of the disease. During the past 15 year period, more than nine out of ten of all cases recorded in wild life were in foxes. But, the present methods of fox control, trapping, is expensive and usually not too effective. It must be limited to a small area and the cost per fox trapped is high. In addition both traps and poisons pose a danger to innocent pets or even children.

A team from Cornell has been contracted to come up with a better method of fox control. The work is being done for the New York State Conservation Department under the leadership of Dr. E. L. Cheatum. Drs. Hansel, Thompson, and Bauerman of Cornell are also working on this project. The long-term objective of these studies is to limit the spread of rabies in foxes by decreasing their reproductive capacity through the use of baits treated with antifertility agents.

The study is scheduled to run for three years. Its immediate goals are: 1, to find and test antifertility agent on captive foxes, 2, to develop suitable baits to disseminate the antifertility agents, 3, to determine the most economic and effective way of dispersing the bait in the field and, 4, to conduct limited field tests to determine the effect of the reproduction inhibitors.

COURTESY OF N.Y.S. COLLEGE OF AGRICULTURE

The fox — a common carrier of rabies in New York State.

Present findings are not yet conclusive, but several agents have been found which effect the desired result in captive foxes. And these agents are temporary. This hopefully will make the spreading of bait containing inhibiting agents acceptable to the public.

It seems likely that this research will soon reach a successful conclusion. Most of the materials being studied now effect either the adult male or female fox. However, Dr. Hansel is studying another possibility: a chemical agent which, when taken by the female, is passed to the young through the milk, rendering them sterile when they mature.

The ultimate use of any or all agents developed by the Cornell Research team will be decided upon by the New York State Department of Conservation. If employed, the results of work being done at Cornell should soon be able to control a potentially epidemic disease effectively and inexpensively.

ELECTRONIC TURKEY TRACKING

by JERRYANNE TABER

While the Indian and the early pioneer in America had to depend on their own skill to track game animals, modern conservationists are letting the animals speak for themselves.

The new technique in tracking utilizes electronic devices which allow animals to send out their personal radio signal. Conservationists receive these signals and are able to determine the general whereabouts of their subjects.

Bio-telemetry, as this method is called, has provided valuable ecological information to conservationists. By following certain animals for a period of time they are able to study traveling habits, preferential habitats, and movement patterns.

Recent experiments in this area have been undertaken at Cornell University. John Proud, graduate student in conservation, is using the bio-telemetry technique to track wild turkeys. John's choice of this native American game bird as his subject has particular significance considering recent developments of the breed.

In the past few years New York State conservationists have shown an increasing interest in this bird, which has been a traditional symbol of our country's heritage. This interest was generated by the gradual reappearance of wild turkeys in southwestern New York where, for decades, they had been nearing extinction.

Originally, during the country's early development, the bird had thrived in this portion of the state. However, when thousands of acres of the land were cleared for agriculture in the late 1800's, the wild turkey's natural shelter and food source were destroyed. He was forced to seek another habitat, finally settling in southern Pennsylvania.

Even in his new environment, the turkey did not have too great a chance for recovery because of the limited size of the range. Conservationists recognized the wild turkey as a valuable game bird and the threat of the species' total extinction, but they could not very well transfer birds to additional areas because of their small numbers. They decided to propagate birds artificially for release.

The semi-wild turkey which was developed proved to be poorly adapted for wildlife survival. Early attempts at transplanting the species were not always

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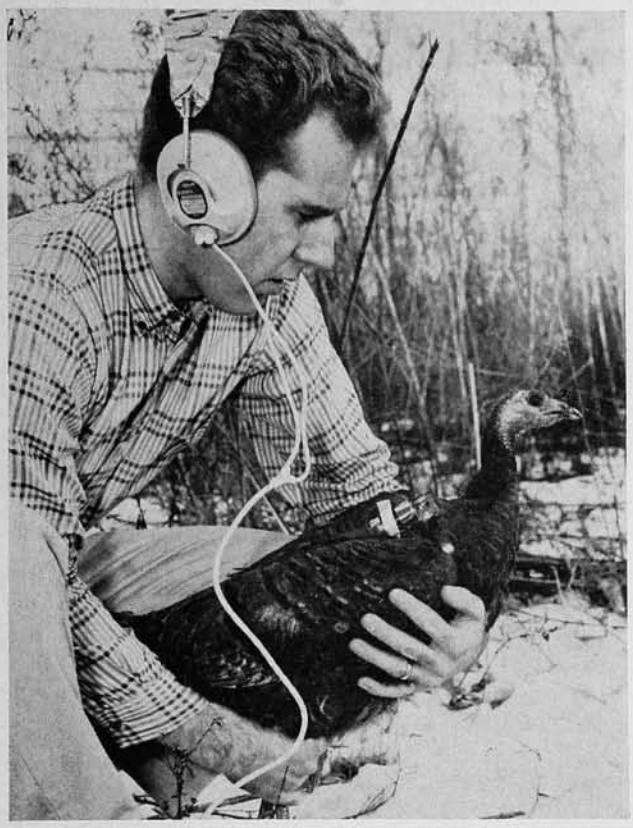
A wild turkey being outfitted with its radio transmitter.



COURTESY OF N.Y.S. COLLEGE OF AGRICULTURE

A conservation graduate student about to release a "rigged" turkey.

successful. Finally, the idea of natural migration of the birds spurred the conservationists' curiosity. Wildlife enthusiasts wondered if there was not some way of luring the wild turkey back to his original home areas. Changing patterns in agriculture and land use have restored some suitable habitats. But very little was known of the bird's habits and living patterns. Research was needed.

Bio-telemetry, it seemed, would be an effective means of studying the bird. The project was undertaken by the New York Cooperative Research Unit. This unit in turn operates on funds, equipment, leadership, and programming contributed by the Wildlife Management Institute, the N.Y.S. Conservation Department, Cornell University and the U.S. Bureau of Sports Fisheries and Wildlife. John Proud is the graduate assistant in charge of the experiments.

The main objective of this radio tracking is to pry into the wild turkey's private life and observe his living traits. Although thousands of birds have been released to increase the turkey population in certain areas, there have been relatively few signs to indicate what actually becomes of them. The problem of tracking the wild turkey is complicated by the species' highly elusive nature. His phenomenal sight and acute sense of hearing normally prevent the most cautious curious trackers from actually seeing the bird. The bio-telemetry method provides an accurate and much less frustrating tracking technique.

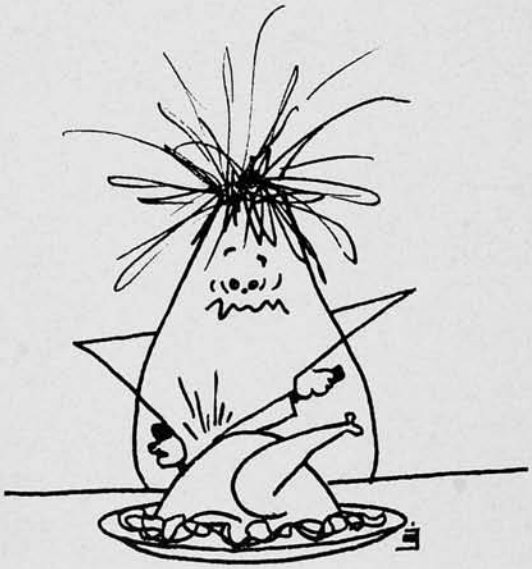
The equipment used by graduate student John Proud includes a transmitter, receiver, and a directional antenna. The transmitter, about the size of a matchbox, is what the turkey wears. It is fastened to the bird by means of a plastic harness which fits under the bird's wings without limiting his movements. The transmitter is attached to a stainless steel antenna which is placed in collar form around the bird's breast.

This simple radio transmitter emits a single electronic tone which broadcasts approximately two miles. Each bird is assigned a personal frequency so he can be easily identified. His signal is picked up by the receiver, which, in this case, John Proud has installed in his car. The researcher also carries a directional antenna, a wire loop 2″ in diameter. The general location of the bird is determined by rotating the loop antenna, which is held vertically, until the signal is received most strongly. The researcher then knows that the bird is in direct line with the plane of the loop. Since the turkey could be either in front or behind the antenna, his approximate location is determined by lining up the signal line received at two separate points. The intersection of the two signal lines indicates the bird's whereabouts.

By following the turkey's movements over a period of time, the conservationists hope to learn more of the breed's habits and traveling traits. Roost characteristics, water and food needs, rest areas, and brood cover are all elements under investigation. Observations have shown already, contrary to former beliefs, that the wild turkey is not totally a cover seeking bird but does require open areas.

In addition, bio-telemetry promises to allow conservationists to determine the fate of the birds they are releasing. Do they fall prey to hunters' bullets, to disease, to predators?

The answers provided by Cornell researchers in their turkey-tracking project will set guidelines for future conservation policies and attitudes toward the wild turkey — a valuable game bird as well as a traditional symbol of early America.



BEEP.... BEEP....BEEP

COURTESY OF ANDREA JACOBSON

COUNTRYMAN CAPSULES

Robert E. Habel, professor of veterinary anatomy at the New York State College of Veterinary Medicine at Cornell, was elected vice president of the World Association of Veterinary Anatomists at the meeting of the Association held in Weisbaden, Germany on August 2 through 13. Professor Habel was the chairman of the eight man American delegation which attended the meeting. He presented a paper concerning the external anatomy of the female bovine reproductive organs to the assembled anatomists.

* * *

The week of May 29 once again brought thousands of New York State high school students to the Cornell University campus for the annual High School Natural Science Program. For the eighth consecutive year, Cornell scientists presented lectures and demonstrations designed to stimulate these students in natural science and related fields, and to provide them with information not available in their school curriculum.

The Colleges of Agriculture, Arts and Sciences, Home Economics, and Veterinary Medicine have participated each year. Instructors volunteer their time, and may choose to present either a 50-minute lecture or four 20-minute demonstrations each day. Through careful planning and timing, students can learn about such fields as agronomy, biochemistry, entomology, pomology, food and nutrition, physics, medicine, and small animal medicine and surgery, to name only a few.

Although each visiting class is able to see all of the demonstrations and lectures during the four-day program, each student sees only one-third of the entire program. Interest in the program can be measured by the increasing numbers of students who flood the campus for this event each year. This year over 3200 students participated. The program is planned again for next summer.

* * *

Professor Thomas C. Watkins, Director of Resident Instruction at the New York College of Agriculture at Cornell University, retired last August 31.

COURTESY OF N.Y.S. COLL. OF AGR.

Retiring Director of Resident Instruction Thomas C. Watkins.

Dr. Watkins had 30 years of teaching experience, beginning in 1930 as a biology instructor at Washington and Lee University. Since 1930 he has been in research, extension, and resident teaching at Cornell University. In 1952 he was transferred to full-time resident teaching and made responsible for introductory courses in general entomology and general economic entomology.

In 1957 he was voted the Professor Merit Award by the members of the senior class, a distinction conferred for excellence in teaching.

A native of Calhoun, Missouri, Director Watkins received his B.S. degree in biology from Davidson College, North Carolina, in 1928, and his M.S. degree in zoology from the University of North Carolina in 1930. He received the Ph.D. degree in entomology and plant pathology from Cornell University in 1939.

Dr. Watkins did extensive research in plant pathology as well as in entomology and made contributions toward the biology and control of the clover leafhopper, potato leafhopper, flea beetle, carrot rust fly, and onion thrips. He initiated a basic research project on insecticide dilutents.

While on sabatical leave in 1959-60, he was technical officer wtih the Food and Agriculture Organization of the United Nations in Rome, Italy, consulting on research problems with near eastern countries.

COURTESY OF N.Y.S. COLLEGE OF AGRICULTURE

Prof. Robert W. Holley (right) received the Distinguished Service Award on July 7 in behalf of his research team at the U.S. Plant, Soil and Nutrition Laboratory and the N.Y. State College of Agriculture at Cornell University. The award, presented by H. A. Rodenhiser, deputy administrator of the U.S. Department of Agriculture's research service, is the highest of its kind given by the USDA. It was presented to the group for discovery of the structure of a nucleic acid, a substance that helps direct the development of form and function of all living things.

ALUMNI SCIENTISTS

ROY L. GILLETT, '17, 164 Orchard St., Delmar, N.Y., completed his Ph.D. at Cornell in 1922, and then worked as a scientist for the USDA in soil survey. He then was a statistician for crop reporting with the Department of Agriculture and Markets in cooperation with the USDA. Before retiring in 1952, he spent several months in San José, Costa Rica and Quito, Ecuador, assisting with the Latin American Training Center for Agricultural Statisticians, under the Food and Agriculture Organization of the United Nations.

JOHN VANDERVORT, '23, 215 Mitchell St., Ithaca, N.Y., was put in charge of the Poultry Account Record Project in Orange and Ulster counties after graduation. He left this for the position of Poultry Specialist at the University of Illinois. In 1926 he was in charge of Poultry Extension Work in Pennsylvania, a position he held until he became Poultry Specialist for G.L.F. in 1964. In 1963 he went on the People to People Good Will Tour in Europe.

DEAN R. MARBLE, '26, Rice Hall, Cornell University, Ithaca, N.Y., also did his graduate work at Cornell, receiving his Ph.D. in 1930. He then did research and taught at Pennsylvania State College until 1944 when he went to work as a geneticist for Creighton Bros., in Indiana. At present he is in the Poultry Department at Cornell.

L. L. PECHEMAN, '35, — Received his M.S. in 1937 and Ph.D. in 1937 from Cornell. He went to work for the California Chemical Company's Ortho Division in 1939 gaining the position of senior research scientist in 1961. He returned to Cornell in July of 1962 as associate professor and curator in the Depart- of Entomology. An authority on the horse fly, Professor. Pecheman is a member of a number of entomological and archaeological societies and a frequent contributor to technical publications.

VIRGINIA FORBES, '37, 10 Northgate, Westport, Conn., did licensed testing of milk for various dairies in Westchester County before working as a bacteriologist at the Northern Westchester Hospital. From 1949-1953 she did volunteer laboratory work in the State of Saga Hospital in Japan. She returned to the U.S. and is again working for the Northern Westchester Medical Group.

HOWARD EVANS, '44, Veterinary College, Ithaca, N.Y., returned to Cornell after the Army as an instructor in comparative anatomy, while working towards his Ph.D. in zoology. This he received in 1950 majoring in comparative anatomy and minoring in ichthyology and entomology. He became Assistant Professor in Veterinary Anatomy, later Associate Professor and now Professor of the course. In 1957 he taught small animal surgery and anatomy at the University of California Veterinary College as a National Science Foundation Fellow. The following summer he was a visiting Associate Professor of Zoology at the University of Washington. At present he has twenty-one articles under his bibliography. He is now actively engaged in the position of teaching Professor, Secretary of the College, Graduate Field Representative, member of the University Council, Student Advisor, and Graduate Director.

HERBERT R. PALLESEN, '52, 10 Park Pl., Geneva, N.Y., started as a chemical analysist at the N.Y.S. Agricultural Experiment Station in Geneva. He was promoted to Research Associate and is presently Pilot Plant Manager and Supervisor in the new Food Research Laboratory.

MARTIN M. KULIK, '54, 9316 Wyatt Drive, Lanham, Md., received both his M.S. and Ph.D. in Plant Pathology from Louisiana State University. He then spent two years as 1st Lt. in the Chemical Corps, U.S. Army Biological Labs, Fort Detrick, Md. where his supervisor was Major George Asai (Ph.D. '44). After his discharge from the Army he worked as a plant pathologist in the Seed Branch, and presently in the Seed Research Laboratory, both under Oren L. Justice (Ph.D. '40) at USDA, Beltsville, Md.

DOMINICK J. PIRONE, '57, 120 The Esplanade, Mount Vernon, N.Y., worked in wholesale produce until 1960. The next three years he spent as a lecturer in biology at Hunter College. At present he is working towards his Ph.D. in Lepidopterological Taxonomy at Fordham University.

RICHARD K. HARTMAN, '59, Laboratory Service, Irwin U.S. Army Hospital, Fort Riley, Kansas, received his M.S. degree in biochemistry and physiology. He then was employed as a research assistant at the Bureau of Biological Research at Rutgers University. At present he is the Clinical Officer in charge of a laboratory which services a 250 bed hospital.

No. 1 in a new series from the New York State College of Agriculture, a contract college of the State University at Cornell University, Ithaca, N.Y.

AMERICA'S great agricultural achievement, unequaled in the world, lies on a foundation of basic biological research.

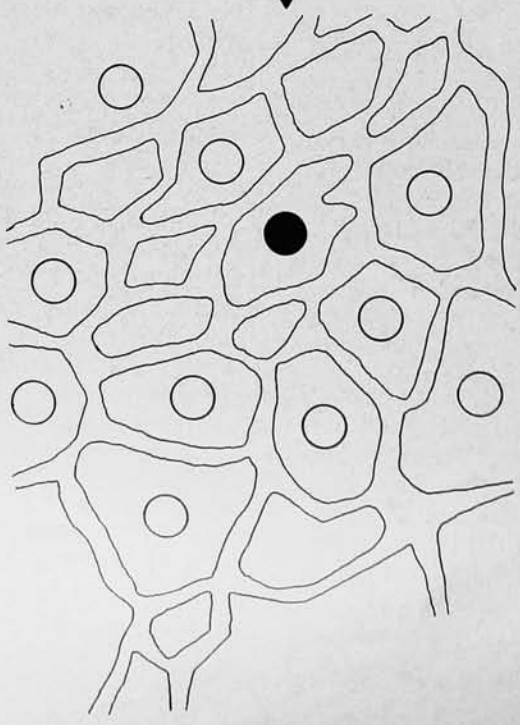
Scientists at Cornell's N.Y. State College of Agriculture are probing deep into biological mysteries to strengthen this foundation. They are investigating genetics, nutrition, and the very creation of life itself.

These men and women of science are working with actual mechanisms of heredity and are studying the synthesis of proteins of which life is basically formed. They are actually working at the points where enzymes help create living matter.

The chemical "codes" that travel from generation to generation in all forms of life are becoming understood. Researchers are analyzing the way these "codes" send out "messages" in each living thing, and give "instructions" for the conversion of other life (taken in as food) to new living forms.

Selective breeding and crossing, aided by today's new biology and biochemistry and the greater understanding of genetics, are giving the world bigger and better animals and vegetables. Cows are producing more milk. Oat fields are resisting disease because of the mixing of varieties with certain genetic factors. More is being learned about crippling diseases of animals and man because of the work in agricultural laboratories.

This foundation of basic research is growing wider and deeper each year. Therefore the applied research that follows has a stronger base on which to stand. And American agriculture grows more dynamic.



CORNELL COUNTRYMAN

NOVEMBER, 1965

Special Feature — Campus Dogs

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IN THIS ISSUE

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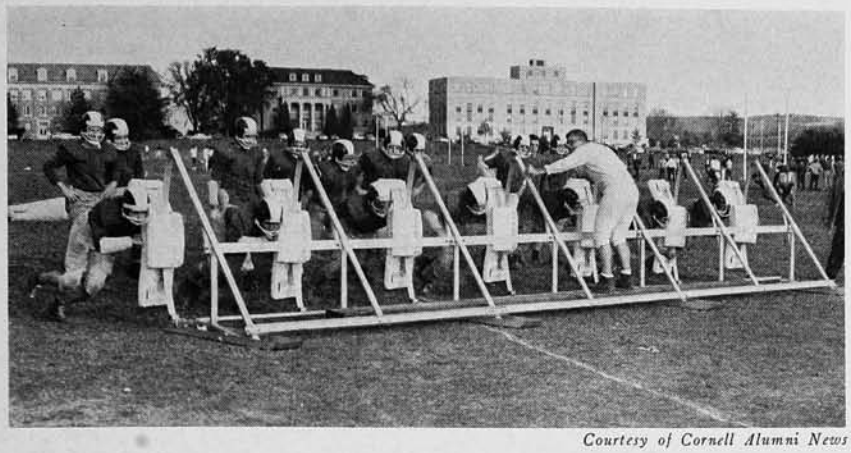
Football's Miniature Men



Courtesy of Cornell Alumni News

The 150-pound football team works out on charging sled. Coach Cullen is at right.

by John Short '67

If you thought football was meant for the occupation and pleasure of the 200-pounders, you have only to witness Cornell's Upper Alumni Field late every fall afternoon to prove yourself wrong. There some 65 members of Cornell's lightweight football team are working out under the eye of Coach Robert Cullen. They may have the size of high school kids but have no less ability or desire than their heavyweight brethren.

Coach Cullen explains that because of the large weight differences, which average about 50 pounds, lightweight and heavyweight football are not always the same type of game. First of all, a lightweight game is quicker, and hence, often has an added touch of excitement. In fact a lightweight lineman is often as fast as a heavyweight halfback. Cullen also says major injuries such as broken bones and shoulder separations are less frequent because of the lighter force generated by the players. The majority of injuries are sprains, bruises and muscle-pulls which only temporarily hold a player back from rough contact work.

Coach Cullen emphasizes however that in one respect these two types of football do not differ—that is the necessity for a player's complete dedication if he hopes to improve himself and the team. Both types of gridders must be willing to work long hours months before the season begins to get themselves in top physical shape, and to work endlessly during the season to develop their skills and strengthen their weaknesses.

In a sense though, a lightweight player must go even one step further in his dedication. He must pay very close attention to another aspect of his physical make up—his weight. All football players should be aware of the weight at which they are most efficient, and be able to attain it when necessary. But lightweights *must* be able to attain a maximum weight before a game. or not play. This requirement leads to complications with some players, and is more often the cause of agony and suffering than the long, strenuous workouts. The rules presently state that every player, to be eligible to play in a game, must weigh no more than 154 pounds at a weigh-in held two days before that game.

A player whose normal weight is about 160 pounds or less usually has no trouble knocking off the necessary poundage anytime he wants with a good hard two-hour workout. But those players whose weight has a habit of rising 15 to 20 pounds above the limit must revert to more drastic means—in this case a strict diet—in fact a near starvation diet! If a game is to be played Saturday, and hence weigh-ins to be held Thursday, the players with severe weight problems must cease all eating on Monday. They are permitted only a glass of juice and some liquid nutrient which will provide the required vitamins and minerals. By Thursday, the victims of this diet are usually unbearably hungry and dehydrated because of the sudden loss of weight and the sub-normal intake of solid foods and liquids.

Another problem arising from this weight regulation is keeping a player's pre-season practice weight close to the prescribed maximum. A man who has worked out three weeks before the start of the season at 175 pounds will find it difficult to play at around 154 when the competition begins. Hence, to reach the vicinity of 154 pounds early, most of the team starts working at their weight during the preceeding spring and continues to work at it all summer.

Though this team does not get the publicity the varsity does, these 150-pounders put out as much effort for the fans as any Cornell athletic team, and certainly receive as many benefits in return. Coach Cullen told me about a boy who led and played brilliantly on the team a few years ago. He had all the savvy and ability of a great player, but weighed only 130 pounds, and hence had no chance to make the heavyweight varsity. Because of the lightweight team he had available an outlet for his many talents. He subsequently told the coach that his experience with lightweight football was one of the most important aspects of his education at Cornell.

LAND GRANT RESEARCH

Key To New Discoveries

by Marjorie L. Case '67 and Jerryanne Taber '67

There was a time when the American farmer was the helpless victim of insect blights; a time when he labored sunrise to sunset behind horse and plow; a time when he planted corn according to the moon. Today, due to a century of expanded and applied research, the path of agriculture spans miles of new knowledge. Available preventatives guard against crop disaster; plowing and harvesting have become mechanical operations; fertilizers and planting patterns are taken for granted. Research has been the key factor in the transformation from old to new agriculture.

However, scientific inquiry in the realm of farming is a relatively young concept. Until the mid 1800's, opportunities for actual research were scarce.

A giant step in agriculture was taken by the federal government in 1862. On July 2 of that year, President Lincoln signed the Morrill Land Grant College Act . . . "to donate public lands to several states and territories which may provide colleges for the benefit of agriculture and the mechanical arts . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." Such colleges were to be endowed with grants of land which could be sold for financial support. The Morrill Act was the starting point. One hundred years after its passage, the Land Grant Act has provided for 68 colleges and universities, as integral or separate sections of State Universities, or as private institutions. The first land grant colleges, however, faced a serious dilemma. Once established, they found they had very little to teach. Scientific information was not only inaccessible; it was non-existent. Several states, recognizing the deficiency, set up experiment stations in order to develop the knowledge needed. These preliminary research centers received encouragement in 1887 in the form of federal funds. The Hatch Act, endorsed by Congress in that year, provided federal grants to assist these projects. The first allotment made $15,000 available to each state for establishing and supporting an experiment station as a department of the agricultural college. The act also subscribed a method of financing by which the states agreed to match, dollar for dollar, the federal funds administered by the United States Department of Agriculture. Over the years these funds have increased greatly while the experiment stations make invaluable contributions to science and technology.

The establishment and consequent coexistence of the land grant colleges and experiment stations created an important federal-state tie. The USDA and the stations were bound theoretically by the common purpose and objective of developing knowledge. In the practical sense of finance, there also was a need for a working relationship. After just 30 years of cooperative effort, accomplishments were overwhelming. Control of the Colorado beetle, identification of the tick as carrier of Texas fever in cattle, and successful grasshopper controls were but a few outcomes of the partnership.

Today, agricultural research is the aim of 53 experiment stations in the United States. Research is a substantial source of new knowledge which can be converted into useful innovations. The abundance and efficiency of our nation have resulted largely from the application of science and technology growing out of this research. The important contributions of land grant colleges and agricultural experiment stations to this body of research are revealed in many illustrations.

Penicillin is only one example of agricultural research that has given us new and useful medicines. Streptomycin, discovered at the New Jersey Station, chloromycetin, aureomycin, and terramycin are among other antibiotics derived from agricultural research.

Experimentations carried out by a team of Cornell University and federal scientists headed by Professor Robert W. Holley, has recently been rewarded with discovery. For the first time, man has determined the structure of a nucleic acid, namely ribonucleic acid. Commonly called RNA, the nucleic acid carries hereditary information about the nature of protein and other constituents of which man and many forms of life are composed. The RNA is always at work receiving and transferring DNA (deoxyribonucleic acid) messages. Knowing the structure of nucleic

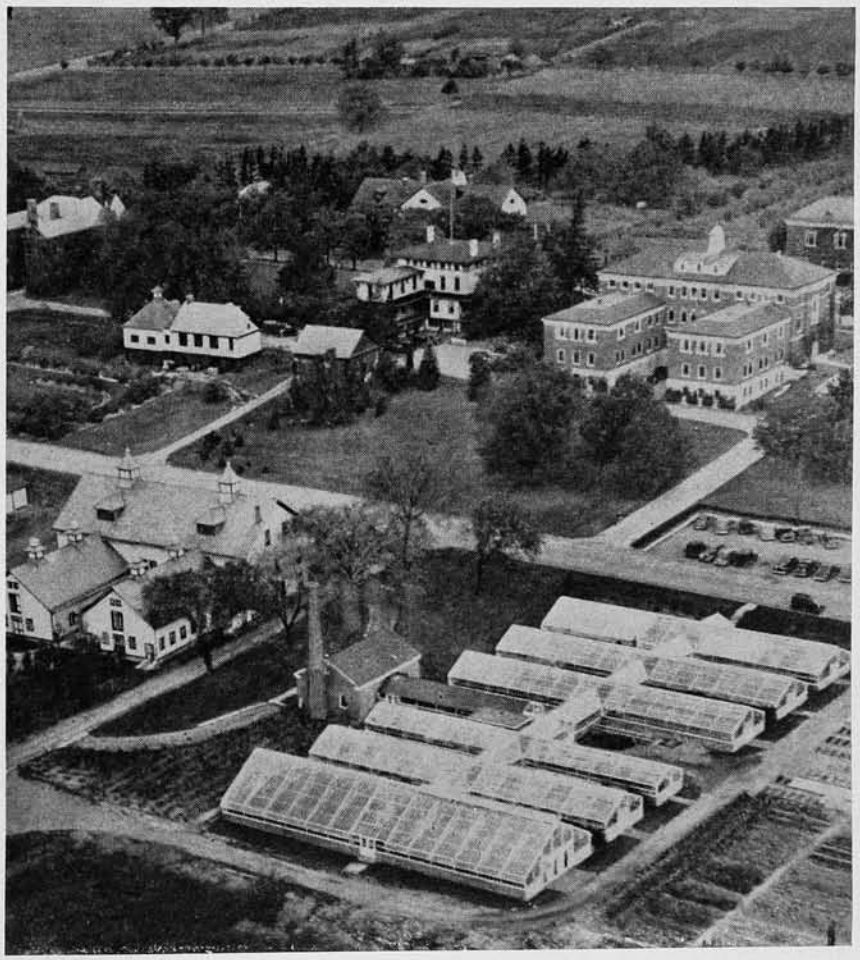
acids can lead to a greater insight into the essence of life itself. Since DNA contains the "formula" for an individual and RNA continually transfers each person's "formula" from the moment of conception, the mystery of living matter comes closer and closer to being solved. A greater understanding of the working of DNA and RNA may result in new conquests over disease and genetic disorders.

Experimentation with hybrid corn breeding has resulted in higher yields, adoption of mechanized harvesting methods, more efficient fertilizing techniques, and varieties with greater disease and insect resistance. The most significant advance in breeding utilized heterosis, the increased vigor which results from crossbreeding. This research sparked improvements in other crops and livestock. More productive hybrids have replaced the first ones and adaptable strains are now grown outside the Corn Belt. The land grant colleges, however, are not satisfied with these achievements and continue to carry on basic research in areas of genetics. One of their recent discoveries was a hybrid with special high amylase and oil characteristics desired by industry.

In aggregate, the achievements of the land grant colleges and experiment stations have lead to the abundant, varied, nutritious, safe and wholesome supply of food and fiber, and to the healthy bounty of the United States. Each discovery and accomplishment is the culmination of many private achievements all over the country. A research program consists of small, semi-autonomous systems centered around key personnel in the research organization. In turn, each research program completes another piece of the puzzle of a scientific breakthrough. The case of wheat rusts is a perfect example of how findings are made through the cooperation of many research branches. E. C. Stakman of the Minnesota Experiment Station laid the foundation of our present knowledge of wheat rust. He proved that the fungus winters in the south and is transmitted by the wind to the north where it settles, destroying wheat harvests. Stakman identified and developed resistant wheat strains. H. H. Flier, while working with flax rust at the North Dakota Station, worked for a variety completely resistant to all rusts. He identified a chemical component common to the virulent rust and the flax it infected. Another group of scientists came up with a supplemental discovery. Schmidt and Maan of the Nebraska Station have found an effective fertility restorer gene which facilitates breeding hybrid wheat. From this, it is easy to see how separate scientific contributions often may culminate in even greater achievements.

A fascinating discovery has been made by scientists at the Wisconsin Station. They have separated a chemical sex attractant from the abdomen of female sawflies which will prove invaluable in controlling this harmful insect. Researchers found that newly hatched caged female sawflies attracted thousands of males of the species. This attractant continued for three days after the female died. If scientists can isolate and synthesize this attractant material, they will have a means of luring male sawflies into traps. This will gradually kill off the species since unmated females produce only male offspring.

The important partnership between the United States Department of Agriculture and the land grant college experiment station system forms the largest network of cooperating agricultural agencies anywhere in the world. Through such a partnership, scientists have a better chance to coordinate and exchange ideas. Their research is of major significance not only to the farmer, but to all people. It assures the highest efficiency of production, distribution, and consumption to all citizens, as well as contributing essential knowledge for the detection and control of disease.



New York State Land Grant Experiment Station at Geneva, New York.

STUDENT GOVERNMENT — A *SUCCESS STORY*

by Joan Solomon '67

Two years ago, the Agriculture College Student Council arose in place of the Ag-Domecon Council. Finally, the College of Agriculture had a representative student government of its own.

The Council is mainly concerned with service. It coordinates the activity of upper campus clubs. Included in its membership is an official from each of ten activities. Each fall, *A Guide to Upper Campus Activities* is published and circulated among the students in order to encourage interest and participation in extra-curricular clubs.

The Student Council fills in its ranks each spring with an election open to everyone enrolled in the College. One representative from each class is chosen, as well as one representative-at-large for every 200 students. To diversify the composition of the Council further, affiliated delegates from fraternities are included as members. Two professors serve as faculty advisors to the organization.

Activities of the Council, aside from its primary function of serving the clubs, are many and diverse. The Council contributes funds to help support the Swedish Exchange Program. Its members select each year the Cornellians who will participate in both this program and in the Argentine Exchange Program. Both of these plans have recently been expanded to include summer travel. Money is designated for the foreign exchange students to tour the United States after their year of study at Cornell. In this way the Council hopes the students will become acquainted with a wider cross-section of the American people, and will gain a deeper understanding of our culture.

One of the problems that the agriculture student government is actively involved in is the controversy over the practice requirement. Is it effective? Is it the most profitable way a student can spend his summer? These are the questions the Council was trying to resolve last year in a survey of students and faculty. The results of the study were discussed at last spring's annual student-faculty banquet. No conclusion was arrived at at that time, but this year a faculty committee is reviewing the issue.

Additional duties of the Council include nominating professors for the annual Professor of Merit Award and recruiting sub-frosh by agriculture undergraduates. Along with the 4-H Club, the Council is in charge of a nightly coffee hour in Warren Hall. And this year, the Council is even considering becoming a co-sponsor of the University Fall Weekend.

An important branch of the Student Council is the two-year-old Educational Policy Committee. This body searches for changes which will improve the quality of education in the Agriculture College. It reports back to the administration and to the Council.

A newly-created organ of the Agriculture College Student Council is the liaison committee, which consists of three professors elected by the faculty and three undergraduates elected by the students. This committee serves as the main vehicle of communication between the faculty and the student body. At the meetings of this group, the ideas of the individual faculty delegations and student committees are brought forth and discussed. Each group then reports back to its own committee on the topics discussed by the liaison committee.

A major function of the Student Council is to stimulate the participation of the agriculture student in every phase of campus life. This applies not only to upper campus activities, but to university-wide events as well. The student is encouraged to become active in student government, in athletics, in clubs, and in service organizations. There will be an effort to better publicize lectures given by prominent visiting speakers. Thus, the Council hopes to broaden the horizons of students in the College.

The Agriculture College Student Council is a well-organized, efficient structure. It has received a great deal of support from the faculty and the student body. In its short span of existence, it has fully proven its worth as a body capable of representing the diverse interests of the students of the College of Agriculture.

Courtesy The Cornellian

Student Council, 1964-65. Charles C. Russell (right) was senior faculty advisor.

SPARE TIME FOR "EXTRA" ACTIVITIES

by Gene Goldenberg '67

"Cornell would be a great place if there weren't so much work!" The entering freshman is quite often staggered by the amount of his time which is consumed by studies. In high school he found plenty of time to participate in many after-school activities and he was still able to maintain a high scholastic average. At Cornell, this same student is disappointed because he cannot find time to participate in half the extra-curricular activities he had hoped to join.

It is probably safe to assume that most of the students at Cornell do not have as much free time as they might like. However, it is a foregone conclusion to say that students tend to waste time. With careful and thoughtful planning, most of us could participate in those activities for which we "just don't have the time."

The "extra" in extra-curricular is perhaps superfluous. Participation in the so-called extra-curricular activities at Cornell could be considered part of your regular curriculum. Some of the student organizations provide practical experience in the participant's future vocation. Others serve as a forum for the exchange of ideas among people of the same or different backgrounds. And still others bring together those who share the same hobby or special interest.

Let's examine some of these organizations, and what they can offer someone who is "busy enough as it is, without a lot of meetings to attend."

Take, for example, the opportunities for musical expression that await you. Some of the groups you might join if you like to sing include the Glee Club, Cayuga's Waiters, the Notables, the Sherwoods, or if your interest lies in musical comedy, Octagon. If you're musically inclined, but unable to sing on key except with a bad cold, there is always the Big Red Marching Band or the Repertoire Concert Band.

If oral expression is one of your favorite pastimes, but no one ever lets you finish a sentence, then try the Debate Association or the Dramatic Club. However, if you wish to discuss any thing with a political tint, there are several organizations which would be only too happy to accommodate you. These include Students for Democratic Society, Young Democrats, Young Republicans, Young Socialist League, and the more recent Ad Hoc Committee on Viet Nam.

For those of you interested in participating in the governing of student affairs, there are many groups which offer ample opportunity. For some positions in student government, one must be elected; for others an interview system determines appointed positions; and for still others, a volunteer is always welcome. Remember also, the individual college student governing bodies such as the Agriculture College Student Council, the Industrial and Labor Relations Student Representatives, and the Student-Faculty Committee of the College of Home Economics.

For students in the College of Agriculture, there are several groups in which you may pursue your scholastic interests further or, perhaps, develop a new hobby. Some of these include the Agronomy Club, the Pomology Club, the Poultry Science Club, The Round-up Club, the Pre-Veterinary Society, and the American Society of Agricultural Engineers.

If you are a freshman who likes to write, but is tired of themes for English 111, then all is not lost. There are a number of publications on campus which would greatly appreciate your talents. The *Cornell Daily Sun* has a regular program of competition for positions on the paper. There are many other publications including the *Cornell Widow* (for those with a sense of humor), the *Trojan Horse* (for those with literary leanings), and the *Cornell Walk* (for those with an itch for social comment). Also, the different colleges have publications of their own. There is the *Cornell Engineer,* the *Voice for Ives Hall,* and the *Cornell Countryman.*

There are over 100 recognized student organizations at Cornell. Whatever your interest, there is bound to be some group which will make your wasted time worthwhile. If there isn't, form one.

Outing Club members snowshoeing, one of the many activities of this group.

Courtesy Cornell Outing Club

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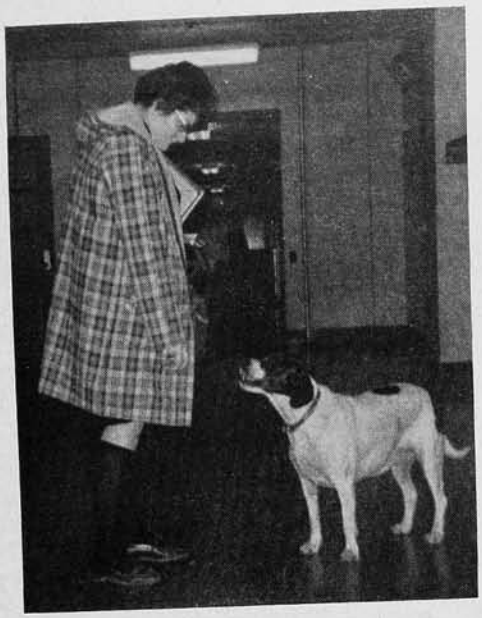
by Sandra Zi



Being man's best friend, dogs have followed him wherever he's gone. This includes to college, as it is plain to see with all the dogs roaming around the Cornell campus.

Dogs have almost always been allowed to wander freely about Cornell since the University was founded 100 years ago. It has become an established belief that wealthy Cornell alumni bequeath money to the University for maintaining the freedom of the dogs on campus.

In 1960, Cornell's Ban on Campus Dogs threatened their liberty. This action resulted from complaints filed by the professors that their classes were being disrupted by dogs in the classrooms. Also, librarians reported that dogs were disturbing the students' studying and were damaging valuable books in their frolic.

* * * *

One of the kings of dogs that used to rule the campus was Chinook. In November, 1953, during his freshman year, Chinook was struck by a car, and his left front leg had to be removed. After his recovery, he returned to campus and attended classes, athletic programs and other important events. The students soon nicknamed him Tripod. Tripod became a familiar and lovable sight everywhere on campus, known to students, faculty, and visitors at Cornell. He died on Dec. 20, 1964 in Alaska where he had returned with his owner. Tripod will always be a legend and a part of Cornell.

* * * *

Ezmond (center picture) is a 9-month old Saint Bernard, weighing 185 pounds. He is owned by Chi Psi which is proud to say that Ezmond's father was a national champion of Saint Bernards who appeared on Johnny Carson's "Tonight" Show. Ezmond himself makes grand appearances on campus, attending classes and events around Cornell. At the house he enjoys playing a good game of football with the boys.

* * * *

Molly, a big white dog, was used by the students a few years ago to display their reactions towards the University's placing signs on all the buildings. The students put a sign on her which read, "Molly, Pregnant Dog."

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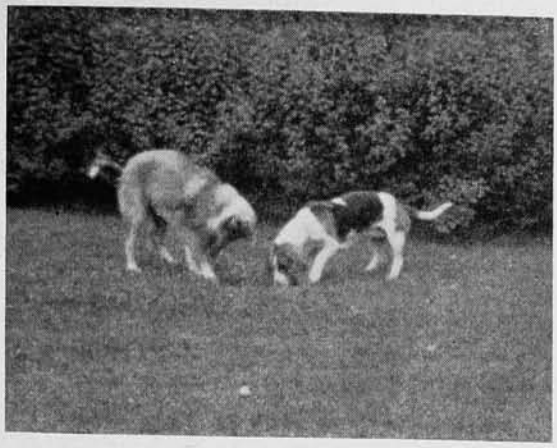

Another class was disturbed one day by the prancing up and down the aisle of an impatient dog. The professor ordered him out. As a student ushered the dog to the door, the class hissed and booed. After the commotion died down, the professor calmly stated, "I don't know what he's doing in here anyhow. He took the course last term."

* * * *

The students who found one class very dull decided they would give a reluctant and small clap on the last day of class. When they applauded, a dog sitting in front became excited and chased the professor off the stage and out of the room.

* * * *

Dogs have become almost as important as the students on campus. Some even attend more classes than the students do.

Some of the dogs on campus are here for fun and participate in soccer games on the Arts quad and play "monkey in the middle" with frisby players on the front lawn of Balch or Donlon.

Often, a dog sits beside the sidewalk, waiting with a stick in his mouth for someone to throw it for him to chase. When a student throws the stick, the dog runs happily after it, only to return and find that the student has disappeared. Then the dog settles down to wait for someone else to come along to play with.

On nice sunny days, when weather permits students to have lunch under the trees or on the lawn of the Ag quad, the dogs gather around to beg and tease for at least a bite of something. Nine times out of ten they manage to get half a sandwich or a couple of cookies.

During the cold winter months, dogs are spotted on campus lying on steam vents near Olin Library or Rockefeller Hall. But any time of the year, students share the Mann Library reading room with dogs seeking a warm and quiet place to snooze.

The most familiar sight of all is the dog in the classroom. Last term three dogs were in the habit of showing up for a sociology class at eight o'clock every Monday and Wednesday. In the middle of one of the lectures, they started barking back and forth across the front of the room. The professor stopped his lecture and said, "I will not continue until those mutts leave this room." Soon the dogs quit barking and the class became silent. All three lowered their heads and walked quietly out the door.

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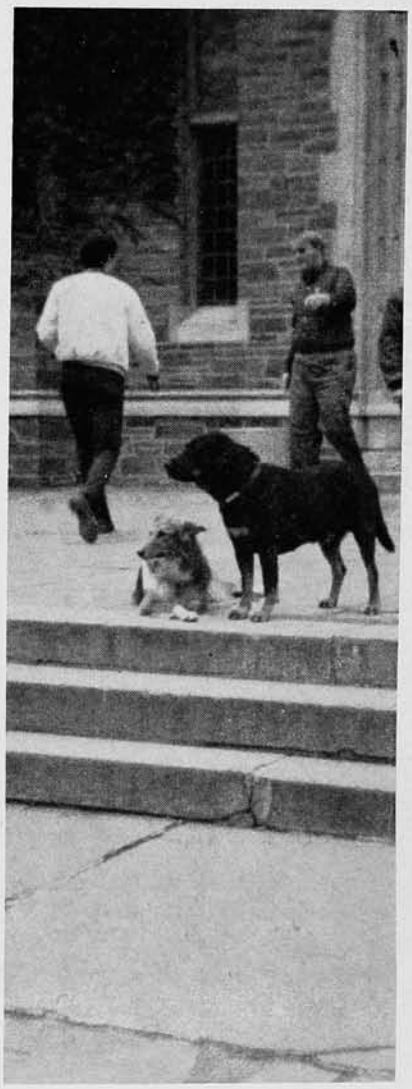


AFTER THE CHESTNUT BLIGHT - - A REVIVAL?

by Charles Wilson '69

Is the American chestnut, a species which was almost completely destroyed by chestnut blight, actually making a comeback on the American scene? The question is a most debatable one and disagreement ranges far and wide as to its answer.

Chestnut blight was first recognized in America in 1904. As a disease it is native to China and is believed to have been passed on to the United States in the 1890's. The disease probably was transferred to the United States through a shipment of Asiatic chestnut nursery trees before a quarantine on oriental plants was enacted in 1912.

The blight, caused by the fungus, *Endothia parasitica,* kills a tree by first clogging the inner bark layers and then gradually working out to the surface, eventually girdling the trunk. The oriental chestnut and other varieties of this tree have some resistance to the blight but the American chestnut has none at all and, as a result, suffered almost complete elimination.

The effect of the chestnut blight on the American chestnut has been a staggering tragedy. Before the blight the American chestnut was "King of the Hardwoods" in our nation. Its bark was important in the leather tanning industry and its timber served as an excellent veneer base. Also, the wood had a very high resistance to decay which gave it a wide variety of uses. The chestnuts themselves were in deman as a food product for roasting and stuffing. As soon as the chestnut blight began to spread in the United States, scientists became aware that it was not remedied by tree surgery or by spraying or injection of chemicals. Once started, the blight travelled on the average of twenty-five miles a year. It was spread by birds, insects, and the wind, as well as by the shipping of infected nursery stock. When the worst of the blight had passed in the late 1930's it had killed a total of nine million acres of forest areas containing pure chestnut.

The first efforts made to rehabilitate the American chestnut were centered around cutting scions from the few surviving trees on the old natural ranges and grafting them to healthy Asian trees. These scions were sent to volunteer cooperators in seventeen states for grafting and cross breeding. These tree breeders worked the same way as breeders of hybrid corn. Paper bags were used to protect the blooms, mesh bags shielded the nuts from squirrels, and pollen was applied by hand. This type of tree breeding, with men working atop thirty-foot ladders, was extremely time consuming and difficult to perform.

Another chestnut rehabilitation project in Connecticut, called "Sleeping Giant", has produced several combinations of Asian chestnuts and dwarf chestnuts called chinquapins. A large proportion of these trees grow upright and are vigorous yet are still susceptible to the blight. Those few trees that show some resistance are then used for further breeding work.

One such breeding project involves the following: a selection of Chinese chestnut is crossed with American chestnut yielding fast growing, upright trees which are fairly blight resistant and similar in appearance to the American chestnut itself. The resultant trees are then backcrossed to the Chinese parent tree, producing a tree nearly as blight resistant as the Chinese chestnut. Another project also devised a type of grafting known as "inarching" which allows the saving of blighted hybirds with valuable characteristics. Projects such as this one are important because they distribute scions from "good" specimens to commercial nurseries where further grafting takes place and additional trees are grown.

Since the chestnut blight does not affect the roots of the tree, American chestnut trees are able to continue sprouting from their roots after blight killing. These sprouts may escape blight for a number of years, particularly where both chestnut trees and blight infection are rare, but according to Professor Wayne Sinclair of the plant pathology department, the trees are not able to develop their own blight resistant strains without artificial breeding. The trees may now reach a sizeable height before dying since there are increasingly fewer blight spores present in the forests of today. This decrease in spores is due to the disappearance of many old blighted trees.

Thus it seems improbable that the American chestnut will make a comeback on its own, but meanwhile, breeders continue to experiment with shoots that are within the old natural range and show marked blight resistance. Specifically, they are also searching for shoots that have an 8-inch diameter at breast height and bloom early with no blight. Hopefully, with a little help, the great American chestnut may bloom again.

U.S. Forest Service Photo

A blighted stand of chestnuts, 1907

A BETTER TOMORROW

by Alexander Harwood '68

Caste marks, and saris, red, blue, and green robes, serapes, and sandals are all common sights on the Cornell campus. Asiatics, Orientals, Europeans, and African exchange students are all represented in large numbers. Stopping on the steps of Willard Straight Hall, you can overhear bits of conversation in everything from Swahili to Spanish.

Every new student, whether at Cornell or elsewhere, must adapt to his new surroundings, but the problems facing incoming freshmen are small when compared with the obstacles facing the foreign student. For many, Cornell University is, at first, a confusing and frustrating language, a cold and unfriendly climate, a steep snowy hill, and new and at first undigestible foods eaten to the accompaniment of blaring rock and roll in the Ivy Room.

Ideas from Professor Elmer S. Phillips' workshop will be carried around the world.

There is a brief orientation period for the new foreign student and special guidance and counseling. But, for the most part, he must adapt on his own. In spite of all this the foreign student does fit in. He is not, as might be expected, an odd rarity on campus or a rare exception in class but rather an integral part of the student body. He attends the same classes, has the same prerequisites and requirements, and must meet the same standards as his American counterpart.

There were over 1,000 foreign students living and studying at Cornell University last year, and this year there are even more. Their diverse backgrounds are an asset in class discussion and often bring up new and unique viewpoints. Outside of class too, most foreign students are willing to talk about their native countries and have many questions of their own about Cornell and the United States.

There are far more foreign students that would like to come to Cornell, but, unfortunately, financial aid and other facilities, while large, are limited. Cornell University has done a great deal of work in foreign countries. Its students can be found all over Latin America as part of the Honduras Project, and Peace Corps volunteers receive Spanish instruction at Cornell.

Our foreign students are typically from new and underdeveloped nations and most of them are enrolled in the Cornell College of Agriculture. When asked why so much effort is expended on these students, David B. Williams, director of the International Student Office, said this was Cornell's own small contribution to American foreign aid. But it is much more than this and small only in its numbers. It is very important to both us and those we are helping.

Today, in Central and South America, large portions of the population are starving. By 1970 the population of this area will increase by 29% but the agricultural productivity, if it continues at the present rate, will increase only 21%. In Asia (exclusive of the Soviet Union) and the Indian subcontinent we find 57% of the world's population and only 37% of the world's total food production. Here in the United States we are burdened by a food surplus and a rapidly increasing agricultural productivity.

Automobiles and television sets are far from the thoughts of hungry people all over the world, but thoughts of food are always with them. Foreign aid, the Peace Corps, or even giving away our present surpluses will not ease our embarrassment at being overweight while two-thirds of the world is perpetually hungry. Nor would it be an effective long term solution to double and triple our efforts. However, the technology and training which Cornell's foreign students take back to their native countries will help to make them and their nations more self-sufficient and productive in the future.

Priceless Collection

TWO MILLION INSECTS!

by Alan Hall '67

The Cornell University Insect Collection is the second most extensive university collection in the world, and it ranks among the eight largest museum insect collections in the Western hemisphere. Whereas many collections are concentrated on one group of insects, the Cornell collection is especially outstanding in that all groups of insects are well represented.

The collection was started 10 years after Cornell's founding by John Henry Comstock. Comstock, the founder of Cornell's Entomology Department, devised the system used in Cornell's collection and in collections around the world. By pinning the specimens of each species on a separate tray, movable in its case, he was able to add new species without readjusting or repinning the other specimens. Insects too small or delicate for pinning, such as stoneflies and larval forms, were put into bottles of alcohol or mounted on slides.

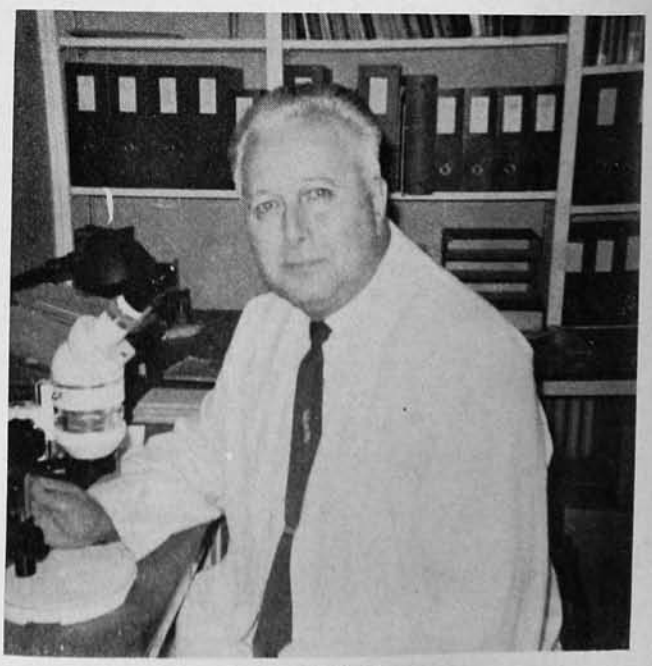
Presently the collection contains over 2 million specimens representing approximately 200,000 different species, and it includes about 2,000 holotypes, the original specimen used in identifying all the others in a particular species. It has been contributed to by Cornell expeditions, by exchanges with other universities, and by donations from other collections. Cornell has sponsored expeditions to Africa, Greenland, Central and South America, and Mexico. Additional species are gained by exchanging duplicates. Many insects are sent to Cornell for identification. The university keeps specimens of each species sent in for identification.

The uses of the Cornell Collection are varied. It is used as a reference collection for identification of specimens sent in by the public. For example, an unidentified insect was found in a grain elevator, and the grain failed to pass government inspection. However, when samples were identified at Cornell, it was found to be a clover insect and not a pest of grain. The shipments of grain then passed inspection. In this way, the collection can be of considerable economic value, as many pests have been identified through reference to it. The collection also provides a source of material for graduate students and staff involved in problems of evolution, taxonomy, and research on specific groups.

Boxes of specimens are loaned to museums and to other collections for research purposes. Presently, over 200 lots of specimens are on loan to such places as the University of Michigan, the University of California, and the United States National Museum. Over 30 lots are on loan to foreign countries. This service allows groups conducting research to compare more specimens than they have in their own collections. Many researchers also visit the collection. They are allowed to work with it for periods varying from several hours to many months. According to Dr. L. L. Pechuman, curator of the collection, Cornell's collection is so extensive that few studies are really complete without Cornell's specimens.

Perhaps the most important feature of the collection is the records that are kept, something which is done in few other collections. As each group of specimens enters the collection, it is assigned a lot number. This number is entered in a ledger with the name of the person who used the specimen and the titles of any papers or theses written using the specimen. In entomology many species are being renamed. Also, entomologists are finding that what was thought to be one species may actually be two. Consequently, a researcher, using the work of previous researchers as references, cannot be sure that his predecessors used the same species as he is currently using. By checking Cornell's lot number, he can obtain the very specimens used in a previous work. These are called voucher specimens. He can compare these to his own. For example, a study of *Chrysops striatus* was done at Cornell in 1929. In 1945 what had previously been called *Chrysops striatus* was found to consist of two species, and the new species was named *Chrysops aberrans*. In 1964 a man was conducting research on *Chrysops* and wasn't sure which species had been used in 1929. He consulted Cornell and found that the specimens used were actually the new *Chrysops aberrans* and not *Chrysops striatus* as originally recorded. In this way the Cornell Collection helps clear up much of the confusion in research.

The collection is priceless because of its usefulness, both to researchers and the public through commercial entomology.



Dr. L. L. Pechuman

Cornell Builds a New Home for Agronomy

by Andrew Batty '69

Out of the gaping hole on Tower Road a giant, new 11-story building will soon rise, housing agronomy, a large portion of plant breeding, and a small section of conservation. This modern complex will actually consist of two structures: a high element or tower and a low element of three and four stories. The 11-story tower is to be the research center with the exception of one floor that will be devoted entirely to classrooms. The low element will house the offices of the staff and specific exhibitions such as the mammal and bird collections.

There will be several distinguishing characteristics which will set the new building apart from the older ones on campus. Aside from the height, there is the fact that there will be an almost complete lack of windows in the tower. The only exceptions will be the meteorology department, on the eleventh floor of the tower, and the north and south sides which will have one window at the end of each corridor. Adequate ventilation will be provided by an air conditioning system that will run throughout the building.

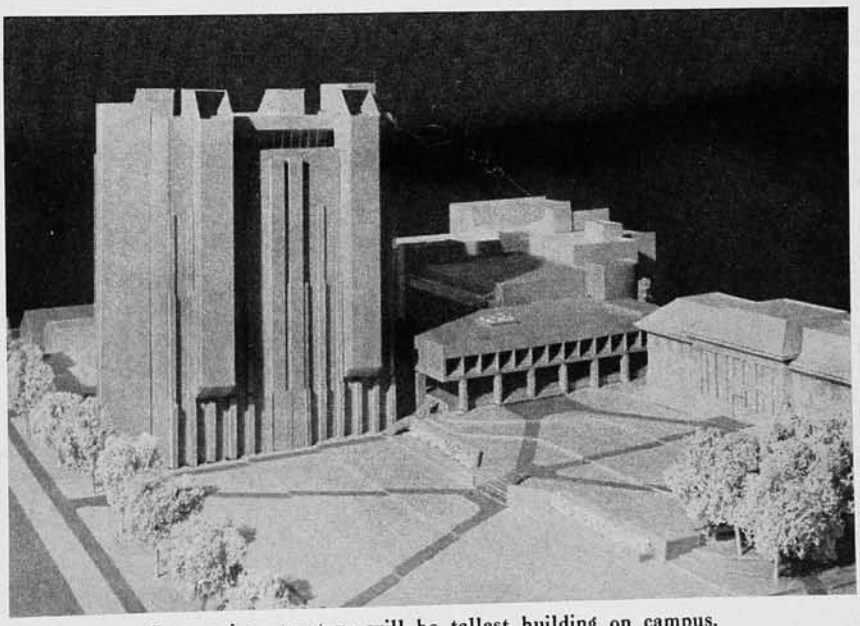
The need for such a structure to house the ever-expanding departments has long been recognized. In fact a complete set of plans was drawn up in 1937. Nothing ever came of this though, becuase before construction could begin, cost mounted above the amount of money appropriated. Again, in 1947 a second although incomplete set of plans was developed. Finally, in 1954 a third and final group was drawn up. This was successful and excavation of the site began this fall.

At the present time the agronomy department is spread throughout the campus. An urgent need for a centralized location with more room is evident. Currently, agronomy occupies space in Morrison Hall, Warren Hall, Bailey Hall, Fernow Hall, Caldwell Hall, and several other locations. The new building will provide undergraduate agronomy students with a place to call their own, as well as labs for staff members who have never had them. A substantial increase in the number of majors in agronomy, plant science, and conservation will be possible. Extensive research in fields such as soil physics and chemistry, micro-biology, crop preservation, physiology, seed technology, and an array of others will be conducted. In addition specific scientific projects concerning water pollution and pesticide control will be carried on.

Financing such a project as this is no small task. An estimated total of six-and-a-quarter million dollars will be needed. The bulk of the load, approximately three-quarters of it, will be financed through the State University Construction Fund. The other twenty-five percent of the total will come from two federal institutions, the National Science Research Foundation and the National Institutes of Health. There will be no dependence on alumni or individual contributors.

Slated for completion in August, 1967, the new building will leave Caldwell Hall completely vacant. As yet, no final decision has been made by the College of Agriculture. The administration is at present exploring possibilities for additional construction with the State University. Tentatively the space in Caldwell may be used to provide more room for the department of entomology, but, as stated before, no final decision has yet been reached.

The introduction of the new structure is another step toward making Cornell the ideal institution in which any person may find instruction in any subject.



Impressive structure will be tallest building on campus.

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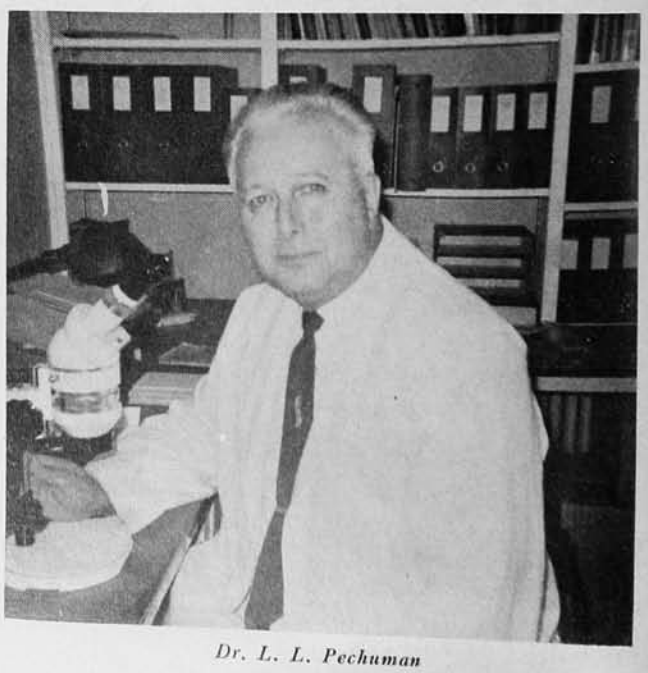
The uses of the Cornell Collection are varied. It is used as a reference collection for identification of specimens sent in by the public. For example, an unidentified insect was found in a grain elevator, and the grain failed to pass government inspection. However, when samples were identified at Cornell, it was found to be a clover insect and not a pest of grain. The shipments of grain then passed inspection. In this way, the collection can be of considerable economic value, as many pests have been identified through reference to it. The collection also provides a source of material for graduate students and staff involved in problems of evolution, taxonomy, and research on specific groups.

Boxes of specimens are loaned to museums and to other collections for research purposes. Presently, over 200 lots of specimens are on loan to such places as the University of Michigan, the University of California, and the United States National Museum. Over 30 lots are on loan to foreign countries. This service allows groups conducting research to compare more specimens than they have in their own collections. Many researchers also visit the collection. They are allowed to work with it for periods varying from several hours to many months. According to Dr. L. L. Pechuman, curator of the collection, Cornell's collection is so extensive that few studies are really complete without Cornell's specimens.

Perhaps the most important feature of the collection is the records that are kept, something which is done in few other collections. As each group of specimens enters the collection, it is assigned a lot number. This number is entered in a ledger with the name of the person who used the specimen and the titles of any papers or theses written using the specimen. In entomology many species are being renamed. Also, entomologists are finding that what was thought to be one species may actually be two. Consequently, a researcher, using the work of previous researchers as references, cannot be sure that his predecessors used the same species as he is currently using. By checking Cornell's lot number, he can obtain the very specimens used in a previous work. These are called voucher specimens. He can compare these to his own. For example, a study of *Chrysops striatus* was done at Cornell in 1929. In 1945 what had previously been called *Chrysops striatus* was found to consist of two species, and the new species was named *Chrysops aberrans*. In 1964 a man was conducting research on *Chrysops* and wasn't sure which species had been used in 1929. He consulted Cornell and found that the specimens used were actually the new *Chrysops aberrans* and not *Chrysops striatus* as originally recorded. In this way the Cornell Collection helps clear up much of the confusion in research.

The collection is priceless because of its usefulness, both to researchers and the public through commercial entomology.



Dr. L. L. Pechuman

Cornell Builds a New Home for Agronomy

by Andrew Batty '69

Out of the gaping hole on Tower Road a giant, new 11-story building will soon rise, housing agronomy, a large portion of plant breeding, and a small section of conservation. This modern complex will actually consist of two structures: a high element or tower and a low element of three and four stories. The 11-story tower is to be the research center with the exception of one floor that will be devoted entirely to classrooms. The low element will house the offices of the staff and specific exhibitions such as the mammal and bird collections.

There will be several distinguishing characteristics which will set the new building apart from the older ones on campus. Aside from the height, there is the fact that there will be an almost complete lack of windows in the tower. The only exceptions will be the meteorology department, on the eleventh floor of the tower, and the north and south sides which will have one window at the end of each corridor. Adequate ventilation will be provided by an air conditioning system that will run throughout the building.

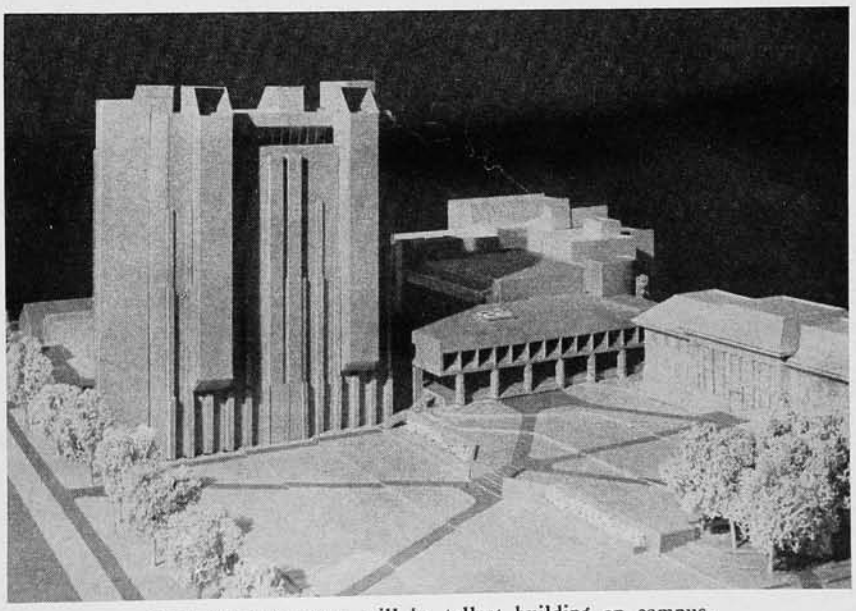
The need for such a structure to house the ever-expanding departments has long been recognized. In fact a complete set of plans was drawn up in 1937. Nothing ever came of this though, becuase before construction could begin, cost mounted above the amount of money appropriated. Again, in 1947 a second although incomplete set of plans was developed. Finally, in 1954 a third and final group was drawn up. This was successful and excavation of the site began this fall.

At the present time the agronomy department is spread throughout the campus. An urgent need for a centralized location with more room is evident. Currently, agronomy occupies space in Morrison Hall, Warren Hall, Bailey Hall, Fernow Hall, Caldwell Hall, and several other locations. The new building will provide undergraduate agronomy students with a place to call their own, as well as labs for staff members who have never had them. A substantial increase in the number of majors in agronomy, plant science, and conservation will be possible. Extensive research in fields such as soil physics and chemistry, micro-biology, crop preservation, physiology, seed technology, and an array of others will be conducted. In addition specific scientific projects concerning water pollution and pesticide control will be carried on.

Financing such a project as this is no small task. An estimated total of six-and-a-quarter million dollars will be needed. The bulk of the load, approximately three-quarters of it, will be financed through the State University Construction Fund. The other twenty-five percent of the total will come from two federal institutions, the National Science Research Foundation and the National Institutes of Health. There will be no dependence on alumni or individual contributors.

Slated for completion in August, 1967, the new building will leave Caldwell Hall completely vacant. As yet, no final decision has been made by the College of Agriculture. The administration is at present exploring possibilities for additional construction with the State University. Tentatively the space in Caldwell may be used to provide more room for the department of entomology, but, as stated before, no final decision has yet been reached.

The introduction of the new structure is another step toward making Cornell the ideal institution in which any person may find instruction in any subject.



Impressive structure will be tallest building on campus.

COUNTRYMAN CAPSULES

Prof. Herbert L. Everett, a specialist at Cornell in plant breeding and genetics, will be the new director of resident instruction of the College of Agriculture. He succeeds Prof. Thomas C. Watkins who devoted 26 years of service to Cornell.

Everett, who is responsible for the College's teaching program will enter his new post on Feb. 1, 1966.

He is presently teaching and doing research at the University of the Philippines as project leader of the University of Philippines—Cornell University Graduate Education Program organized in 1963 to improve the academic program of the University of the Philippines College of Agriculture near Manila.

After earning his B.A., M.S., and Ph.D. degrees from Yale, he came to Cornell in 1952.

Everett has taken two other leaves from Cornell. He spent 1956-57 as a visiting professor at the University of the Philippines aiding that university's plant breeding research. In 1961 Everett did research in Chapingo, Mexico, for the Mexican Agricultural Program.

* * *

Agricultural engineers at the College of Agriculture report that machine apple picking can now be done commercially as a result of experiments with a mechanical apple harvester developed by Cornell.

Prof. Everett D. Markwardt—the major designer of the machine—says a new catching frame is being built which engineers hope will minimize the bruising of the apples. The frame has been the Achilles' heel of this machine and has been modified three times in the past.

The machine consists of a tree shaking device, a clamp at the end of a long metal arm and catching units that are fitted around the tree.

Markwardt says the machine can do the job of at least 15 men by harvesting 150 to 200 bushels per hour. He hopes a harvester can be perfected which will pick both cherries and apples.

* * *

Is the United States alone in South Viet Nam? A letter from Mr. Arthur J. Dommen, a former journalism major at Cornell University and present Tokyo Bureau Manager of the *Los Angles Times,* shouts a fervent "No." A little known contingent from the Philippines is there to wage war on a different front.

Mr. Dommen, after years of Southeast Asian news gathering, has tried "not to become passionately involved" in the Viet Nam situation "as some of my colleagues do, but to hear as many opinions as possible on every side." In a letter to Prof. William B. Ward, head of the department of extension teaching and information at Cornell University, Dommen states that the handful of Filipinos aiding in non-combatant status are doing more to undermine the Viet Cong than the combatants are. Filipino medical technicians bring the magic of medicine to the highlands in Kontum while Filipino agricultural specialists help reclaim the lands ravaged by war in parts of Viet Nam.

Mr. Dommen states, "It will take years" of such unselfish personal contact "to repair the damage caused by blind American check writing to Diem . . . if, indeed, we are going to have time to repair it all."

* * *

Dean Charles E. Palm announced the appointment of Prof. Robert J. Young, Cornell University animal nutritionist, as the head of the poultry department effective Oct. 1, 1965.

Prof. Jacob H. Bruckner, who will be succeeded by Prof. Young, will devote more time to teaching and research. Bruckner served as head of the department for 25 years.

Young, a native born Canadian, earned his undergraduate degree with honors at the University of British Columbia, Vancouver, British Columbia, in 1950. He received his Ph.D. from Cornell in September, 1953.

Before joining the faculty at Cornell in 1960, Young was research associate in Banting and Best Department of Medical Research, University of Toronto from 1953-56, and a research chemist at both the International Minerals and Chemical Corp. and Proctor and Gamble Co., between 1956 and 1960. Since 1960, Young has been active in both teaching and poultry research.

* * *

Cornell University has developed two new egg products. The two products, frozen Western and Catskill egg omelets, have been perfected under the direction of Profs. Robert C. Baker and Lawrence B. Darrah. These two convenience products are frozen in round slices, each of which weighs two and a half ounces. The Western omelet has ham in it, but the Catskill omelet has smoked chicken. Other ingredients are chopped onions, peppers, salt, and monosodium glutamate. The major advantage of these products is the time element. It is ready for use and can be cooked quite easily and quickly in six to eight minutes. The two products had been tested in a number of restaurants in the western part of New York State, and the results have been tremendous. The omelets are now being used by a number of restaurants.

ALUMNI

RONALD SCHLIESSMAN, '57, 1187 B Street, Bronx, N.Y., is currently a public health sanitarian with the New York City Department of Health. He is also a trustee of the Bronx County Historical Society.

ROBERT ANTHONY, '64, New York, New York, is currently doing graduate work for his Ph.D. at Rockefeller University in New York City. He is majoring in the life sciences and is studying under Dr. L. C. Craig of the biochemistry department.

FRANK REEVES, '38, Otego, New York, is now an attorney-at-law in Otego, New York.

JAMES O. DEAN, '51, 602 Liberty St., Penn Yan, New York, worked for Comstock Foods, Inc., a division of Borden's Company, from 1957 to 1963. He is presently field superintendant for three area Borden factories.

RONALD MARTIN, '54, 8548 Conservation St., NE, Ada, Michigan, is now a salesman for Belding Fruit Sales in Grand Rapids, Michigan. He had worked as assistant manager of the Great Lakes Cherry Producers Marketing Cooperative.

RICHARD D. BENTON, '52, 41 Glann Road, Appalachin, N.Y., is a real estate broker in Appalachin. As a hobby, he has for 35 years collected and restored antique firearms and equipment of historical significance.

DONALD RICHTER, '50, Middletown, Ohio, was recently appointed to the Agriculture Committee of the Chamber of Commerce of the United States. He is employed by the Armco Steel Corporation as supervising sales engineer for the metal products division.

JAMES DEAN, '51, Scipio Center, New York, is married and has three children. He is farming in Scipio Center.

CHARLES POWERS, '50, Sawmill River Road, Hawthorne, N.Y., is working for Rosedale Nurseries, Inc. He has been president of the New York State Nurserymen's Association, president of the Landscape Nursery Council of Dayton, Ohio, and the director of the Horticultural Society of New York.

DAVID GROVE, '40, 36 South Maple St., Warsaw, New York, was assistant manager of the Co-op Farm Credit of Western New York. He then served as a pilot in Italy. He is presently a salesman for Nu-V Food Bar in Warsaw, New York.

STEVE MIDDAUGH, '62, Post Office Box 535, Barrington, Ill., is working with the Jewel Tea Company. He was formerly business manager of the Cornell Countryman.

BYRON CRAMER, '54, Jamesville, New York, is selling tractors for the Tractor and Implement Operations of the Ford Motor Company.

ROBERT H. EVERITT, President of the Alumni Association of the New York State College of Agriculture will be writing a column every month beginning in the next issue of the *Countryman*. Don't miss it. And be sure to fill out your alumni questionnaires which will be sent to you within the month.

No. 2 in this year's series from the New York State College of Agriculture, a contract college of the State University, at Cornell University, Ithaca, N.Y.

Equal and exact justice to all; peace, commerce, and honest friendship with all nations.

— Thomas Jefferson

THE TWO AMERICAS:

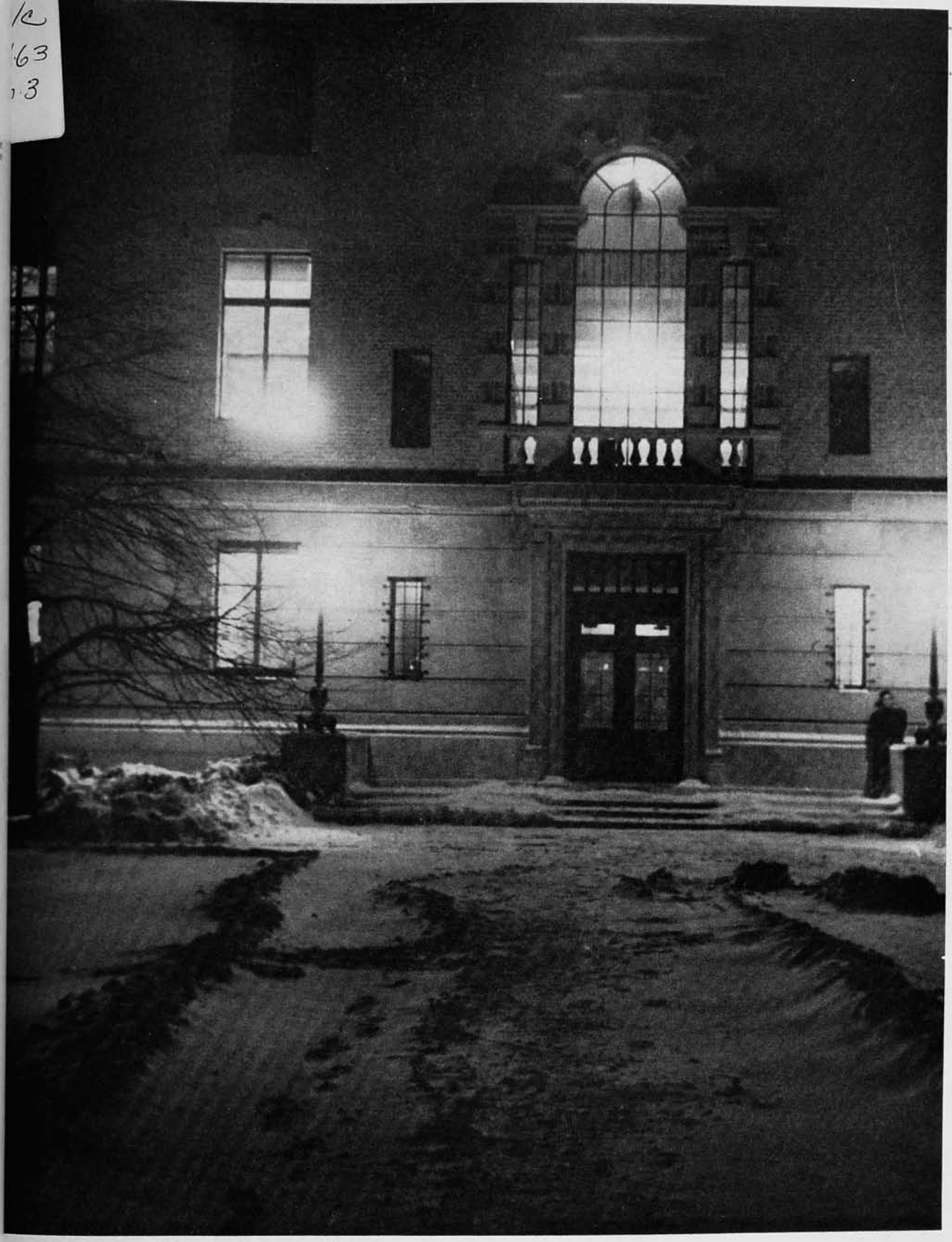
CORNELL'S LATIN AMERICAN YEAR

I desire to see America fashioned into the greatest nation in the world . . . not so much by virtue of her area and wealth as by her freedom and glory.

— Simon Bolivar

Stars represent cities from which principal speakers will come for agricultural discussions

December
1965



CORNELL COUNTRYMAN

CORNELL COUNTRYMAN

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IN THIS ISSUE

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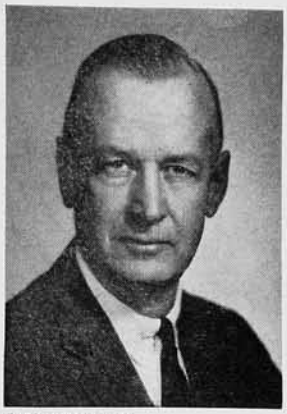
Beyond The Ivy

by Marjorie Case '67

Cornellians often describe their University as an isolated academic community, severed from national and world-wide concerns. The environment seems to magnify the distance between the University campus and the areas of national problems or international tensions. Yet, many outstanding individuals on the Cornell campus have synthesized their university lives with the national interest. James A. Perkins, Hans A. Bethe, and Nyle C. Brady are among the many Cornellians who have made valuable contributions to the University while playing important roles in the formation of national policies.



Fabian Bachrach

James A. Perkins — Hans A. Bethe — Nyle C. Brady

James A. Perkins became Cornell's seventh president in July, 1963, leaving his position as vice president of the Carnegie Corporation of New York and the Carnegie Foundation for the Advancement of Teaching. President Perkins' participation in federal affairs dates back to World War II when he served in the Office of Price Administration and in the Foreign Economic Administration. Currently, Mr. Perkins serves on a number of governmental and educational advisory commissions. In March, 1965, he was appointed chairman of President Johnson's General Advisory Committee on Foreign Assistance Programs. He is also a member of the President's advisory panel and a special committee on nuclear weapons. Mr. Perkins is also active on the National Citizens' Commission for International Cooperation and serves on the 12-man General Advisory Committee of the United States Arms Control and Disarmament Agency. He is a trustee of the Rand Corporation (a non-profit Air Force advising corporation), of the Sloan-Kettering Cancer Center of New York, and of the Council on Foreign Relations. Presently, he is heading a study of democratic growth in developing countries for the Rockefeller Brothers Fund.

Hans A. Bethe, one of the nation's leading theoretical physicists, is the John Wendell Anderson Professor of Physics at Cornell. His achievements have been of utmost importance to the nation and world as a whole. Dr. Bethe postulated that the carbon-nitrogen cycle is significant in the sun's energy production, thus expanding knowledge of energy production in the stars. Further contributions made by Dr. Bethe include the original development of the theory of electron-positron pair creation, and the development of a new theory in stopping power. The latter has been useful in nuclear physics, shielding reactors, and in understanding cosmic rays. His early work in the field of nuclear physics dealt with nuclear reactions, which were the foundation for the development of atomic energy during the second World War. Because of his role in the development of civilian power reactors and his vital contributions to the development of the re-entry of the inter-continental ballistic missiles and anti-missile defense, Professor Bethe is deeply concerned about the impact of nuclear weapons on world peace. This concern is illustrated by his membership on former President Dwight D. Eisenhower's Science Advisory Committee, the United States Delegation to the Geneva negotiations on the nuclear test ban, and former President John F. Kennedy's panel on nuclear testing.

Professor Nyle C. Brady, director of science and education for the United States Department of Agriculture and former head of Cornell's agronomy department, was recently named director of research and director of the Cornell University Experiment Station. Prior to this appointment, he coordinated scientific and educational activities of the USDA, and worked to establish relationships with similar groups outside the department, particularly in the agricultural colleges of land-grant universities. Professor Brady is interested in plant nutrition and has been observing the effects soil temperature and other factors have on the uptake of nitrogen and phosphorus by plants. His interest in plants and soils led him to serve 18 months as professor of soils at the University of the Philippines, training agricultural leaders and developing cooperative research between the University and other agencies. Subsequently, he has served as consultant for the Cornell-University of the Philippines cooperative program, and as assistant director of the Division of Agricultural Relations of the Tennessee Valley Authority, assisting in the program for education and research in the area of chemical fertilizers.

James A. Perkins, Hans A. Bethe, and Nyle C. Brady have clearly demonstrated that an academic community, like Cornell, can, and does have a direct link with national and world affairs.

CORNELL IN SOUTHEAST ASIA

Professor Mellor Conducts Research

by Andrew Batty '69
and Charles Wilson '69

Indian farmer Khem Singh and his family intensively work their 8-acre farm from dawn to dusk each day for an approximate yearly income of less than $400, which is still well above the average for an Indian village. An income level such as this encourages research to find means of improvement. Cornell, with its wide and varied program in international affairs, is playing a large part in such study.

Prof. John W. Mellor of the agricultural economics department at Cornell, and associate director of the Center for International Studies, has for some time been looking into situations such as that of Khem Singh. Working largely in India and the Far East, Professor Mellor is the author of numerous publications, encyclopedia articles, and books concerning the economics of agriculture in Asia. Each year he spends at least a month in countries of the Far East doing research and working with his graduate students.

In 1958 and 1959 he spent a year and a half in India, surveying Indian farmers and doing analytical work on the data obtained. He also spent a year in India in 1963 and 1964 doing similar work with the Rockefeller Foundation and the Indian Agricultural Research Institute.

During his yearly travels, Professor Mellor spends a considerable amount of time with his graduate students, who are doing work in the Far East. For instance, at the present time one of these men just returned from living in a remote Indian village studying consumption patterns and agricultural processes. Also, one has returned from studying irrigation methods in another section of India. A third is preparing to go to India to study milk marketing.

Another area of foreign service in which Dr. Mellor is an active participant is the International Voluntary Services, Inc. This organization, which was chartered in 1953, is non-profit and committed to the idea that the youth of America can promote good will by taking part in a service program for foreign nations. He has been a member of the Board of Directors of this organization since 1962. The Peace Corps operation was patterned very closely along the lines of the International Voluntary Services and cooperates with it at this time in certain areas.

Asian women working in rice paddies.

The International Voluntary Services' program, as well as work done by Professor Mellor, is based on expanding knowledge of agricultural development and then transmitting this knowledge so it can be effectively used. This, according to Professor Mellor, is as it should be and he states, "The greatest lack in economic development is the lack of knowledge."

This point is illustrated in the case of India, where a great portion of his work is carried on. India is in many respects just beginning economic development, with poverty being a way of life to most Indian farmers. "This problem of poverty," explains Professor

Mellor, "is not due to lack of resources or of ability of the people, but rather it is concerned with the use and organization of the people and resources."

Concerning the specific role of Cornell in the development of underdeveloped countries, he states that "Cornell has an extraordinarily large and varied program which is strong in the development of basic theory and yet which centers a great deal of work in the applied sciences." No other institution in the country has this same combination which allows for such progress.

When a citizen of the United States enters a foreign country such as India, he is normally greeted with only slight suspicion by the Indian farmers. This suspicion, as a rule, soon subsides and friendly cooperation on the part of local citizenry takes over. For the most part, according to Professor Mellor, the Indian people with whom he worked were interested in his work, and highly cooperative.

Improvement Takes Time

On a government level, cooperation may be more difficult to attain. There may be suspicion and distrust of a foreigner trying to obtain information through observation within a country. Usually these differences may be readily resolved by simply conferring with and confiding in the local government. This may be seen in certain countries in Latin America where actions by foreign powers working in these countries have aroused the ire of governments. Potential for trouble between an assisting country and the underdeveloped country is constantly present on the government level.

Despite knotty problems that often occur, countries oriented to agriculture as a way of life are making progress. India, for example, is extremely interested in her progress as an agricultural nation, thus accounting for the degree of cooperation of the Indian government. Tact and common sense have paid off in India for us. In Professor Mellor's words, "Problems grow from a simple lack of common sense and decency." Often Americans tend to go abroad with an arrogant attitude. Frequently, this is the case with Americans who are not arrogant in their relations at home. In general, if we or any other advanced nation are to transmit knowledge to these people, we must approach them with the attitude that our intent is not to exploit, but to share knowledge.

One example of Dr. Mellor's work is of particular interest since it exhibits the amount of work involved in foreign research.

In the years 1959 through 1960 a thorough research project was carried on in Midhakur, Agra district, an area of India with less than average population pressure and greater than average agricultural prosperity compared with the rest of India.

From this area specific villages and farms were chosen for intensive study. Six farms were taken from each of five groups which were arranged according to size. This list, as a whole, seemed to be a fairly representative sample of Indian farms. The number of farms was kept small so researchers could more completely explore and analyze each one.

Interviewing the farmers themselves followed the choosing of the farms. It was this phase of the research project which had to be done extremely carefully. Care was taken to obtain accurate and factual data which, when processed and analyzed, would result in a clear picture of the economics of the agricultural operation. The farmers were first interviewed before the harvest in 1959. Each farmer was then interviewed a total of eight times in the succeeding 12-month period. These interviews were planned to coincide with the more important cycles of the farmer's work year. Dr. Mellor and his partner in this project, Mr. T. V. Moorti, did all of the interviewing.

The first interview covered the farm as a whole, that is, its organization and resources. Subsequent interviews were made in order to obtain a continuous survey of the farm operation. Because of the slight suspicion on the part of the farmers, communication was sometimes difficult and "voluntary memory lapses" would occur. Gradually though, the farmers' reserved feelings melted, and accurate information came more easily. Also, checks were devised to increase the validity and accuracy of the data.

The data having been collected, the next step was to organize and analyze it, making it workable and meaningful. Information was transferred to worksheets, one for each farm, which could be used to calculate crop yields and income. The facts were also formulated into averages and graphs that presented a good description of the facts gathered.

Cornell researchers do many village studies, this being one example. In each case, however, the gathered hard core of facts is used as a basis for contributing to development by training and education. The storehouse of pertinent knowledge also makes the task of teaching much easier and more effective.

The Potential for Trouble Exists

There is one fact you must take into account when considering work of Cornell and other organizations in trying to improve the agricultural economics of many nations. This is that generally, a new and original set of technological improvements must be created for economically underdeveloped nations. This is the reason that research is of primary importance. In the United States it has taken experts many years to develop high-yielding varieties of plants which are disease-resistant and acceptable to both farmers and consumers. Likewise, suitable fertilizers and methods of management that fit the specific area in which they are used have taken a great amount of time to be formulated.

This cannot be accomplished in India or any other nation overnight. It will take many years of further research, such as that carried on by Professor Mellor and his students, to bring these nations to a level of economic development comparable to that of the wealthy countries of the world. Finally, as Professor Mellor emphasized, "The task of development is so enormous that it can only be achieved when numbers of the people in the developing countries have organized themselves to do this work. The contribution of Cornell researchers, or any foreigners, can do no more than touch upon the basic problems."

CENTRAL AMERICA PROJECT

by Gene Goldenberg '67

Living in a well-developed society with its high standard of living, it is difficult for most of us to comprehend a school that has no desks. To have children learning to read while sitting on a hard, cement floor may seem a thing of the past, but it is not. This was exactly the case in Lepateripue, Honduras until students working with the Cornell Central America Project built desks and chairs for the children there.

This is only one example of the useful and very necessary work performed by this group, manned entirely by Cornell students and sponsored by the Cornell United Religious Work (CURW). Last summer, 27 students (including six student nurses from the Cornell Medical Center in New York City) lived in three different villages in Honduras and Guatemala.

All participation in the project is voluntary, the only requirement being a familiarity with Spanish. This usually entails at least one semester of the language at Cornell. Other on-campus training includes basic construction techniques and simple methods needed for teaching Spanish to illiterate natives. However, the real work begins when the project members arrive in their summer homes.

During the summer of 1965 the project was divided into three teams. Two of the teams went to Honduras, while the third was in Guatemala. One of the first tasks fell to the nurses in each team. They immediately contacted doctors of the Alliance for Progress who were in the area and went about the job giving vaccinations and examinations to the people of the villages. Task force members also began giving literacy lessons to the children. Then they attacked some of the larger problems.

In Milparada, a small "project village" outside of San Pedro, the industrial center of Honduras, the project members built a child-feeding center. The local branch of CARE supplied the food for the center, but the Cornellians built the center and then organized the villagers to run it. During the summer of 1964, the project members had helped to build a school in Milparada using funds supplied by the San Pedro Rotary Club.

In San Antonio Aquas Alientes, Guatemala, and Lepateripue, Honduras, the project members found the school children sitting on the floor, a situation which was soon remedied. Again with the financial aid of CARE, desks and chairs were built, and the children were given a luxury which most of us would consider a necessity.

According to Stuart Thomas, the student leader of the project, the main tasks dealt with supplying physical facilities for the villagers.

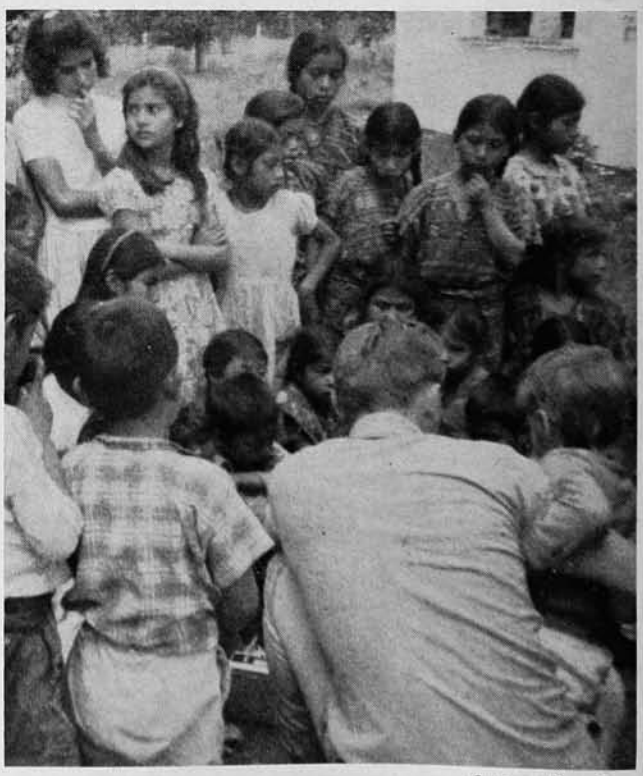
"But from our point of view," Thomas continued, "we try to use these physical projects to get to know the people. We try not only to give them schools and desks, but to give them contacts in the larger towns. We teach the villagers to organize themselves and to gain assistance from groups such as Rotary Clubs and the Alliance for Progress in the near-by towns and cities."

How much success have the Cornell students had in the past? Stu points proudly to one village where the people planned and built a school entirely on their own. They received financial help from the Rotary Club of a neighboring city.

The project, formally under the direction of Paul Jaquith of the CURW and now under the direction of Hollis Hayward, also of the CURW, plans to expand the training of its members.

"In the future," Thomas pointed out, "we want to incorporate the student's academic activity at Cornell so that project members may see their work in a broader perspective. We want the students to be able to integrate the work they do in the villages into a larger picture of the Latin American society. Through seminars and discussions with different professors on campus, we hope the members of the group will gain an understanding of how the village functions as a part of the society and economic structure of the country."

The project members are trying to help the villagers help themselves. Cornell students who work with the project have caught on to a phrase commonly used by Peace Corp members: "We are trying to work ourselves out of a job."



Courtesy Diane Green

Honduran children at an informal lesson.

BRAZIL PROJECT

Cornell University's part in an experiment in learning and understanding

by Barbara Fitzpatrick '67

Last summer, a group of students and faculty members from Cornell went to Brazil for their first experience in a projected three-year program called the Brazil Project.

The idea for this program grew from a seminar that was held two years ago under the direction of the Westminster Foundation of Cornell United Religious Work (CURW). Richard Graham, assistant professor of Latin American history in the College of Arts and Sciences, led the seminar on the problems of modernization in Latin America. Since Professor Graham was most familiar with Brazil, this country was chosen as the target for the project.

By the beginning of the spring semester of 1965, 18 students had been chosen to participate. They met regularly until June in order to become familiar with the problems of Brazil. During this time, Professor Graham was making arrangements with two villages, Pontezinha and Ponte dos Carvalhos, south of the large city of Recife in northeastern Brazil. These preparations were made in cooperation with Brazilian student programs in the same towns. Most of the students were part of the Brazilian Student Christian Movement. They came from the universities of Porto Alegre, Rio, São Paulo, Curitiba, Bahia, and Recife. Here at Cornell, the coordinator for the program was William W. Rogers of the Westminster Foundation of the CURW.

The purpose of this project was to learn everything about Brazil and the people of Brazil by bringing the students in working contact with other students who were aware of the situations facing the people of their country. The American students could begin to understand the different social, economic, political, and ideological attitudes of the country and, perhaps, make value judgments about them.

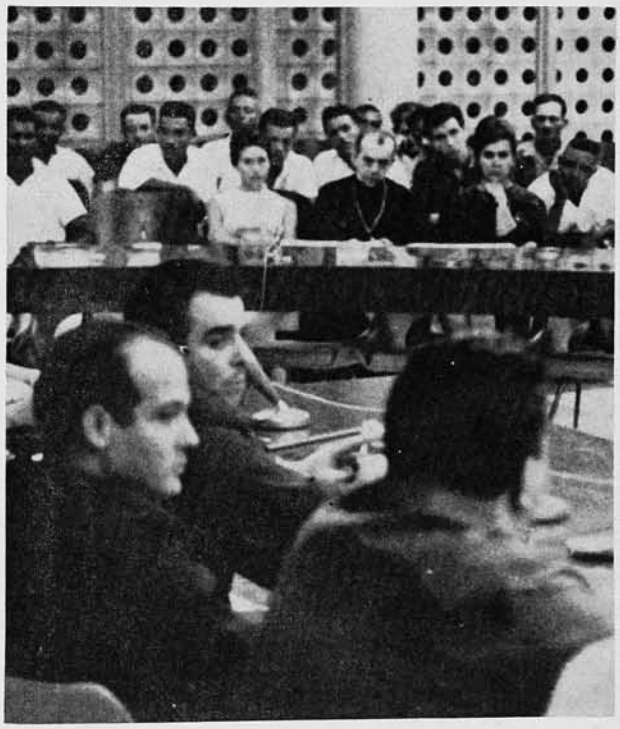
Rapid industrialization is one of the major problems facing Brazilians at this time. The following example illustrates how a certain group was affected by the rapid change. The members of the project felt that this incident had great importance and served as a dramatic climax for their summer.

A fisherman from Ponte dos Carvalhos came to the Brazilian leaders of the project in that town and explained that a distillery on the bank of a nearby river was dumping wastes which killed the fish. At the same time, the government was planning to open a huge synthetic rubber plant on the banks of the river. This plant would dump wastes so toxic that even the vegetation on the banks of the river would be killed. The fishermen asked for help because their families were starving.

The students organized into committees to investigate the situation. They assembled all the facts that they could on the new industry, the fishermen and their families, and the laws concerning pollution. With the help of the Archbishop of Recife, a meeting of the directors of the plant, the students, and the town's elected representatives was called in Recife. Nothing came of the meeting, and the fishermen, in desperation, decided to march on the plant. Since protest marches are illegal in Brazil, they marched in a religious procession led by the Archbishop. Whether the factory will actually compromise is still a question, but the point is that with the help of the students the fishermen were able to make themselves heard.

Although there was a common effort toward building a school in both towns, there were differences in further objectives among the Americans and the Brazilians. The overpowering dedication of the Brazilians to bringing social change to their people was difficult for the Americans to comprehend. Each one felt that he had a personal battle to fight. Therefore, it was necessary to hammer out a common purpose through long discussion and self-examination.

Kelly Woodbury, who worked on the project in Ponte dos Carvalhos, said that she felt the summer was a success. She learned that it is important to emphasize the program on a person-to-person level rather than a nation-to-nation basis. Perhaps her feeling of success came from a Brazilian student's remark: "It's so wonderful to know that there are other students who feel the same as we do, and are also willing to do something."

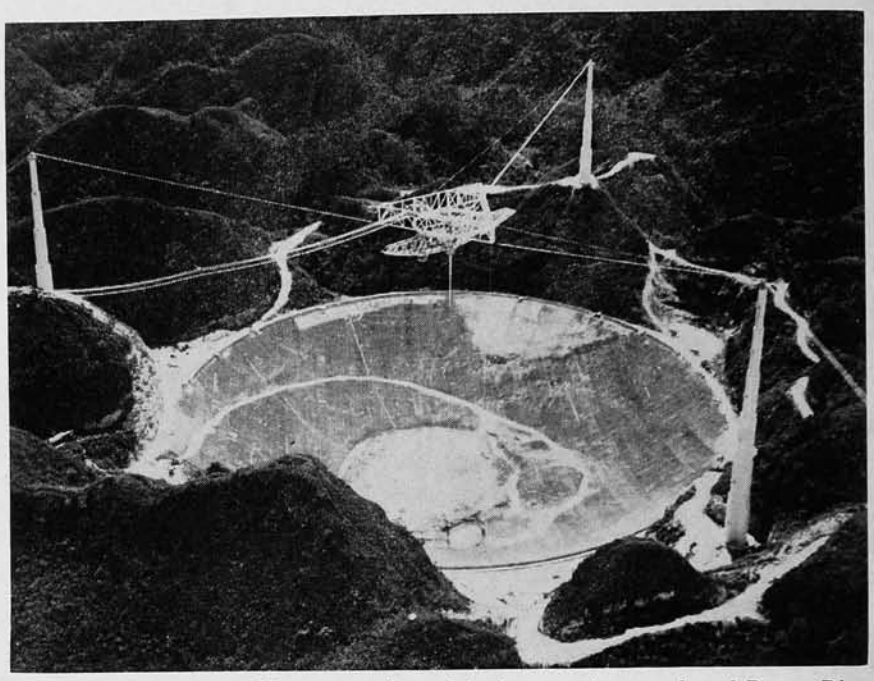


The Archbishop of Recife (center of long table) listens to the directors of the rubber factory (foreground) while the fishermen (background) and two students listen anxiously.

LOOKING ABOVE

The Big Dish At Arecibo

by Brian Regrut '68



The Arecibo Ionospheric Observatory situated in the rugged mountains of Puerto Rico.

One of the craters in the rugged mountains of north-central Puerto Rico is quite different from the others. It is a section of an almost perfect sphere, and is covered with wire mesh. Three white towers are situated around the rim of the crater, and from them cables lead to a huge complex of steel which hangs directly above the dish which measures 1000 feet across, and is 158 feet deep.

At first glance a stranger may think that the crater is a set for a science-fiction movie, or that it is the erector-set-project of an ambitious youngster. However, this is not the case. The crater, the towers and the buildings in the area are a part of Cornell University — a part which would not fit between Baker and Rockefeller Halls.

Arecibo Ionospheric Observatory — the name given the complex which is over, under, and around the Puerto Rican crater — is a division of Cornell's Center for Radiophysics and Space Research. At the center, which is 60 miles south of the coast city of Arecibo, there is a radar telescope consisting of a huge fixed reflector, a platform suspended from the three towers, and a movable power arm which is attached to the platform. Buildings which house data-processing equipment, and transmitting and receiving equipment for radar and radio, are also on the site.

The 2½ million watts radar is the most powerful in the world. When the observatory opened there was a transmitter operating at 430 megacycles. Earlier this year a 40 megacycle system was added to help obtain more accurate information. A new CDC 3200 computer has been installed to speed calculations and allow more time for data collection.

Since its opening in 1963, the observatory has been in almost continual operation. Dr. William E. Gordon, professor in the School of Electrical Engineering, and former director at Arecibo, has been studying the composition, temperatures, and ion densities of the ionosphere as far out as 2500 kilometers.

While Dr. Gordon has been studying the ionosphere, his colleagues have been making observations of the moon and beyond. The surface of the moon is being studied by several members of the staff, and the observations are expected to help the government in planning the Apollo program for landing men on the moon.

Perhaps the most interesting discovery to date has been that Mercury is not rotating in its long-assumed 88 day period, but is rotating with a period of 59 days. Dr. Gordon H. Pettengill, associate director of the observatory, and Dr. Ralph B. Dyce, senior research associate from the University of Sydney, learned of the rotation of Mercury while making radar observations of the planet.

Although much of the work at Arecibo has involved sending signals, there has also been quite a bit of listening. Because of the excellence of the observatory's equipment, many radio sources from stars can be studied. As a result, many sources within the range of the telescope have had new positions measured.

Since its inception in 1959, the project has been supported by the Advanced Research Projects Agency under a research contract with the Air Force Office of Scientific Research. Cornell built the observatory under the guidance of the Air Force which brought to Puerto Rico information concerning spherical antennas gathered over a period of 10 years. At present Cornell scientists, under the direction of Dr. John Findlay, have full responsibility for all activities at Arecibo.

Although Cornell does have charge of the A.I.O., it is unlikely that many of the students at Ithaca will ever see it; many do not know such a place exists. Perhaps if the crater were the set for a movie, or if it were built with an erector set, more people would be aware of its existence. However with all the work that has to be done it is probably better that the tourists stay along the shore on Puerto Rico, and leave the A.I.O. for the scientists.

. . . AND BELOW

Descent Into the Pacific

by Marsha Camp '68

As a consultant to the Navy's "Man in the Sea" project, Prof. Perry W. Gilbert of the department of zoology spoke on his favorite topic, sharks, before the Sealab II aquanauts early in August. The topic was of vital interest to the men who later descended to a pressurized cabin 210 feet off La Jolla, California.

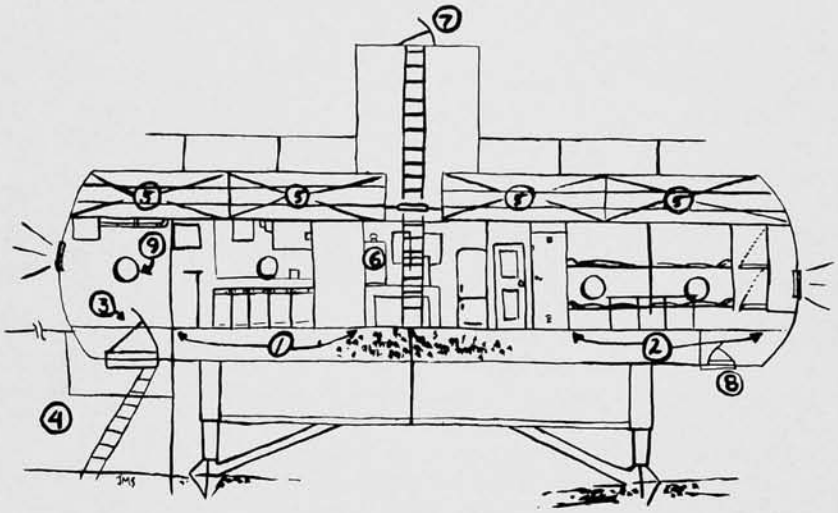
Sealab II is only one of the projects undertaken by the United States Navy to open the frontiers of the ocean to the increasing needs of mankind. The initial project, Sealab I, was conducted last year when four Navy divers spent 11 days in a special underwater habitat at a depth of 193 feet off Bermuda.

This year the project was expanded to 28 men, divided into three groups. Each group spent 15 days in the ocean this fall.

The Sealab II aquanauts lived in an underwater laboratory. Referred to as the "habitat" by researchers, the Sealab II is an ocean-going vessel capable of vertical motion. It is 12 by 57 feet and cylindrical, and is divided into laboratory, galley and bunk room. The men were able to leave their quarters for a swim in the ocean and re-enter through an anti-shark cage and an access hatch.

A unique aspect of the craft is the atmosphere it provides for its occupants. The "air" they breathe contains helium instead of nitrogen and is at a pressure of seven atmospheres, just equal to the water outside. The absence of nitrogen at high pressures prevents a dangerous condition known as nitrogen narcosis, or "rapture of the depths."

Normally, water pressure limits the depth to which free swimmers can descend and still accomplish useful work. But with special equipment like Sealab II, men can remain on the ocean floor for extended periods of time without harm, as shown by the Sealab experiments. What is more important, men can perform various tasks which are basic to the future use of the ocean as a natural resource.



Jane Silvernau

Diagram of Sealab II: (1) laboratory area, (2) living quarters, (3) underwater access hatch, (4) shark cage, (5) water ballast, (6) power panel, (7) upper access hatch, (8) emergency escape, (9) port hole.

The pressurized helium atmosphere of the Sealab craft allows greater efficiency in work situations than is possible using conventional diving methods. In the past, it has been necessary for the diver to return to the surface to rest and replenish his oxygen supply. He wastes valuable time compressing and decompressing slowly as he travels between an underwater work area and the surface. Using Sealab II equipment, the same diver can remain on the job for several weeks.

The aquanauts spent an average of 45 minutes per man swimming in the ocean each day. Their schedule included testing new equipment and collecting data and samples from their environment.

A concrete structure known as the Bethnic Laboratory served as a relay station for data reports and communication with the support-vessel and the shore. Placed 100 feet from the habitat, its television channels made possible constant monitoring of the work site.

The salvage of a Navy aircraft was carried out using a new plastic foaming technique. The plane was filled with liquid foam which hardened and floated it to the surface. Wearing wet-suits of heavy rubber, the aquanauts also patched a damaged steel hull sunk for this purpose. They used a novel tool, a "stud gun," unusual because it produces no recoil.

The aquanauts also operated an undersea weather station which collected data on velocity of currents and temperature fluctuations. Such data is important as a supplement to our knowledge of the ocean because it offers a continuous report on conditions. Most of the information so far collected comes from instantaneous measurements or samples taken by surface ships.

By the Treaty of the Continental Shelf, of June 1964, the United States gained rights to over one million square miles of virgin underwater lands. This acquisition has been likened to the Louisiana Purchase in the potential wealth of its resources. Developing the technical means by which the free swimmer will aid in recovering this wealth is the aim of the "Man in the Sea" project.

CHRISTMAS: A RELIGIOUS OR COMMERCIAL HOLIDAY

by Michael Barclay '69 **photos by John Polastri '69**

Has Christmas, with its plump stuffed turkeys and its devoutly sung carols, lost all of its religious significance and become merely a time for merchants the world over to get rich? The *Cornell Countryman* asked a number of foreign students this question to find out how much commercialization dominated their Christmas.

David Boxer

David Boxer, an undergraduate from Jamaica, made this reply, "Our Christmas is no more commercialized than any other country. Before the Americans brought Santa Claus to Jamaica, Christmas was the observance of the Birth of Christ. The people, composed of a large percentage of Catholics, went to church and prayed. Afterwards, they would go to their homes and spend the day feasting and frolicking with the family. Now, the people (who earn around 30 dollars per week), spend as much as 50 dollars on one gift! The extent to which the dollar dominates Christmas is evident even in the government. To retain a favorable populace, the local governments provide work for the people by "fixing" the roads directly before Christmas. Merchandise is usually placed on sale about thirty days before Christmas. Even the rural Jamaicans come to the towns and erect shabby stalls, hawking their wares on the streets and in offices.

"As I said before, the people are religious. Therefore, they go to church on Christmas Day. However, those who don't regularly attend church are found piously praying during Christmas."

From the British Isles, Irish undergraduate Jim Sheehy answered the question from a different perspective, "Our country is less dominated by commercialization in Christmas mainly because of the Catholic supremacy. The people live their religion; thus the holiday is a time for paying homage to Our Heavenly Father and a time for family festivities. The youngest member in each family lights the candle and leads the rest in prayer.

"We are not without commercialization. In our cities, the store windows dazzle the eye at every turn. The toys and other things usually begin to appear about two weeks before Christmas Day. This is through the influence of the American economy."

From our Latin American neighbor, Panama, undergraduate Rogelio Novey had this to say, "Commerce is incorporated into religion. Christmas in Panama is very similar to Christmas on the American farm. Both the American farmer and the Panamanian go to church, honoring and praising God. Both, partly due to economic reasons, do not spend large amounts on gifts. I think that these gifts hold more love than the hoard of gifts bought to obtain love, parent-child love, with the dollar bill."

David Mitchell, undergraduate from the Netherlands, provided still another view to the question with his reply, "I would say that the Dutch Christmas is more religious and less commercial than in the United States. There are several reasons for this. First of all, the Dutch are a very religious people. This is due to their constant struggle against the brute force of nature in the reclaiming of the land from the sea. With the constant danger from the sea behind the dikes, the people feel that they live in God's protective hand and therefore honor Him reverently. Second, the Dutch are not affected by the religious decay and monetary riches that are part of the American upper-middle class. The Dutch do not spend nearly as much on Christmas gifts as do the people in the United States. Third, and last, the Dutch are a frugal people. They just don't want to waste their hard-earned money on frivolous and non-functional luxuries. Their dollar is

David Mitchell

fought for too hard to be squandered on nothing. This means, however, that the gifts, when received are of greater meaning to the receiver."

Has Christmas lost its holy origin and become swallowed up in a world dedicated to the dollar? It would seem so from the reaction of our many foreign students.

CORNELL SOCCER TEAM

by Greggory Morris '68

In the past years soccer has not been very popular at Cornell. That is, it has not been as popular as the three sports that surround it: football, hockey, and basketball. However, this year, soccer possesses one element that makes any sport at Cornell popular: victory.

The Cornell soccer team is experiencing its first winning season in eight years. Under the astute coaching ability of Jerry Lace, Cornell soccer has compiled a won-lost record of five wins and no losses. The team has tied once with Princeton.

Last year was a season of absolute agony. As Coach Lace put it, "We were losing in every conceivable way." Victory last year was as evasive as the ball during a game. The team compiled a disheartening record of one win and six loses; it tied twice.

Last year the team scored 17 goals in nine games. This year's team has scored 30 goals in six games and has limited its opponents to eight goals.

The prolific scoring of Joe Osakwe, the tremendous teammanship of Seth Dei (who leads in assists), and the tenacious defense of Otis Curtis have combined to give the soccer team a nucleus which enables the team to anihilate any opponent foolish enough to be on its schedule.

Coach Lace is stressing a different style of playing this year. In one of its strategies, soccer is similar to basketball and football. The strategy in these two sports is that the team that endures, and controls the ball the longest is the team that wins the game. Coach Lace is stressing a technique known as short passing. Unlike long passing, short passing stresses a ball-control game. By allowing the ball to be passed (kicked) a relatively short distance to a teammate, it gives the team control of the ball and allows less chance of the ball being intercepted. It also allows the team to set the tempo of the game. The scores of the first six games show the result of this technique: Syracuse 0, Cornell 12; Rochester 3, Cornell 5; Cortland 1, Cornell 4; Harvard 1, Cornell 3; Princeton 1, Cornell 1. Except for one game, Cornell has wreaked devastation on its opponents.

Coach Lace explained that soccer combines the smooth fluid play of basketball and the gruelling grinding game of football. Known in European countries as "association football," soccer is probably one of the most popular international sports. One of its attributes is the consistency of the rules that govern it. Little variation in rules allows this sport to be played competitively on an international level. The game has two 45-minute halves with a ten-minute rest period. The playing field is 100 to 130 yards long and 75 to 100 yards wide. The only game that is similar to soccer is rugby. In rugby, however, the ball is allowed to be handled and carried to the opponent's goal.

Coach Lace revels in his team's present performances, but is cautious about one future opponent: Brown.

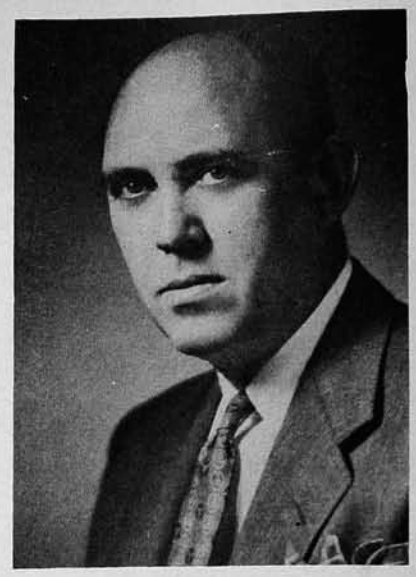
"Brown is very tough," said Lace, but then he smiled and said, "So are we." Brown and Cornell are presently the two contenders for the Ivy League championship, and more than likely, the crown of the Ivy League will be settled when they meet. However, Lace is very optimistic about receiving a regional NCAA bid for the soccer championship. The contest with Brown will not have any effect on whether Cornell receives the regional bid or not.

Fine coaching and a working team have produced a long overdue winning season for the Cornell soccer team.

Courtesy Ken Singer

Cornell player driving for goal.

COUNTRYMAN CAPSULES



Dean Charles E. Palm

"Where Have We Been and Where Are We Going as an Industry" was the theme of the New York State Flower Growers, Inc. 20th annual meeting held at Cornell. The meeting consisted of a short course, dedication of the new bioclomatic laboratory by Gov. Rockefeller, and a symposium. The labs and adjoining greenhouses were named the Kenneth Post Laboratory after Prof. Kenneth K. Post, who headed the floriculture department until his death in 1955.

Ceremonies recognized Professor Post's many contributions to the floriculture industry. For instance, his research resulted in the production of chrysanthemums throughout the year.

* * *

Prof. A. A. Johnson, state director of extension, announced two appointments to the agricultural leaders office at Cornell.

Prof. Arden F. Sherf has been named extension program leader of plant sciences. He received the B.S. degree from the University of Minnesota and the Ph.D. degree from the University of Nebraska. Before his appointment to the Cornell staff as an extension project leader in plant pathology and specialist in vegetable diseases in 1954, he was an associate professor of plant pathology at Iowa State. Sherf will have leadership responsibilities in developing and carrying out extension programs on fruit, vegetables, floriculture, ornamental horticulture, and sugar beets.

W. Dale Brown has been appointed assistant state leader of county agricultural agents in 12 eastern counties. In addition he will assist in developing and carrying out the state-wide dairy program offered by the Extension Service. A 1939 graduate of Cornell's College of Agriculture, Brown has completed 22 years as county agricultural agent. In 1956 he received a $1,000 grant from the New York Artificial Breeders Co-operative to conduct special research in the animal husbandry department. In 1957 he received the Distinguished Service Award of the National Association of Agricultural Agents. He received the M.S. degree from Cornell in 1959.

Dean Charles Palm of the N.Y. State College of Agriculture has been named chairman of the Agricultural Board of the National Academy of Sciences-National Research Council. The board brings scientific talent of government, industry, and universities into committees for study of the broad and diversified problems of agriculture.

As board chairman, Dean Palm heads a group of committees concerned with animal diseases and health, genetic research, educational policy in agriculture, pests and pesticides, and numerous other projects involved with agricultural research.

Dean Palm has headed Cornell's College of Agriculture since July, 1959. Previously he was director of research for the Colleges of Agriculture and Home Economics and director of the Cornell University Agricultural Experiment Station.

* * *

The College of Agriculture will play its part in the Cornell University Latin American Year from Nov. 29 to Dec. 3, when symposia on "Potentials of Hot Humid Tropics in Latin America" will be held. Present will be authorities on Latin America from the United States, Brazil, Mexico, Peru, Venezuela, Colombia, Honduras, Ecuador, Costa Rica, Puerto Rico, Guatemala, and the Netherlands. Topics discussed will include physical-geographical conditions, the region and its problems, and the nature and potential of tropical soils.

* * *

Since hens lay more eggs when daylight is longer, artificial light is critically important in the winter months. According to Prof. Clesson N. Turner, agricultural engineer at the College of Agriculture, studies show that 40-watt incandescent lamps on light colored ceilings 10-12 feet apart produce the best results. Layers are only stimulated by light up to a certain point; any amount over this is wasted. The combination of artificial lighting and natural daylight should be increased to 17 hours a day during the laying period by adding 15 minutes per week to the lighting schedule.

ALUMNI

Herbert J. Dietz, '52, 14 James St., Sidney, New York, taught in the General Martin Central School, Glenfield, from 1945-1960. He received his degree through work done during the summer at Cornell. From 1960-61 he served as principal of the Sidney Junior High School, and is presently the Curriculum Coordinator and Elementary Supervisor of the Sidney Central School. He is affiliated with many organizations: National Education Association, New York State Teachers' Association, Sidney Central School Association and many more. He has served as president for the Susquenango Elementary Principals' Association, Lewis County Agricultural Teachers' Association, General Martin Parent Teachers' Association, Black River Schoolmasters' Association, and the General Martin Teachers Association.

Barbara Bennett Agostini, '55, Food and Agriculture Organization of the U.N. Viale delle Terme di Caracalla, Rome, Italy, is presently an economist in the Investment, Trade, and Price Analysis Branch of the Department of Economic and Social Affairs for the FAO. She has served at the M. W. Kellogg Company, New York City, and attended Harvard University in the Department of Economics.

Karen Gay Anderson, '57, writes that she is now in San Francisco in charge of the landscape architecture department of the 200-man Frisco office of Skidmore, Owings, & Merrill, Architects and Engineers. She adds that the distance her work carries her is as close as one block from her home and as far away as Australia.

Sp/5 Michael E. Sangaline, '61, R.A. 12676137, 12 U.S.A.S.A.F.S. (6012), APO, San Francisco, California, is stationed in Chitose, Japan, 500 miles from Tokyo on the island of Hokkaido. He was previously stationed at Travis Air Force Base in California.

John E. Franzreb III, '64, now has John E. Franzreb IV in the family. Instead of singing lullabyes, John III is producing full-fledged wild west shows for both John IV and local stores as opening entertainment.

Robert A. Jacobsen, '65, is practicing veterinary medicine in Connecticut. Along with his new practice, he has a new addition to his family. His wife Mary Jane presented him with a baby boy, Christopher.

Samuel S. Goldberg, '19, 369 W. Hudson St., Long Beach, New York, has retired from the New York State Supreme Court after serving the court for 38 years as a trial term clerk. He writes that he is dividing his time between Long Beach and Florida. He has a son, Dr. Joseph H. Goldberg, 43, practicing dentistry in Long Beach.

About 150 New York high school students gathered at Riley-Robb Hall on November 13, 1965 for the Annual College Open House under the auspices of the Alumni Association of the New York State College of Agriculture and the department of resident instruction.

Prospective high school seniors and promising high school juniors were given a glimpse of life at the College of Agriculture. Members of the student body and faculty participated in the briefing.

The day started with registration in Riley-Robb Hall and continued with a welcome by the Dean. A discussion on educational opportunities was followed by a panel discussion on student life on the College of Agriculture campus by members of the student body. A tour of the campus with student guides followed luncheon in Stocking Hall and then a talk on admissions procedures and employment opportunities. The final session of the day was an informal seminar in Riley-Robb Hall with various members of the faculty.

President of the Alumni Asociation, R. H. Everitt and Vice President Norman J. Smith stated that "The boys and girls who have participated . . . have found the day at Cornell a worthwhile experience."

A recent study of the graduates of the New York State College of Agriculture from the classes of 5, 10, and 15 years ago revealed that only one-third of them are doing today the work they anticipated when they entered college. Only half of Cornell's agricultural graduates are still following the same work they entered after graduation.

The survey was conducted by Prof. Howard S. Tyler, vocational counselor in the college's office of resident instruction.

Of the graduates who entered farming upon graduation, 74 per cent are still farming. This is a higher percentage than any other occupation. It is pointed out that when they entered Cornell, only 59 per cent indicated a desire to farm.

Eleven per cent of the class of 1949 and 10 per cent of the 1959 class, but only 7 per cent of the 1954 class, are still farming.

The survey shows the largest number of graduates of the three classes have entered business or industry. More than half of these businesses or industries relate to agriculture — growing, processing, or distributing food, selling farm supplies and feed, etc.

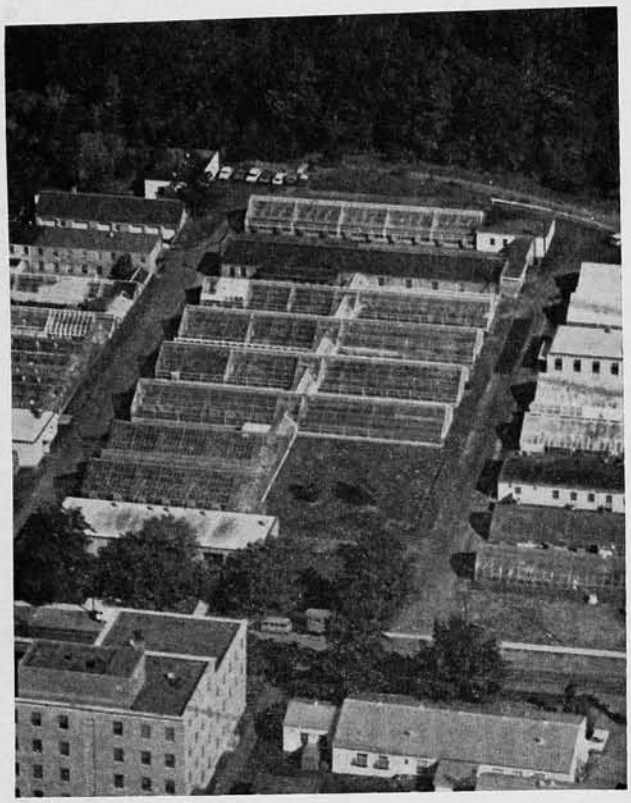
Those teaching on the college level, or in college administration or research, have been consistent with 11, 12, and 10 per cent of each class so engaged. This consistency also appears in public teaching and administration.

Professor Tyler said salary information indicates a wide range for similar jobs. Also, though the older graduates started out at a lower salary than the other two classes surveyed, their incomes are now generally greater.

Earnings of farms range from $1,200 to $24,400. Those in business or industry range from $4,920 to $32,000 for a 15-year graduate; and public school teachers range from a low of $5,950 for a five-year graduate to a high of $13,300, also for a five-year graduate.

Professor Tyler noted that nearly four out of five of the graduates in the three classes returned the questionnaire, and 249 indicated they had received advanced degrees. A total of 717 returned the survey questionnaire.

No. 3 in this year's series from the New York State College of Agriculture, a contract college of the State University at Cornell University, Ithaca, N. Y.



The Cornell bioclimatic laboratories at their dedication by Governor Nelson A. Rockefeller on October 26, 1965.

Advance In Agricultural Research:

Cornell's Bioclimatic Laboratories

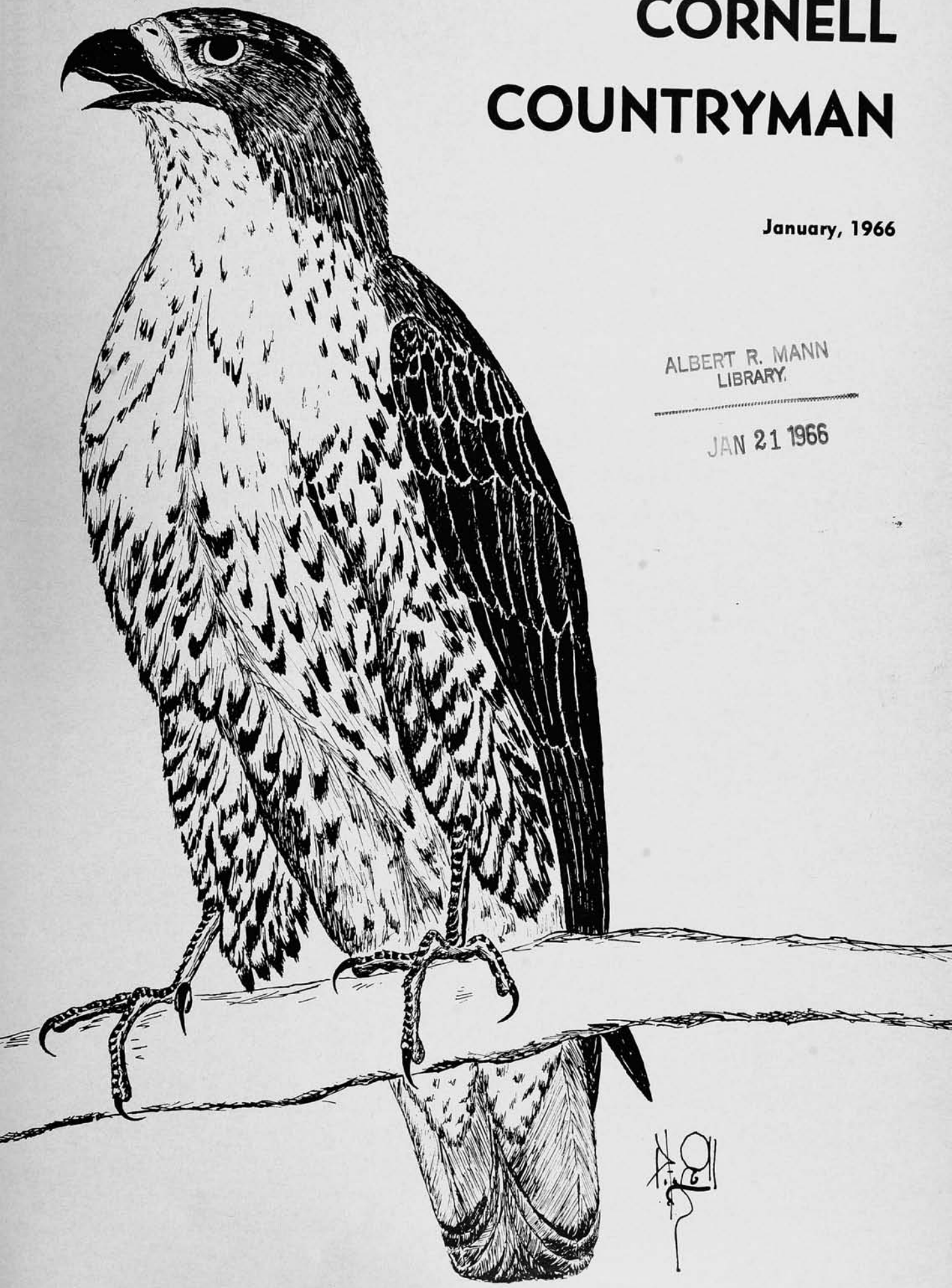
The dedication of Cornell's bioclimatic laboratories by Governor Rockefeller on Oct. 26, 1965 marked the end of phase one of a 4.5 million dollar program that will provide Cornell with facilities to serve an agriculture more dependent than ever on technical knowledge.

The 22 controlled growth chambers are among the finest in the world. In 1960 when state funds were made available no growth chambers equal to the exacting tasks required by the Cornell scientists existed. The lab will enable researchers to probe behavioral and growth patterns free from uncontrolled or unknown variables. Within the complex of growth chambers, greenhouses and laboratories, uniformity and dependability of temperature, humidity, light, and nutrients can be assured.

Since its founding, the College of Agriculture has been a leader in world agriculture. It can maintain its position only if it continues to meet the demands placed on agriculture with full use of its scientific tools and research. This new scientific facility with its program of expansion will assure a strong Empire State agriculture for years to come.

CORNELL COUNTRYMAN

January, 1966



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Sapsucker Woods:

Haven For Winter Birds

David G. Allen

by Alan Hall '67

The snow lies deep in the woods and the trails are impassable with deep drifts. A few bare trees are silhouetted against the ice-choked pond; their branches stark against the cold winter sky. The tracks of a lone deer leave dark hollows in the snow. Icicles hang from the eaves of a low ranch-type building and partly obscure a wide expanse of picture windows bordering the pond.


David G. Allen

This is winter at the Lyman K. Stuart Observatory of the Cornell ornithology department, located in the Sapsucker Woods Bird Sanctuary three miles from the Cornell campus.

Despite its seeming desolation, the sanctuary is by no means devoid of life. A small section of the shallow 10-acre pond is kept free of ice. The open water is crowded with black ducks and mallards, about 800 of which remain at the sanctuary throughout the winter. They are shallow water ducks which would be unable to survive the winter on Cayuga lake, for once ice formed near the shore they would no longer be able to find food. If this pond was not open the ducks would be forced to migrate further south to find the unfrozen shallow water they require.

The woods are also very much alive. According to a census taken every January first, between 65 and 80 species of birds can be found in the area during the winter, and many of these can be found at the sanctuary during one of the two daily feedings. In fact so many birds come to the observatory for food that approximately two tons of corn are consumed each month of the winter, as well as hundreds of pounds of sunflower seed and suet. When the birds are fed, all the food is usually gone in 10 minutes.

At feeding many year-round bird residents may be seen. A flock of chickadees perches on a rail fence next to the pond and eats the smaller pieces of corn that the ducks leave. They are joined by cardinals and sometimes a robin or flicker that has not migrated south because it can find ample food at the sanctuary. Several crows peck at the corn amongst the ducks and mallards. Screams from a bluejay can be heard from the woods. In the distance red-tailed hawks line the telephone wires and survey the snowy fields. Occasionally one will leave the wire and return with a freshly killed field mouse. Downy, hairy, and pileated woodpeckers drum on the dead trees seeking the insects upon which they live. Often the stillness of the night is disturbed by the cry of a young rabbit killed by a silent-winged owl.

In the woods the junkoes and winter wrens feed on the summer's berries and seeds. These birds migrate to the Ithaca area from much further north. Sometimes they join the chickadees in eating seeds provided by the sanctuary. Every now and then a solitary evening grossbeak will appear at the sanctuary, as a result of an erratic southward migration. Thus these birds aren't seen at the sanctuary each year.

Inside the observatory building people stand before the picture windows or sit in comfortable chairs and watch the ducks swimming on the pond or feeding. By means of a stereophonic public address system the sounds are "piped" into the building from microphones placed under the eaves. Other visitors either browse through a small reference library which contains the principal reference works and journals of ornithology, or study an exhibit of birds in art.

The sanctuary is open to the public all year and is visited by as many as 300 people each day. You may watch the birds from the observatory where staff members are always willing to answer your questions, or else you may hike the sanctuary's four miles of trails. Anyone is welcome and to the bird lover, the professional ornithologist, or just the curious, a trip to Sapsucker Woods is well worthwhile.

AGRICULTURE IN THE JUNGLE

by John R Short '67

When Americans (who are conscious of the disastrous effect of prolonged drought and sudden hard frost on agriculture in the United States) consider the humid low-land tropics of Latin America, they may think of the abundant rainfall and year-round warmth in much of this area; and they might believe that tremendous potential must exist there for a highly productive agricultural economy. The truth of the matter, however, is that the agriculture of this area may not be potentially productive.

The possibilities and problems which these climatic and other conditions present with respect to successful agriculture in the Latin American tropics was the subject of a conference sponsored by the College of Agriculture from Nov. 29 to Dec. 3. The conference, entitled "The Potentials of the Hot-Humid Tropics in Latin American Rural Development," brought to Cornell more than 20 scholars and scientists from 11 Latin American countries in addition to several from the United States to examine the efforts now being made, and the work which must be accomplished in order to develop agriculture in the Latin American lowland tropics. This program, believed to be the first of its kind in the United States, was the College of Agriculture's major contribution to the Cornell Latin American Year, a year-long series of conferences initiated to focus attention on the culture and problems of South and Central America.

The importance of this conference and of the development of agriculture in this area was emphasized by Charles E. Palm, Dean of the College of Agriculture, when in his opening remarks to the conference he said that a more efficient agriculture in this area is indispensable if the region is to attain a "healthy economy, and if it is to meet the ever-growing food requirements of a rapidly increasing population." Several members reiterated this second point during the conference when they warned of the serious malnutrition among many peasant families resulting from the inadequacy of food productivity, and the low nutritional value of much of the food.

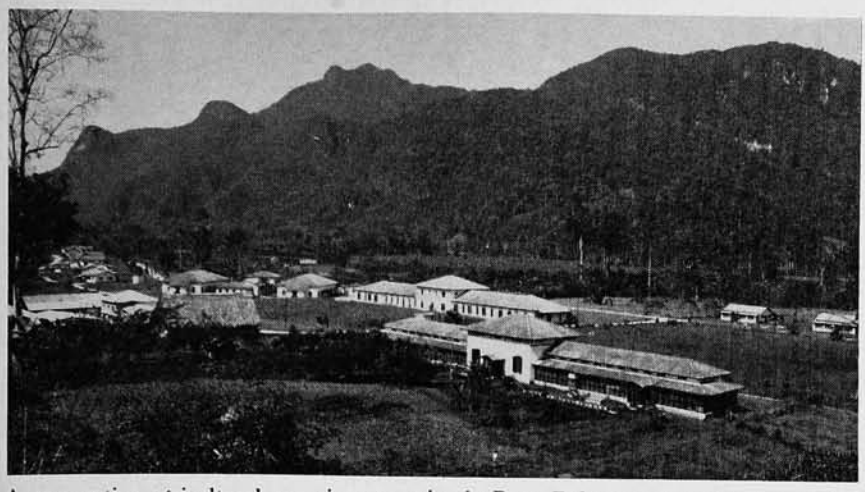
A small, inefficient subsistence farm in Nicaragua. Extension agent leaves farm equipment used to spray livestock for the control of tick infestation.

The conference's significance could be summarized with this statement from Dean Palm. "I believe that there cannot help but be a certain sense of urgency in our proceedings. After all, we have not convened to discuss abstractions in a scholarly but detached manner. Our talk will not be of the distant future nor of things little related to reality."

The five days of lectures, seminars and workshops produced a few differences of opinion as to the extent of the humid tropics' potentials for agricultural development. However, there was a consensus as to several basic problems which must be overcome, and several factors which offer hope for an improved agriculture in the tropics of Latin America.

One of the basic problems is that the majority of the farms are operated on a very small scale by poor, uneducated peasants who apply the most primitive and inefficient farming methods. Prof. Raymond E. Crist of the University of Florida explained that this subsistence farming consists of "clearing land of tropical forest or bush, . . . burning the trash when dry; and planting of crops for from one to five years. As yields decline owing to the leaching out of . . . plant nutrients, as weeds take possession, and as rodent, bird, and insect populations build up, this land is abandoned for another nearby plot." The jungle will eventually take over, but in some regions such as mountain slopes, serious erosion will result, slowing down the reforestation process. Crist pointed out that these farmers have no knowledge of advanced agricultural practices because "education has not pentrated their world."

Manuel Alers-Montalvo of Colorado State University discussed another cultural barrier which has limited these farmers' efficiency



A cooperative agricultural experiment station in Peru. Delegates at conference emphasized the need for more research institutions in the tropics of Latin America.

Many peasants value their farm not as a means of making a living but as an end in itself. They often value their land for non-economic reasons, such as the tranquility it affords them, and the fact that they were born to the land. This indicates a very close emotional attachment to the land, and hence extreme difficulty is encountered in persuading the farmer that he is operating inefficiently and should therefore abandon his land and help create a more efficient agricultural system. Breaking down these cultural barriers of very limited education and primitive values certainly has to be the stickiest problem of all in the development of tropical agriculture.

The physical factors which affect tropical agriculture form another class of problems altogether.

One of the more important physical problems is the tropical soil's lack of adequate fertility. Phosphorus, potassium and especially nitrogen are often present in insufficient amounts. The problem can be alleviated only by intensive fertilization, soil management, and proper crop rotaton. This problem also makes the establishment of good pastureland for cattle difficult unless the fertilization is maintained, and soil characteristics, type of grass planted, growth characteristics of that grass, and intensity of grazing are all closely correlated.

The abundant rainfall is also a problem in areas that have been cleared for crops and pastureland. It often permits the re-establishment of weeds and forest vegetation on these lands. Although rainfall is usually plentiful, prolonged drought periods are frequent in many regions of the tropics, and have had an adverse effect on many pasturelands.

Other physical factors which create problems for tropical crops and livestock are insect pests which breed heavily because of the warm climate, a large variety of diseases which spread rapidly in this region, and the extreme heat which causes problems with respect to the milk production of cattle.

Surprisingly enough, many of these physical conditions which present problems for tropical agriculture also offer in another sense potentials for development. Most of the soil in the tropics is porous, erosion resistant, and easily tilled. The plentiful rainfall in most areas of the tropics and the year-round warm temperatures provide two factors which are very basic to a succcessful and productive agricultural system — plenty of moisture, and a long growing season.

The greatest source of hope may lie in the extent to which technology has advanced. As W. C. Paddock, formerly head of Latin American Affairs of the National Academy of Science, emphasized, "The hope of the area lies in an application of 20th century science and technology." It is certainly conceivable that many of the physical problems previously mentioned might be solved by some facet of this technology. It may provide an inexpensive method for clearing tropical forests, it might offer an effective method for restoring nutrients to the soil and controlling the regrowth of unwanted vegetation, and it may even rid tropical agriculture of disease and insect pests.

The conference produced several significant conclusions — and most of these emphasized in one way or another the need for more concentrated research on the subject of agriculture in the hot, humid tropics.

Also emphasized was the need for further education of all groups of people concerned with the agricultural development of the tropics. More trained technicians and scientists are needed, and more and better teachers must be trained. Also, the political leaders of the areas involved should be educated as to why agriculture in the tropics must be improved, and how this can be accomplished.

The proper education of the individual farmers is also indispensable. In fact this may be the key to the success of the entire effort. If the cultural barriers are not broken, and the farmer not made to understand the importance of adopting the better agricultural methods that research may bring, all this work will go for naught.

A field being cultivated at an experiment station in Peru. Low soil fertility is a problem in much of the tropics.

Functional Beauty At Beebe Lake

by Brian Regrut '68

Cornell's chilled water plant attractively set above the falls overlooking Beebe Lake.

Serenely set on the south bank of Beebe Lake overlooking the falls is one of the lesser known buildings of Cornell. The attractive stone structure is Cornell's unique chilled water plant.

In keeping with the building's exterior beauty, the interior is brightly decorated. The beige of the offices blends well with the blues, greens, and tans of the rest of the building and of the equipment that is in it. The charm of the building however does not detract from the service performed there, that of chilling water.

Until 1960, most of the water for air conditioning systems at Cornell was used once and then down the drain it went. The demands on the filter plant were increasing rapidly. To relieve the filter plant and to prevent the waste of water, the chilled water plant was proposed.

The increased demands for air conditioning in several of Cornell's present buildings, beside those that are under construction, and still others in the planning stage, were recognized by the engineers of the Department of Buildings and Properties. To meet the demands practically and to allow all air conditioning equipment to be consolidated, a system whereby water could be cooled at a central location and recirculated was designed.

A site at the south-east corner of Beebe Lake was chosen, and the chilled water plant was built. Condensers and pumps were installed, distribution pipes were laid under the campus, and the plant was in business. Although the present load is light, the system is designed to meet the growing needs of Cornell.

From Forest Home Road the plant looks like a chalet on the lake. However, one has only to open the front door to realize that the building is not as peaceful as it looks. The mild roar that fills the building announces the activity that is going on. The whine of the pumps and the hum of the condensers make it quite evident that the plant is in operation.

The building houses two 1200 ton centrifugal refrigeration compressors, and four large water pumps. Two of the pumps circulate water from Beebe Lake through the condensers and back to the lake; the other two pump the chilled water to the buildings and back to the compressors.

The two compressors chill water to 41 degrees for circulation throughout Cornell. The temperature of the water in the return line varies from 44 to 51 degrees depending upon the load of the system. The temperature of the water brought in from Beebe Lake is also important, since cold, winter water could be detrimental to the system. A warm water recirculation system has been built in, to maintain a relatively high water temperature for the condenser circulation.

The entire chilled water system can be monitored and controlled by an advanced Honeywell control center. From the control room, which looks like a part of N.A.S.A.'s space center, the operator at the chilled water plant can learn of temperature and humidity conditions at any installation along the line in a matter of seconds. This information enables the operator to pinpoint trouble spots without having to leave the plant.

Although the plant is new, it is already supplying chilled water to the Plant Science building, Newman Lab., the physical sciences buildings, Olin Library, and Rand Hall. The agronomy building and Baker extension, both presently under construction will be connected to the chilled water system. Plans are also being considered to equip some of the older buildings on campus with chilled water air conditioning.

Cornell's chilled water system is the first of its type to be operational. It is the answer to demands for increased air conditioning, and it is also a major step in the conservation of our water resources. The plant has proved very successful, and corporations and other universities are instituting similar systems to meet their needs for chilled water.

A Teaching Clinic

by Alexander Harwood '68

You walk into a tiled waiting room. There are couches and chairs lining the walls and in the center of the room is a large rectangular table covered with old issues of the *New Yorker* and *Post*.

The prospective patients sit or stand quietly by their seats, only occasionally wandering to another part of the room. One by one the patients get up as the receptionist, in her clean white uniform, calls out a name. This is what the average visitor sees at the New York State Veterinary College's Small Animal Clinic, but there is a great deal more than a modern and efficiently run office.

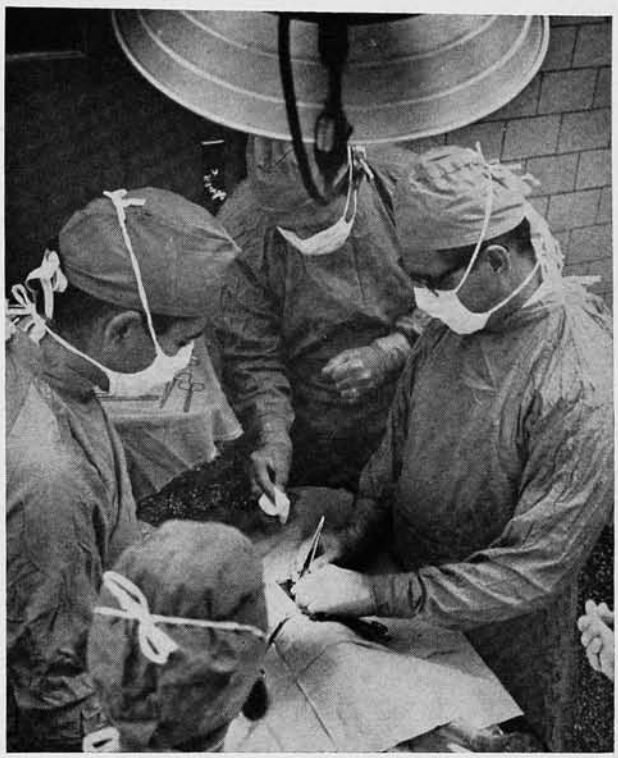
The modern simplicity of the glass and brick building which houses the Small Animal Clinic and the unobtrusive manner in which it is integrated into Cornell's veterinary college belies its complex nature and the important role it plays for both its patients and the veterinary students.

From an unassuming beginning in 1907, the Small Animal Clinic has made for itself a reputation as one of the world's finest. In its first year, under the direction of its founder and head, Prof. Pierre Fish, the clinic treated 103 cases. Prof. E. P. Leonard, a former student of Professor Fish, is presently directing activities at the clinic. The clinic now treats more than 10,000 cases a year, and while it still limits its patients to small animals considered as pets, its clientele has spread from dogs and cats to such oddities as: turtles, mice, hamsters, guinea pigs, skunks, monkeys, fawns, ocelots, and iguanas.

You can see an operation in which you would never know that the patient was not human. Nurses, interns, and assistants, whose faces are covered by sterile masks all make it look like a scene from *Ben Casey* or *Dr. Kildare*.

There are, however, many other small animal clinics which are modern and well-run but do not have the enviable reputation which Cornell's has. It is not only its efficiency and modern equipment which make it unique. When asked what makes our small animal clinic different from others, Prof. E. P. Leonard said, "The main difference is that it is a teaching clinic." According to Dr. Leonard, "Many of the best clinics are teaching clinics. You attract men who are doing research in various fields and who add stature to the institution."

Even though members of the Small Animal Clinic's staff are doing research, the patients brought in are not in any way experimented on. In an effort to cure the animals, the doctors at the clinic use the newest and most modern techniques, never using any unproven or experimental methods. Indeed, the animals brought into the clinic would be useless for experimentation because of their ailments and unknown backgrounds. What research is done, is done elsewhere in the veterinary college and on specially selected animals.



Veterinary students and doctors working together on a dog.

The clinic has a permanent staff of six. At this time the staff is: Prof. E. P. Leonard, Prof. R. W. Kirk, Assistant Prof. G. E. Ross, Jr., medical interns, M. J. Bojarb, R. S. Jackman, and P. V. Purvis. Instruction consists of lectures, recitations, and laboratory work. The clinic provides material for instruction in applied therapeutics, including the surgical as well as the medical. The students are assigned to patients, observe and assist in operations, and under close supervision have charge of the patients.

Each member of the staff is a specialist in his own field and has groups of three or four students assigned to him for instruction. These are fourth-year students who work with a different professor for one month each term of their senior year. In this way they profit directly from their instructor's knowledge and experience.

The good work of the staff of Cornell's small animal clinic, the reputation of the Cornell veterinary college, and the prestige of its faculty and graduates are not the result of an effort to gain esteem or recognition for work done, but rather the result of years of hard work and cooperation between faculty and students in an effort to better serve the community and the profession.

The Scholarship Story

by Jerryanne Taber '67

They come in many sizes, for many purposes, and go to many different people. Yet each one, whatever the amount, or whatever the reason, helps the prospective college graduate pursue his educational objectives. Through the years, the financial assistance offered in scholarships has provided an extra incentive for young people to further their education in institutions of higher learning.

Scholarships available to the student in the New York State College of Agriculture at Cornell cover a vast range of monetary values and personal interests. In the academic year 1964-65 scholarship funds awarded to students in the College of Agriculture amounted to approximately $640,000. This figure represents financing from a variety of sources, for a variety of purposes, and to a large cross-section of students.

Scholarships are initiated and supported by government bodies, primarily the states as in the case of New York, by well known business corporations and associations, by private individuals, by independent clubs, and even by student organizations on campus. Each is awarded on the basis of some qualifying criteria which may include the applicant's scholastic standing, his personal character, his residence of locale, the ability he has demonstrated in a specific area, and/or financial need.

Before embarking on a descriptive survey of the scholarship picture in the College of Agriculture, it might be well to recognize what costs are actually involved. According to the Cornell University bulletin for financial aid, student expenses are estimated as the following:

	New York Residents	Non-residents
Tuition	$400	$600
Fees	100	300
	Men	Women
Room	$400	$1085
Board	650	
Admissions deposit		
Books, equipment		
Personal allowances	$500	
Laundry and cleaning		

	New York Residents		Non-residents	
	Men	Women	Men	Women
Total expenses (Average per year)	$2050	$2085	$2450	$2485

Individual budgets will, naturally, vary according to personal circumstances, but these figures indicate the skeleton around which student expenses are expected to range.

New York State residents, initially benefitted by lower tuition and fees, have the opportunity to relieve their financial burdens moreso through Regents Scholarships. Awarded on the basis of scholarship examination scores, these appropriations by the state are applicable to expenses at an accredited college within the state for a normal period of four years. The actual amount designated to recipients is determined by their financial need. Further assistance from the state level includes Regents Scholarships for Deceased and Disabled Veterans and State Scholar Incentive Awards.

The remaining scholarships for the student of agriculture generally fall into two categories — those administered by Cornell University and those administered by the College of Agriculture. The scholarships which come under the realm of the University are open to students in any college. They are maintained through the endowments and annual gifts of alumni, friends, industries, foundations and other organizations. Application is made to the University's Office of Scholarship and Financial Aid. Final recipients are selected by Cornell student aid committees after careful consideration of each candidate. Normally, awards are granted for one academic year and must be reapplied for annually. Renewal may often be dependent upon the student's performance in the previous year along with the competition for available funds. Scholarships under the jurisdiction of the College of Agriculture follow the same basic outline as do those under the University with a few modifications. They are for agricultural students exclusively and often tend to be more specified in their purposes and qualification requirements.

The following examples illustrate the diversity of the scholarships in this division — those administered by the College of Agriculture.

Robert M. Adams Memorial Scholarship

Established by 4-H clubs in New York State in memory of Professor Adams, this award of $50 a year is open to state residents after their first year in college. First consideration is given to past or present 4-H club members. Bases for award are financial need, character, ability and scholarship.

William Frederick Dreer Fund

This award, currently for $2500, provides an opportunity for a worthy student specializing in floriculture or ornamental horticulture to study and practice in foreign countries for approximately one year. The major considerations of candidates are scholarship, character, maturity, seriousness of purpose, and promise of contributions in his field.

Eastern Milk Producers Cooperative Scholarships

Three awards of $500 are granted annually to assist worthy students in any class in the college

with preference given to sons and daughters of members of the Association. Recipients must rank in the upper two-fifths of their high school graduating class or class in college while demonstrating a need for financial assistance as well as outstanding character and leadership ability.

H. J. Heinz Company Scholarship

This award is open to students participating in the Food Distribution Program, providing $1000 for student's expenses and $500 for expansion within the program. Scholastic achievement, character, financial need, and students' desire to pursue a career in the food industry are major considerations for selection of a recipient.

Hudson H. Lyon Memorial Scholarship

This endowment of $1600 a year is intended to aid students who are preparing for Protestant Christian missionary service with preference to those including agriculture in their training.

Louis Ware Scholarship-Fellowship Award

This annual scholarship for $1000, provided by the International Minerals and Chemical Corporation, recognizes and encourages a student entering his senior year, academically and personally outstanding, who is likely to continue his achievements in the field of agricultural science in graduate school. Need is not a primary qualification.

Woman's National Farm and Garden Association Scholarships

One award of $250 is made biennially to a woman of the sophomore class on the basis of character, interest in agriculture, scholarship, and financial need. A second award of $200 is offered to a junior or senior woman on similar considerations, with preference given to girls active in a 4-H Club.

These examples are but a small number of the scholarship opportunities actually available to the students in the College of Agriculture. Many more companies, private estates, and memorial funds can be cited as sources for scholarships. Further information for details can be found in the annual publications of the Cornell University Announcements for the College of Agriculture. The vast range of purposes and qualifications makes it conceivable for nearly any student worthy of financial aid to receive assistance for his college expenses through scholarships.

Monetary assistance is also awarded in the form of prizes for outstanding accomplishments made during the course of a student's college career. Academic excellence is recognized by such awards as the Alumni Prizes which are based on a student's cumulative average. Excellence in writing ability or public speaking is encouraged by the Paul H. Guilden Memorial Endowment for articles published in the *Cornell Countryman*, the Eastman Prizes for Public Speaking, and the Rice Debate Stage Prizes for public debate on farm life problems. Frank B. Morrison Prizes are awarded to winning participants in the Student's Fitting and Showmanship Contest held annually.

After the applications have been completed and the scholar recipients have been notified, there still remains some question as to how or in what form the

Scholarships enable many students to obtain their college education.

scholarship funds actually reach these recipients. It is generally common procedure for the college to accredit the sums or amounts directly to the student's account with the University in order to simplify and facilitate the administering process. Then the money due for tuition and fees is automatically deducted. If the amount designated by the scholarship does not provide the entire costs of tuition and fees, the balance must be provided directly by the student. In the case that the scholarship exceeds the amount due, the student receives a check for the balance to use at his own discretion.

It is certainly evident that the student in the New York State College of Agriculture has at his disposal numerous scholarship possibilities. It appears that all interested or at least deserving individuals would be able to satisfy their needs. But demands on young people today to complete the college experience are constantly increasing. Keen competition arising from larger college populations and more applicants along with the pressure for the expansion of facilities, has created a continual upward trend of educational costs. This gyrating effect of expenses in turn requires more and more monetary encouragement to young people such as that provided by scholarships. As Prof. J. P. Hertel points out, the new federal law recently passed for the appropriation of funds for aid to higher education will probably do a great deal to expand the scholarship funds presently available. These federal funds, Professor Hertel suggests, will probably be channeled through the states and then to the institutions within the state's jurisdiction.

The $640,000 granted to agricultural students in 1964-65 appears to be a large and adequate sum. Hopefully, it will grow enough each year to meet growing demands, thus enabling more and more qualified young people to fulfill their educational objectives.

This is one article in a series of two on scholarships.

WHILE THERE'S WATER TO SAVE

by Joan Solomon '67

The problem of water shortage presently arouses acute concern in New York State. No longer is water looked upon as an overflowingly abundant resource, unlimited in quantities, available at the turn of a tap. In many areas the reservoirs are at dangerously low levels. Now is the time for action.

The New York State College of Agriculture at Cornell has been a leader in the recent surge of much-needed water resource studies. Through funds from the U.S. Department of Interior, the U.S. Department of Agriculture and New York State, the College's Experiment Station has been running many research projects concerning different aspects of water use in the state.

A particularly noteworthy study, which has important implications, is now being conducted by Geoffrey Ferster, a graduate student in the department of agricultural economics. He proposes to study the present supply and demand of water in New York State, and to project these figures to some time in the future. He will then be in a good position to propose practical solutions for selected water problem regions in the state.

The first step in the ideal study would involve the examination of past literature and projects to become familiar with what has been done previously along the same lines.

The next step would be to determine how the use of water is divided in some geographic area. The amount of water used for livestock, for industry, for irrigation, and for domestic purposes would be examined. These amounts would then be associated with the supply of water in the given area. The supply end of the project is being carried on by engineering graduate student, William Strandberg.

The next part of the plan would involve projecting future use of water in the delineated geographic areas. The main assumption utilized here is that water use is a function of the economic activity in a given area. The task facing Mr. Ferster is that of projecting economic activity and then deriving from this the quantity of water use.

Finally, the plan would associciate the projection of water use with the present supply. This association would point up potential trouble areas. Where future use is greater than availability, a solution to the discrepancy would be looked for.

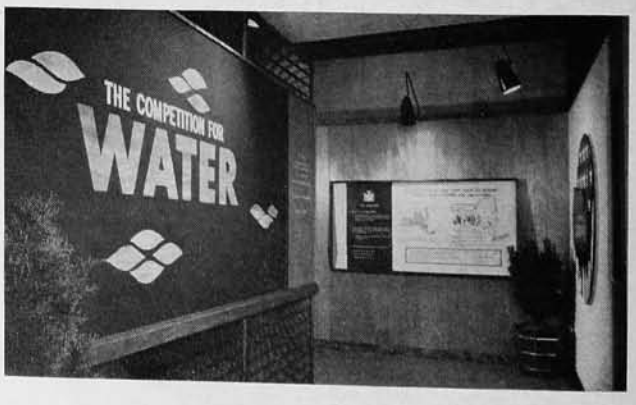
The above is the ideal plan. The scope is wide and the difficulties are great. Mr. Ferster has thus limited himself to the intensive study of the well-defined trouble spots, such as the area from Albany to Utica-Rome, where there is competition for the sources of supply. This competition is a key factor in determining the extent of the problem. Perhaps testing on a small geographic area will suggest directions of practical planning of water resources.

Approximately 30 other projects are being carried on in water research throughout the College of Agriculture. A series of experiments dealing with water flow through living plants is being conducted by the department of agronomy. Some of the questions being asked are—How does water move through plants? How does the plant respond to irrigation?

Another area of emphasis is the study of sources of pollution. Amounts of poultry waste material are reaching extremely high levels because of the recent increase in the size of poultry operations. This creates a tremendous disposal problem. A flock of 100,000 birds, which is now commonplace, creates sanitation difficulties equivalent to those of a city of 10,000 people.

A further contribution by the College of Agriculture was their exhibit entitled "The Competition for Water," which appeared at the Syracuse fair this past summer. The main purpose of the presentation was to inform the public about the water problem.

The College of Agriculture has been doing its share in water resource studies. Perhaps due to its efforts, the water crisis will not grow more intense, and New Yorkers will stop hearing the plea "Save water, while there's water to save."



College of Agriculture's exhibit at Syracuse fair.

Lacrosse-- Spring Sport with a Future

by Charles Wilson '69

This year's "Red Key Calendar" was dedicated to Al Kelz, our assistant varsity lacrosse coach, who was killed last February in a tragic plane crash. The accident deeply grieved lacrosse people all over the country, since Al Kelz had been one of the finest competitors in the sport. He played All-American first team in his senior year at the University of Baltimore in 1960, and was one of the game's most promising young coaches.

The sport that Al Kelz did so much for is truly "American" if any sport is. Actually it was borrowed from the Indian tribes of North America, who called the game "baggataway" and played it with huge masses, often as many as a thousand warriors on each side. Lacrosse was first adopted by French, then by British settlers. In 1867, G. W. Beers, a prominent player, strongly advocated that lacrosse be adopted as the national sport of Canada. His urging led to the formation of the National Lacrosse Association of Canada. The sport flourished in Canada and its popularity there was much more than in the United States.

The object of lacrosse is to send the 4½-ounce, rubber sponge ball into the opponent's goal. The goals are from 100 to 500 feet apart and are 6 feet in length, width, and depth. The ball may be kicked or struck with the stick, a light hickory staff with a triangular rawhide network at the end, but can be handled by no one except the goaltender.

A modern lacrosse game is divided into two periods of play, each of which begins with a "face off" at midfield as in hockey. There are ten players who are arranged in attack, midfield, and defense positions. The ball may be passed to the front, side, or rear and there is no offside. Charging is not allowed but body checking, or standing directly in front of the man, is an important phase of the game. Holding, tripping, and striking with the stick are prohibited by the rules and a player without the ball cannot be interfered with. Fouls are punishable either by suspension or by giving a "free position" to the other side. In the "free position" all players stand still at least five yards from the player with the ball and the referee calls "play."

Aside from the number of players, modern and classical lacrosse differ in one other respect; the Indians favored the long stick which can be used to hurl passes as far as 220 yards, while the modern players advocate a short stick and short, quick passing on a smaller field. Lacrosse is unique today in that it has the goal as in hockey, the passing of basketball, and the blocking of football.

At Cornell, lacrosse was initiated in 1892 but the first formal schedule was not played until 1898. The 1907 team shared the intercollegiate championship with Johns Hopkins when their record was 7-0. Cornell tied Lehigh for the intercollegiate title in 1914 and 1916. Since World War I Cornell has not had any teams of national stature but it was at this time that New York and New England became the center of lacrosse. Among the prominent Eastern lacrosse schools are Hobart College in Geneva, New York (the oldest), Cornell, Syracuse, Harvard, and Yale. Outstanding coaches of these schools were Dr. Covert of Hobart, Laurie Cox of Yale, and Nick Bawlf, who led Cornell to an undefeated season in 1933.

Ray Van Orman succeeded Bawlf at Cornell in 1940 and remained at this post until 1949. His best season was in 1944 when Cornell was 4-1. Ross H. Smith took over in 1949 and served for 12 years. His 1958, 1959, and 1960 teams were barely edged by Princeton for the Ivy League title. Last Spring, under coach Bob Cullen, Cornell defeated Princeton for the first time since 1932.

In the Spring of 1966 the head coach of varsity lacrosse will be Ned Harkness, who coached lacrosse at R. P. I. for 13 years before coming to Cornell. Mr. Harkness calls lacrosse "The fastest growing Spring sport on the Eastern seaboard in the colleges and prep schools where it is played."

The Cornell lacrosse team plays all of the Ivy League schools as well as Hobart, Syracuse, Colgate, the University of Baltimore, the University of North Carolina, and Cortland during its season which lasts from April to June.

Coach Harkness is anticipating a successful campaign this Spring since there will be a good nucleus of returning lettermen on the squad. The Captains are Doug Zirkle, an All-Ivy midfielder last year, and Tom Peddy, on the attack. Third string All-American Bruce Cohen will strengthen Cornell's attack while Ting Vanneman and Bruce Mansdorf will bolster the defense. Also returning are Buzz Lamb, Ted Glass, George Gould and Tom Quaranto. The prospect, then, for 1966, is a strong solid team which should fare well in competition.

Tom Quaranto, a Cornell lacrosseman.

Ithaca-
History In The Rocks

by Margot Jensen '66

Taughannock Falls

Why is Cayuga Lake so deep?—some 420 feet deep and 34 feet below sea level. Why is Taughannock Falls so high? – the highest waterfall this side of the Mississippi and higher than the towering Niagara Falls by some 50 feet.

About 550 million years ago the east coast was a low lying plain at about sea level with the exception of the Adirondack Mountains. At about this time the land began to sink and the ocean rushed in and remained for some 325 million years. During this occupation of the sea, the Adirondack Mountains were being eroded away and about 8000 feet of sedimentation occurred, 4000 feet of which is now exposed. The vast salt deposits in this area are evidence that the sea retreated several times leaving large lagoons which were subjected to extensive evaporation and thus large deposits of salt were laid down. The condition in the Finger Lakes Region during the deposition of salt was probably similar to the Great Salt Lake in Utah today.

About 200 million years ago the Appalachian uplift occurred, leaving gentle folds in this area. During a relatively long period of quiet, small streams and rivers reduced this area to a plain (often called a peneplain by geologists).

Even though this so called peneplain was near sea level at that time, calculations measure the plain to have been 3000 feet above present day sea level.

After another uplift 3 million years ago, or 197 million years after the first uplift, the process of erosion started again. Small hills and valleys were again formed by the erosion of streams and rivers.

One of these rivers was named the Cayuga River by geologists because it followed the approximate outline of the lake. It is interesting to note that the Cayuga River ran at about 900 feet elevation which is roughly comparable to the elevation of the Cornell Campus.

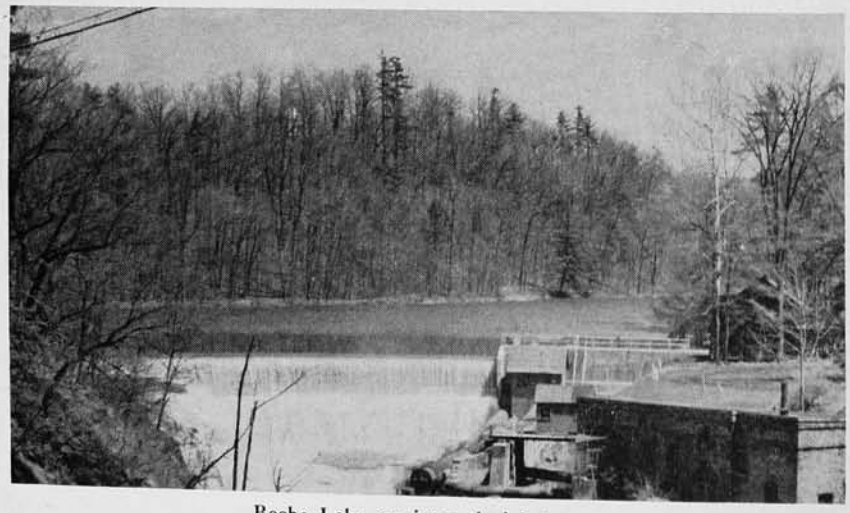
The Cayuga River was fed by many tributaries whose courses are indicated by the upper portions of most of the gorges found in this area. The tributaries, Fall Creek, Cascadilla, Six Mile, Buttermilk, Enfield, and Taughannock were classified as streams because they were well graded and bore no waterfalls.

The portions of the elevated peneplain which escaped erosion by the various rivers and their tributaries can be seen today in this area as a series of hilltops which are all at about the same level elevation. This was the elevation of the Finger Lake Region at the second uplift 3 million years ago.

At the onset of the Pleistocene, the ice age, glaciers moved down from the north. The Cayuga River was a convenient course for the ice to follow.

The glacier excavated the Cayuga River into a basin whose bottom was nearly 1000 feet lower than that of the river before glaciation. Most of the tributaries which ran crosswise to the river, escaped excavation by the glacier. Thus after 1000 feet had been carved away from the river bed, the streams which ran into the river were left hanging, thus producing great waterfalls at the edge of the newly formed lake.

In the Finger Lakes Region, the ice was interrupted by a warm spell, called an inter-glacial period. All the tributaries to the newly formed lake gradually eroded back and the inter-glacial gorges were formed. These gorges were much wider and deeper than the gorges we know today and for this rea-



Beebe Lake, an inter-glacial gorge.

son geologists suspect that the inter-glacial period was longer than our own post-glacial period.

Since these gorges were filled with debris by the second glacier, very few of them can be seen today, except where they have been re-excavated by present-day gorges. Fall Creek Gorge exposes an interglacial gorge in the area of Beebe Lake. In most cases, the present-day gorges run a different course than their inter-glacial counterparts ran.

It must be noted that when the glacier retreated after the second glaciation, it didn't melt all at once. (Some geologists suspect that we are just in another interglacial period.) This means that another glacier may well be coming south again. (Although there is no evidence of this now.) When the ice began to melt, the runoff began to fill the cavity excavated by the glacier and thus Cayuga Lake was formed.

The first Cayuga Lake was nothing as it is today. Geologists have evidence that the lake assumed about seven different levels before it assumed the level which it is at today. As the glacier moved back the runoff uncovered lower outlets and thus the level of the lake was successively lowered at each melting.

These different levels are known to be quite distinct since each successive level of the lake lasted for many hundreds of years.

Baker Delta

Ithaca Falls

At each level of the lake, the streams and gorges, which were tributaries to the lake, deposited eroded rock and debris forming deltas along the shore. The picnic area at Taughannock State Park is an excellent example of a delta today, being made up of the excavated rock from the gorge.

Each time the level of the lake dropped, the deltas were left hanging. There are literally thousands of big and small deltas scattered about Ithaca. An example of a hanging delta present on the Cornell Campus is the hill on which Baker Laboratory and Rockefeller Hall are located. Library Slope is also considered to be a hanging delta, which means that the periphery of the lake was at one time at the same elevation as campus.

With the geological history in mind, the glacially carved lake indeed seems quite marvelous. But what makes Ithaca so very scenic and challenging are the gorges and waterfalls which are also a result of the glacier activity.

Fall Creek Gorge, the largest of the three gorges near the campus, is quite fascinating. The gorge makes its descent to the lake, a distance of 400 feet, in a little over a mile. The positions and sequence of each waterfall are thought to have been determined by each successive lowering of the lake. At each lowering, the gorges were left stranded or hanging, causing a waterfall. This phenomenon is comparable to the initial hanging gorges caused by the glacier. The last level of the lake was possibly somewhere above the elevation of the Ithaca Falls. In the last 10,000 years, the Falls has moved back only a few hundred feet.

Taughannock Gorge, probably the most well known to visitors in the area, is quite different. A small waterfall composed of the nearly indestructible Tully limestone can be seen from the highway. The shale which lies above the limestone is quite destructible and at each lowering of the lake, this shale was worn away practically as fast as it was exposed. The excavation of the shale was finally halted by the outcrop of a more durable sandstone. This sandstone, acting as a cap rock, stood up to erosion better than the shale and consequently the spectacular Taughannock Falls, 215 feet, was formed.

The plunge pool at the base of the falls is the largest development of its kind and were it not for the Tully limestone which forms its floor, the pool would be deeper.

Many people are puzzled about the amphitheater which the Falls empties into. This amphitheater is a result of mist action in the summer and frost in the winter. Unlike most amphitheaters, there is no passage behind the Falls. The shale which makes up the base of the Falls is so destructible that it is continually eroding back. Thus the top of the falls are prone to drop away when enough shale has been eroded. The last major change occurred just before the turn of the century when a large slab of the sandstone cap rock plunged to the bottom of the Falls.

COUNTRYMAN CAPSULES

Dr. Colin D. McKeen, plant pathologist from Harrow Research Station near Windsor, Ontario, worked with the plant pathology staff at Cornell during a recent visit to the United States. He spent much of his one-month stay visiting vegetable-growing areas of the state.

A native of Strathroy, Ontario, McKeen has focused his research on the soil-borne diseases of greenhouse and field vegetable crops. Of late, most of his attention in vegetable pathology has been given to research on the important wilt diseases caused by fungi known as *Verticillium* and *Fusarium*.

* * *

The system of grading at Cornell University has been revised. Beginning this term all grades in all colleges of the University will be recorded on a letter basis ranging from A+ to F.

Although examinations will probably, in most cases, still be returned with numerical grades, final averages will be converted to letters. C- will delineate academic probation and D- will be considered satisfactory for course credit.

* * *

There is real need for the home economist's kind of know-how in the war on poverty, according to Prof. Harold R. Capener of the department of rural sociology at Cornell.

Professor Capener spoke on the subject of working with low income families at a conference for home economists, held at the New York State College of Home Economics. He is chairman of a special task force committee at Cornell to investigate the implications of new social legislation, especially the Economic Opportunity Act.

The Conference was a follow-up to the American Home Economics Association Workshop held last March in Chicago.

Prof. Emeritus Donald S. Welch

Prof. Emeritus Donald S. Welch, noted specialist on tree diseases at Cornell University, has received the Award of Merit of the International Shade Tree Conference for 1965.

Professor Welch was recognized for his "outstanding contributions to arboriculture and the International Shade Tree Conference."

Retired in 1962 after 41 years of service at the New York State College of Agriculture, Professor Welch is noted for his studies involving wood decay and cavity treatments of various shade trees.

He was instrumental in working out control measures for Dutch elm disease, which first became a problem in New York State in 1934. This work prompted Cornell to launch a research project under his direction. The project is still active in probing possible uses of antibiotics in treating the disease, in addition to other activities.

Well-known among professional and non-professional arborists throughout the nation, Professor Welch headed the International Shade Tree Conference as president for two years, from 1943 to 1944, and holds the Past President's Award of that organization.

A film, "Arranging Flowers in Your Home," was judged best in its class and brought an Award of Merit to Cornell University's department of floriculture and ornamental horticulture.

It was cited for "Its excellent horticultural subject material of educational value to the gardening public," by the American Horticultural Society at its 20th annual meeting in Pine Mountain, Georgia, This was the second Horticultural Film Festival held by the Society, and the second film submitted by the New York State College of Agculture to receive a citation.

* * *

Dean Helen G. Canoyer, of the New York State College of Home Economics, addressed a conference for wives of delegates to United Nations' Missions and representatives of consulates in New York City recently.

The three-day conference was cosponsored by the National Council of Women of the United States of America and the College of Home Economics. "What Significant Contribution Can Home Economics Make in a Changing Society?" was the main theme.

Dean Canoyer made her feelings toward this question quite clear by stating, "No matter how much this country spends on defense, no matter how many skilled physicists, chemists or biochemists we train, no matter how many satellites we launch, if our citizens are not well educated and do not understand and know how to appreciate and preserve the basic values of healthy family life, our strong defenses, earth satellites, and trained scientists, will be of no avail to preserve the individual freedom and democracy of our country."

She then pointed out the goal established for home economics and how the college keeps pace with the constantly changing interpretation of that goal—to study the economic and social problems of the home.

Delegates attended from Australia, Belgium, Denmark, Finland, Ghana, Hungary, India, Indonesia, Liberia, Philippines, Sierra Leone, Turkey, United Kingdom, and United States.

ALUMNI

Robert H. Everitt, president of the College of Agriculture Alumni Association.

President's Column

I am very pleased to be the one to initiate this column in the *Cornell Countryman*. In future issues, the column will be used to acquaint students, professors, and alumni with certain phases of agriculture, agri-business, and related fields. In this beginning effort, I would like to describe the Alumni Association —its membership, purposes, and goals.

The Alumni Association is composed of some 1100 graduates of the College of Agriculture. With the payment of the $2.00 annual dues, active members receive all issues of the *Cornell Countryman*.

Our purpose is threefold. Primarily, we maintain an active recruitment program to convince highly qualified high school students to apply for enrollment in the College of Agriculture. Because of our vigorous efforts, enrollment has increased unlike the declining enrollment at other agricultural institutions.

Our second function is to support and aid the College Administration. Thirdly, the Alumni Association forwards any suggestions and ideas which it considers beneficial to graduates.

This business of the Association is channelled by the officers and a board of directors at four annual meetings. These four meetings are the Fall Open House, a meeting in cooperation with the Admissions Office for high school juniors; the Agriculture Progress Day Program, held in cooperation with the College Administration to elect officers; the Alumni Breakfast; and the fourth meeting which is held in early fall for contacting qualified school students.

If any graduates wish to help to secure top students for enrollment in the College of Agriculture, please write to our Secretary-Treasurer, Professor Stanley W. Warren, Warren Hall, Ithaca. Your help will be greatly appreciated.

In addition, all new members are heartily welcomed to strengthen the Association and more important, the Cornell College of Agriculture. Thank you.

* * *

A. WRIGHT GIBSON, SR., '17, 145 Forest Home Drive, Ithaca, N.Y., currently is the Campus Coordinator of a joint Cornell University-United States Department of Agriculture project to aid in developing and improving the University of Liberia. From 1940 to 1960 he served as Director of Resident Instruction of the New York State College of Agriculture at Cornell. His three children—A. Wright Gibson Jr. '42, Philip B. Gibson '43, and Sally Gibson '47, are all Cornellians.

JAMES Q. FOSTER, '34, 121 Honness Lane, Ithaca, N.Y., is currently involved in the Cornell University Extension Civil Defense program. His wife, Eleanor Slack Foster, graduated from Cornell in 1941. Of his six children, Charles S. Foster is a junior at Cornell's College of Chemical Engineering and Paul J. Foster is a sophomore in the College of Agriculture.

RONALD R. BABCOCK, '33, South Road, Cherry Creek, N.Y., coaches the Gold Medal New York State Dairy Judging Team that placed fourth at the National Congress in 1961 at Waterloo, Iowa. He is very involved in agricultural work, also serving as a vocational agriculture instructor at Pine Valley Central School. He is also quite active in the Pine Valley Lions Club and the Town Line Conservation Club.

HOWARD S. TYLER, Ph.D., '38, RD 1, Groton, N.Y., is a professor in Personnel Administration in charge of guidance and placement for Cornell's College of Agriculture. His son, William S. Tyler, graduated from the Cornell College of Arts and Sciences in 1959 and Cornell Medical School in 1963, while son Edward J. Tyler will graduate from the College of Agriculture in 1967.

JOHN VAN BUREN RICE, '32, RD 3, Rice Road, Trumansburg, N.Y. is currently employed as research associate for the department of agricultural economics here at Cornell. His wife is the former M. Christine Smith who graduated from Cornell's College of Home Economics in 1933. To complete the picture, both of their children are Cornell graduates—son Carl graduated from the College of Agriculture in 1960 while daughter Karen graduated from the College of Arts and Sciences in 1964.

KERMIT GOELL, '36, 16 West 74th Street, New York City, N.Y., has been a song writer since 1940. Presently he is in England for the opening of a musical he wrote, *Pocohantas*.

PAUL W. CHRISTNER, '38, Pavilion, N.Y., is the proud father of son James F. Christner '65 who went to Honduras this past summer with the Cornell group. Presently he is farming and serving as the district manager of liquid fertilizer sales. He is also director of the Farm Bureau and is active on the Republican Town Committee.

The Council for the New York State College of Agriculture and the Agricultural Experiment Stations

Dean Charles E. Palm addresses a session of the Advisory Council chaired by Joseph P. King in Ithaca, October 25 and 26, 1965.

Sound advice is hard to find. For this purpose the Council for the New York State College of Agriculture and the Agricultural Experiment Stations is established by the Board of Trustees of Cornell University. The members serve for one year and may be re-appointed at the end of their term. The professions of the members of the Advisory Council range from higher education to the broad fields of modern agriculture: representative leading farmers, members of major farm organizations, and leaders in agricultural industry.

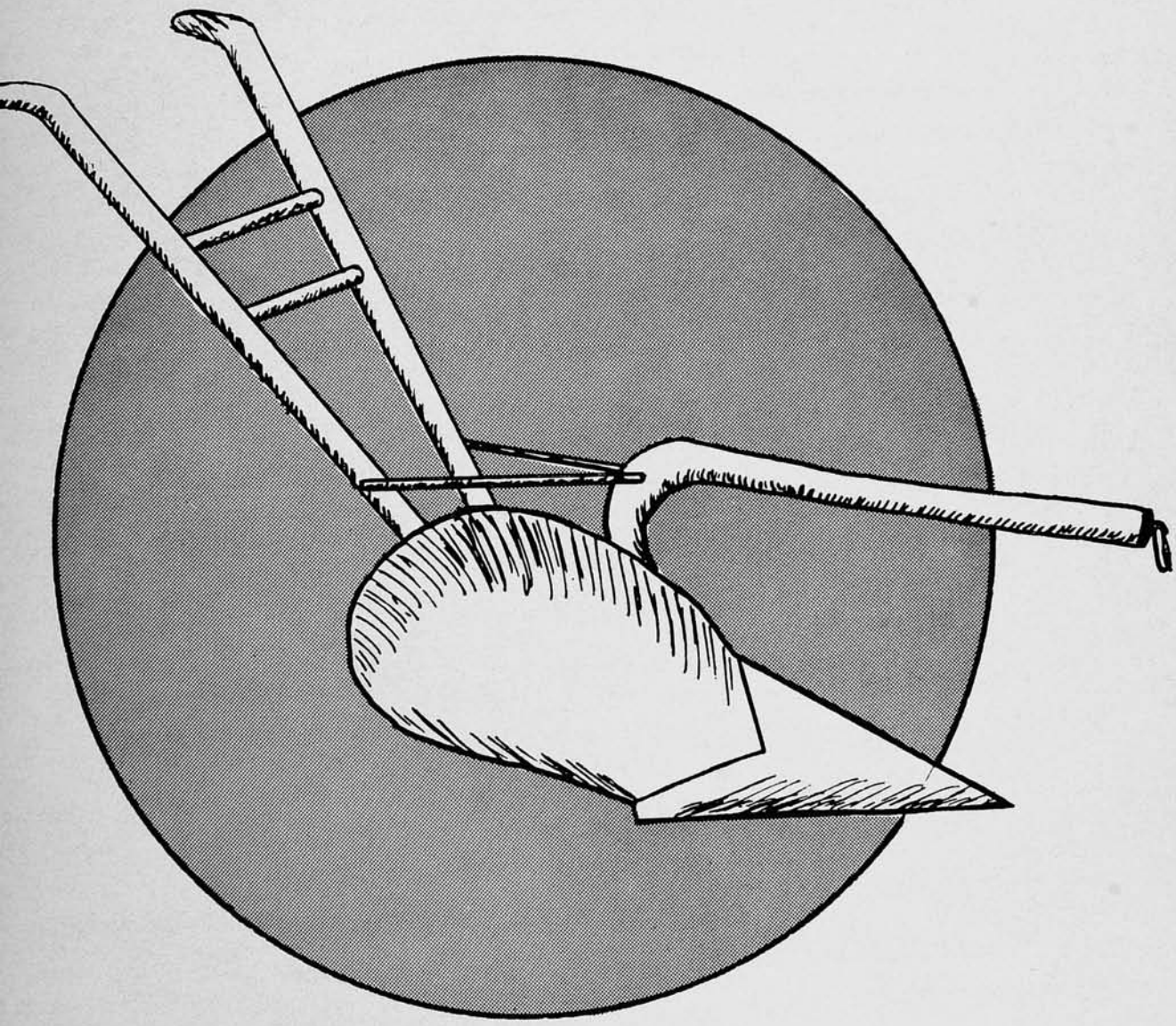
The Council meets twice a year to make suggestions to the College and University administrations. The members are briefed by the Dean of the New York State College of Agriculture, Charles E. Palm, and members of the faculty on fields in which advice is desired. The Council then meets in executive session and passes its recommendations on to the College and University.

The 25 men from the State of New York who comprise the Advisory Council serve the College of Agriculture to help further objectives of four dimensions — research, resident instruction, extension, and international agriculture.

No. 4 in this year's series from the New York State College of Agriculture, a contract college of the State University, at Cornell University, Ithaca, N.Y.

CORNELL COUNTRYMAN

FEBRUARY, 1966



Special in this issue—Cornell Setting a New Pace in Agricultural Education.

CORNELL COUNTRYMAN

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TRAY SLIDING

by William N. Jardine '67

Since the advent of cafeteria trays at Cornell, a highly localized and exhilarating winter sport has been claiming long, freezing evenings and much more. In fact, this "Sport of Sports", as it is reverently referred to by many freshmen, has confiscated many students' college careers as well as various bodily parts.

The sport is known best as "Tray Sliding", but many have given it such titles as "Libe Slope Roulette", "Slide for Your Life", and "Live for a Day." These secondary titles hint at the actual sport of the event – dodging trees, bare sidewalks, street signs, and other sliders.

At the base of Uris Library, there lies a mildly wooded slope of amazing inclination and brief length. After a snowfall, if there is a good freeze and often even when there is not, students from all classes and walks of life–don their largest and roomiest coats and head for the cafeterias to "borrow" trays.

Each cafeteria is known for a certain quality of tray. The Straight has the best, and Baker Cafeteria, the worst. What decides a good, or "super", tray from a bad, or "one-slide tray", is its thickness and overall maneuverability. The perils of the course have dictated these two features to be extremely crucial in one's attempt to reach the bottom of the hill in one piece.

Many young engineers and physicists have claimed to have "clocked" riders from 20 to 30 miles per hour on the icier sections of the slope. Just how maneuverable and durable a cafeteria tray can be under these circumstances is a subject of amazing controversy and dissention. Needless to say, if one hits a tree at 20 miles per hour, he will look for either a more maneuverable model or a new sport.

The methods of tray sliding are a spectacle in themselves. The rider may sit on the tray with his feet in the air (as most do), lie on his stomach, or even stand on the tray (for a few seconds). "Bull Whip" or "chain" sliding is also very popular. Any number of students, from 3 to 100, line up hanging onto the person in front of them and sitting on their trays. Before long, the entire chain is transformed into a pile of arms, legs, and laughter at the bottom of the hill.

The slope offers a variety of courses to satisfy the daring in each man. At the peak of the hill, just below the library, is the most perilous run of all. An 80° drop-off is followed immediately by a bone-crushing ski-jump mound. In the course of perhaps 100 feet, the slider who has dared this course finds himself off the ground and hurtling through the air at the lower branches of a pine tree–or perhaps the trunk. At this point, all but the most steel-nerved sportsmen release their trays, crumble into a ball, and smash into the branches, tree trunk, or, if they're fortunate, Mother Earth. Undaunted, many of these would-be "slope kings" try again and again. If the initial jump is survived, however, the rider may look forward to dodging a few more trees, a no-parking sign, a salted walk, the corpse of a previous failure, and, eventually, the stone wall of Baker dorms.

Other courses offer easier, longer rides, and each entails its own set of hazards.

The insanity of the sport is only topped by the fun it provides. After a long night over books, what better way is there for the student to relax?

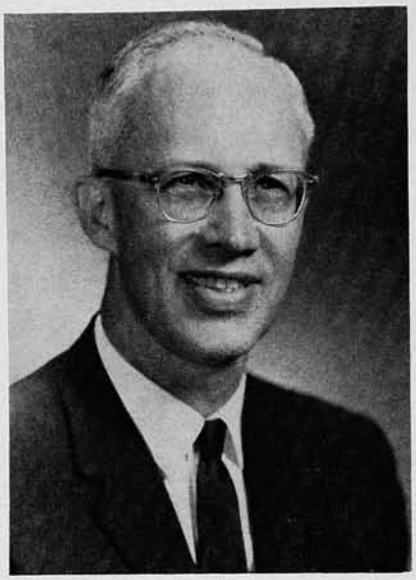
SETTING A NEW PACE

by Marjorie Case '67

Cornell's College of Agriculture has made great strides toward widening and improving its curriculum in recent years. Improvements range from new courses in international agriculture to the appointment, for the first time, of an associate dean of the College of Agriculture to deal with the growing number of students. Many of the recent innovations seem more radical and cross national boundaries.

Prof. W. Keith Kennedy, director of research at the N.Y. State Colleges of Agriculture and Home Economics, was named associate dean of the College of Agriculture on July first of this year. Professor Kennedy, who was recently elected faculty trustee to the Cornell University Board of Trustees, has held the directorship of the Cornell University Experiment Station since July 1, 1959. For the last six years he has administered over 600 research projects. He served as a United States delegate to the eighth International Grassland Congress in 1960, and was elected a fellow of the American Association for the Advancement of Science that same year. Professor Kennedy reviewed research operations of the College of Tropical Agriculture at the University of Hawaii in 1963, and last year received the merit certificate award from the American Grassland Council. As the first associate dean of the College of Agriculture, Kennedy will assist Dean Charles E. Palm with the increasing responsibilities of the College.

Newly instituted this year are revised legislation on the student practice requirement and letter grading in the College of Agriculture. The revised student practice



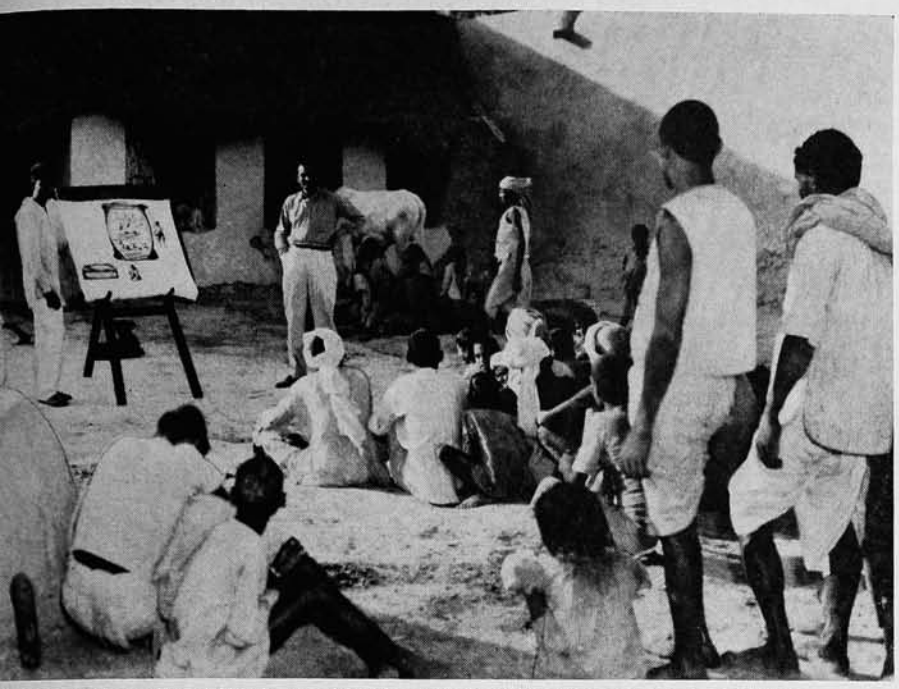
W. Keith Kennedy, first associate dean of the College of Agriculture.

requirement goes something like this. All undergraduates in the College must satisfy a practice requirement before registration for their senior year, and this requirement is 13 units of acceptable practice for *all* students as opposed to the old requirement of 25 units for some majors. The nature of the practice will depend on the objectives of the student as defined by his course of study. However, unless otherwise specified, the requirement must be met by farm experience, with eight units of it completed by sophomore registration.

This year marks a turning point in the history of grading at Cornell. With this year, has come a change from numerical grades to letter grading. As of October of this year the College of Agriculutre has formulated its new policy on grading. The minimum cumulative average of grades earned in the College to qualify for the B.S. degree is now to be a C–. The minimum cumulative average needed to graduate with distinction is a B+ for a student who matriculates without transfer credit, and an A– for a student who matriculates with transfer credit. The faculty of the College of Agriculture hopes that this new grading system will prove to be a fairer and more accurate measure of student ability.

Another new innovation is the opportunity for a senior to take a "combined course". A student enrolled in the College of Agriculture can now complete his requirements in the first three years and in his fourth year register for courses in the School of Business and Public Administration, the School of Nutrition, or the School of Veterinary Medicine. The credit received for these courses goes toward his B.S. from the College of Agriculture *and* toward credit in each respective graduate school. This program is of tremendous advantage to students.

The College of Agriculture is also involved in the University's decision to consider abolishing freshman English and replacing it by small classes in literature, history, philosophy, and history of art. The College of Agriculture will drop their requirement for freshman English if the rest of the University does likewise, but urges students to take the one-term optional course in composition that will be offered. Advantages to the elimination of freshman English would be that students would have a greater choice of courses. Also, since form and content are stressed in all of the humanities, competence in writing would still be emphasized. It is hoped that the new courses offered would impart discrimination in reading and competence in writing.



Foreign students find difficulty teaching farmers in their own countries new methods.

Along with these changes in administration, the College of Agriculture has greatly expanded its courses. The very young department of international agriculture now offers 32 courses including courses in tropical agriculture, agricultural development on an international scale, and problems in international nutrition. These new courses run concurrently with Cornell's Latin American Year, which is designed to create a deeper insight into the cultures and problems of South American nations. The Cornell College of Agriculture is meeting the challenge of developing international agriculture. For a century, Cornell University has extended the benefits of its agricultural knowledge to developing nations in all parts of the world. Cornell's recent contributions to international agricultural development have been directed toward the so-called developing countries, and have taken the form of improved field practices and crop varieties. Cornell's contribution to international agricultural development has also dealt with phases of agricultural science not directly associated with farming, but more with the processing and marketing of food products and the advancement of basic technological research.

The College of Agriculture is participating in a recently innovated program with the University of Liberia in which Cornell is assisting the African university to raise its educational standards. A. W. Gibson, professor emeritus and former director of resident instruction in the College of Agriculture, is the chief coordinator of this project.

New challenges are constantly being presented to the College of Agriculture in the international realm. These will be met with a distinguished research, teaching, and extension staff. The College's new courses are designed to:

1. Provide training to foreign students who will eventually become the agricultural leaders in their countries.

2. Provide training for U.S. specialists who will go abroad.

3. Form an institution-to-institution relationship, including the exchange of faculties.

4. Conduct research which is needed for successful agricultural programs.

More than a third of the professors now in the College of Agriculture and its experiment stations have had experience abroad. At least 50 American students are being trained for overseas jobs. During this past year, nearly 300 agricultural scholars and scientists came to Cornell for training and observation periods. Seven hundred twenty-five foreign graduate students from 59 countries attend the College as well.

Furthermore, the College with the support of the Rockefeller Foundation, conducts a special summer orientation program for foreign students needing training in the English language and orientation to university life in the United States.

The College of Agriculture at Cornell has made enormous strides in the past few years. Innovations have been in many diverse areas and have been for many different purposes. Yet, they all add up to a better education for the Cornell student specifically, and for the world in general.

The number of foreign students coming to study at Cornell increases each year.

TWO SEASONS— AN END AND A BEGINNING

Getting your hands on a rugby ball isn't always easy.

by Brian Regrut '68

In another month or so two minor occurrences will pass relatively unnoticed by many at Cornell. But these occurrences will be quite important in the lives of about 80 people. They are the members of the Rugby and Polo Clubs, for while the Polo Club will be ending its schedule, the members of the Rugby Club will begin getting in shape for another exciting season.

There won't be any fireworks for the Polo Club, nor will there be any heraldic headlines, but there will be a feeling of satisfaction for nearly 40 horsemen. There will be pride too, for besides having a highly rated team, the club has also been able to remain self-supporting since it was organized.

In order to pay for the care of the ponies, and for the maintenance of the equipment, the club collects dues, and charges admission to its games.

Originating with the draft horses left behind when Cornell's ROTC cavalry unit disbanned, polo is now one of the top spectator sports on the winter calendar. Each Saturday night three of the top horsemen meet opponents from other eastern clubs before many enthusiastic onlookers.

Just recently, Cornell's athletic association recognized polo as a minor sport, but the club continues self-supporting. Everyone does his share of the work around the stables, although the freshmen usually end up with the least enjoyable tasks. Everyone gets to ride though, be it in a game, or just in practice.

No sooner will the polo season end when another club will make preparations for its season. Some 40 members of Cornell's Rugby Club will get into shape for two and one-half months of gruelling fun—fun that lasts for an hour and 20 minutes Saturday afternoons, when 30 men clash in organized chaos—or so thinks a casual observer.

This contact sport which has been played at Cornell for over 30 years is rapidly becoming one of the major non-varsity activities on campus. The club, now at its highest point since organization, sports a first team which is rated tops in the east. More and more fans are being drawn to the games and it is not unusual to see 300 to 400 spectators on Upper Alumni Field on Saturday afternoons.

Looking forward to another great season, the first team of the Rugby Club—all 3200 pounds of them—opens its home season against the Toronto Nomads on April 9. Interestingly enough, most of the first team members are graduate students, and almost all are Americans. Many played rugby before coming to Cornell, and some participated in various varsity sports at Cornell or at other schools.

The members of the Rugby Club play as hard if not harder than many of the varsity team members, and bring as much recognition to Cornell as many of the teams, yet they remain independent and self-supported. This year for the first time, the players will shed their football jerseys and don uniforms. This may not change the ability of the team, but it will surely add to its appearance.

Yes, there will be two minor occurrences next month, and perhaps now there may be a few more people that think of them.

Three of Cornell's top horsemen ride on a Saturday evening, the highlight of a week's work and practice.

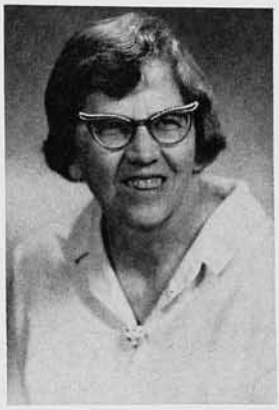
TEACHERS OF THE PRACTICAL

by John Short '67

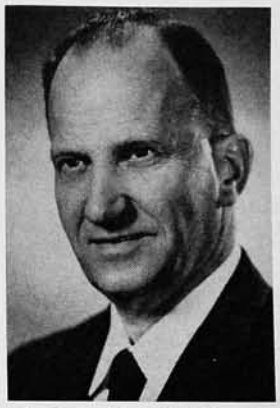
If there is one name which has stood on the roster of the Cornell faculty as long as or longer than any other, it is the Warren name. Probably this family has contributed more years to educating Cornell students than has any other.

Their contributions to Cornell began a few years after the turn of the century when George F. Warren became an important pioneer in the development of agricultural economics and farm management education in the United States. His son, Prof. Stanley W. Warren, is still teaching farm management, and his daughter, Prof. Jean Warren has recently retired from the department of household economics and management in the College of Home Economics.

Prof. George F. Warren.



Prof. Jean Warren.



Prof. Stanley W. Warren.

The elder Warren came to Cornell in 1902 as a graduate student in agriculture, received his Ph.D. in 1905, and about a year later earned his first teaching assignment at Cornell as an assistant professor of agronomy. In 1908, Liberty Hyde Bailey, then dean of the College, promoted him to a full professorship in farm management. With this appointment, Warren became a pioneer in this field, and promptly began to build it into a highly respected area of study. As a result of his thorough and intimate knowledge of the problems of successful farm management, and his ability to impart this knowledge to students, this new subject became increasingly meaningful and important.

In his teaching, Warren's method was to emphasize the realities and facts concerning the operation of the average farm, and to base his instruction on these realities rather than on theory which often applied only to the exceptional farms. Warren acquired this insight into the realities of agriculture by running his own farm, conducting many agricultural surveys, and establishing many close contacts with farmers around the state.

His wide knowledge of farming problems, and the various skills by which he communicated this knowledge, made him a highly respected teacher. Hence many graduate students were attracted to his department. He worked closely with these students, and was always giving them encouragement.

It has been said that farmers in this part of the country respected his advice on agricultural problems more than that of any other man. During the twenties he often communicated with farmers and aided them in applying economic principles to the operation of their farms.

In addition to his contributions to agriculture and to the education of students and farmers, George Warren employed his administrative skills and the respect he commanded to bring about physical improvements within the department. By 1930, the number of graduate students had decreased as other colleges began programs in farm management. Warren had become discouraged by the cramped conditions in his department, and the competition from business and other universities for the members of his staff. The only solution was an improved physical plant. Because he and his department were highly respected by state government officials, a university request was all that was needed before the Governor's Agricultural Advisory Commission would recommend the necessary funds to construct the building now bearing Warren's name.

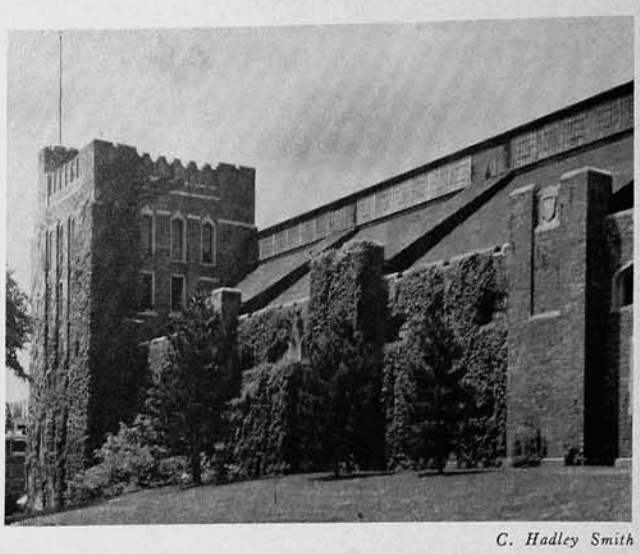
Like his father, Prof. Stan Warren is primarily concerned with the practical problems of individual farms in this part of the state. Prof. Warren has taught for 33 years at Cornell, and also spent parts of the mid thirties as an economist for the Farm Credit Administration, part of the New Deal.

Warren devotes long hours every week developing his two undergraduate courses in farm management. His course format requires a great deal of personal observation of farms in this area. Students take at least six field trips, and since his classes are large, much time is spent on these trips alone. But this does not bother him, for his students, their welfare, and their education are of first importance to him—and this is one reason Prof. Stan Warren is so popular.

George Warren's daughter, Prof. Jean Warren, before her recent retirement, also devoted her time to teaching a practical subject—personal finances—to her home economics students. In addition to teaching at Cornell she has engaged in many lecture assignments around the country on the subject of operating family finances.

The Warren family represents two commendable educational philosophies—first, the importance of emphasizing the practical application of one's field of study, and even more important, the necessity for a complete devotion to the education and problems of the student.

WITHIN THESE WALLS . . .



C. Hadley Smith

by Joan Solomon '67

Paper planes filled the air as students impatiently awaited the Fall Weekend performance of Peter, Paul and Mary. Basketball enthusiasts screamed with excitement and joy as Blaine Aston sank his shot, temporarily humbling the all-mighty Bill Bradley and his Princeton teammates. A group of student demonstrators rose and filed out of a Centennial celebration, holding up signs expressing protest at United States policy in Viet Nam.

The above events will all be remembered for a long time. Each reflects one of the many moods of the students of a great university. Barton Hall, a massive structure which is large enough to hold a football field, served as the home of each of them.

Barton Hall seems to be omnipresent in the lives of Cornell students. We are babes in the woods when it first greets us at the annual orientation convocation. It nurses us through registration, titilates us at games and meets, terrifies us at final examination time, entertains us at concerts, educates us at lectures, and then releases us at graduation time as adults, ready to try our wings in the big, big world.

But there was a time when there was no Barton Hall. Its diverse functions were performed by such buildings as Bailey Hall and the old Armory. Then, in 1914, the need for a drill hall was brought up before the state. A $350,000 appropriation was voted for construction of the building at Cornell. Plans were drawn up by Lewis F. Pilcher, the state architect, and foundations were laid that year.

The Drill Hall, later renamed Barton Hall, has a steel frame, and its walls and two towers are of bluestone. The building covers an area of over two acres. It has been said that Barton Hall contains one of the largest unobstructed floor spaces in the world. The remainder of the building, at the time of construction, was made up of lecture rooms, offices, lockers, shower baths, and an indoor rifle and pistol range.

Upon its completion in 1917, the New York State Drill Hall became the training ground for future soldiers. The facilities of the hall were needed desperately. The building was turned over to the United States government for use as classrooms and quarters for the ground school officers' training of the army aviator corps.

The drill hall became available for use as headquarters of the Reserve Officers' Training Corps (ROTC) and the Department of Military Science and Tactics in 1919. Since then, this has been its major function and capacity. In its early years there was a horsepath running through the hall. Each morning the lieutenants would ride into the drill hall followed by the colonel in a carriage. Presently the Air Force, Army, and Navy all have ROTC units in Barton Hall.

In 1940 the drill hall, in keeping with its military tradition, was renamed Barton Hall after Colonel Frank A. Barton. He was Professor of Military Science and Tactics at Cornell from 1904-1908 and from 1917 until his death in 1921.

The *Ithaca Journal News* said of him, "He made the Cornell ROTC one of the finest units of student

The Heptagonals, intercollegiat

soldiers and reserve officers in the country. His technical and administrative ability, his enthusiasm, his ready sympathy with and understanding of young men and his staunch patriotism served to instill in the Cornell ROTC a morale, an esprit that soon put it in the first rank."

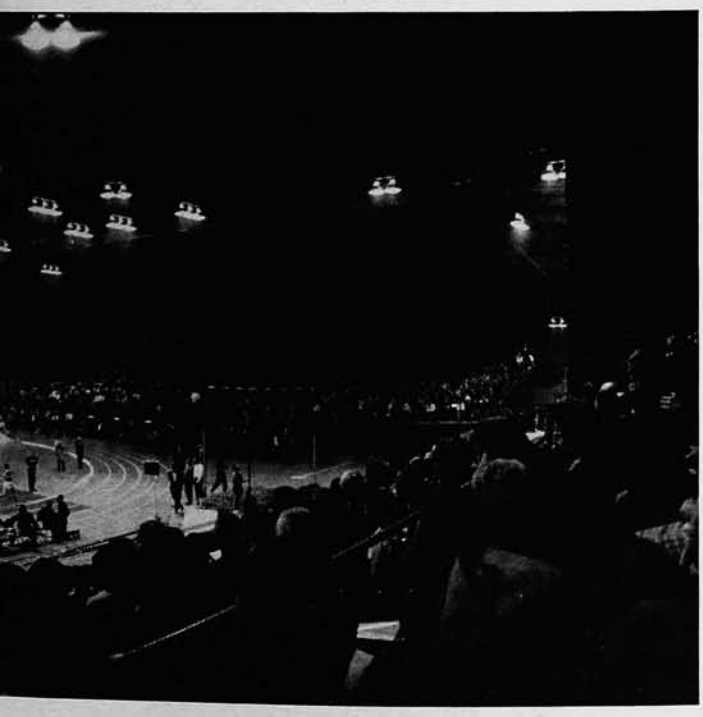
Barton Hall, however, did not serve merely as a military structure. The entire Cornell community rushed to take advantage of the tremendous opportunity which its vast size provided.

Among the most fondly held memories of alumni are the many formal dances of the classes which are part of Barton Hall's, and Cornell's, past. There was the Junior Promenade and the Sophomore Cotillion. For these affairs the hall was magnificently decorated. The student group in charge of this was known as YASNY, or You Ain't Seen Nothin' Yet. Their work is still remembered and praised by many an old-timer. They did a particularly excellent job when they used Hawaii as a theme. Coconut trees swayed, and colored lights played on the water that was flowing from fountains. In the center of Barton Hall were life-like paper maché representations of volcanoes.

These dances, the highlights of the school year, attracted huge crowds. At times as many as 10,000 people, all formally clad, swayed to the music of such all-time greats as Duke Ellington and Benny Goodman.

Barton Hall has a completely different air about it when, instead of soft music resounding through it, there is the sound of a basketball swishing through a net and the cheering from throngs of spectators.

Cornell's athletic department realized the potentialities of the huge hall. A wealth of sports quickly became part of the daily scene at Barton Hall. Tennis courts have been set up on the main floor for professional matches. Wrestling meets are regular occurrences at Barton Hall. And then, of course, there is the biggest attraction, the basketball games.

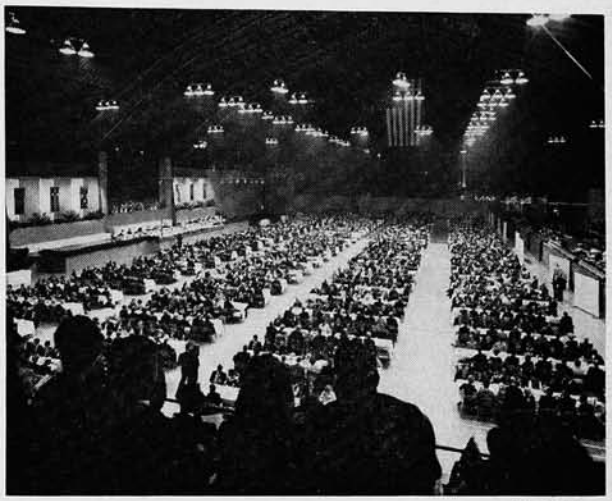


Sol Goldberg

d in Barton Hall since 1953.

In the 1940's Cornell basketball was in its heyday. Crowds of 7000 were not uncommon. At that time the basketball court ran north-south, parallel to the balcony. With the construction of new bleachers in 1946, the court had to be turned around to its present east-west direction. In the '50's attendance at games dropped quite a bit. But in the 1964-65 season the spectators returned in full force. All records were broken by a turn-out of over 9000 fans at the crucial Cornell-Princeton game.

The Heptagonals, a track meet in which Army Navy, and the eight Ivy League schools participate, has



Sol Goldberg

Centennial dinner, October 1964.

been held at Barton Hall since 1953. They annually attract a capacity crowd of 4500, and more recently, 5000.

In its early history, Barton Hall was called upon to play still another role, and in doing so it showed that somewhere in its hugeness, in its vast impersonality, it has a heart. It was the night before Cornell summer school registration when the floods came. The Ithaca residents who were left temporarily homeless sought the shelter of the drill hall. Cots were swiftly set up and first aid administered. The next day, amidst the rescue operations, registration went on as planned.

One of the most remarkable events Barton Hall played host to was the Centennial Dinner of October, 1964. The Department of Housing and Dining worked six months in preparation for the banquet's 2400 guests. It had to take into account the fact that Barton Hall had no facilities for food service except electrical outlets and a water line. Many difficult problems were faced. All were solved. The result was a beautiful affair, complete with white wine, elegant table linens, and red carnations.

Thus, Barton Hall serves the Cornell community in many ways. It shelters us in moments of despair and in times of joy. It is dignity, it is fun, it is winning and losing. It is an integral part of the Cornell experience.

Evolution of a Scholarship

by Jerryanne Taber '67

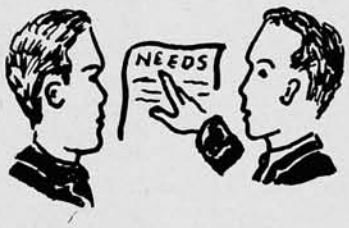
Year after year the costs of a college education seem to spiral endlessly upward. Scholarships have proved to be one way to alleviate the difficulties which rising costs impose upon college students as well as high school graduates anticipating a college career. And year after year there is a need for more and larger scholarships. But how does a scholarship actually come to be? How is a donor's initial idea transformed into a working scholarship?

In the case of the New York State College of Agriculture at Cornell, the evolution of a scholarship follows a fairly regular pattern. Assuming that an individual wants to establish a scholarship for students in the college, there are certain steps he is required to take.

Once the fund or funds have actually been compiled, the donor takes either of two courses of action, depending on the financing arrangements he has in mind. If the gift of money or securities is to be transferred to the University all at once, in a single sum, it is termed an endowed scholarship. If, on the other hand, a company or organization prefers to send the principal each year, perhaps from its annual income, the scholarship is referred to as "revolving". Each method of financing entails following certain procedures before the scholarship is officially recognized.

When an endowed scholarship is intended, the principal is accredited to the University along with specifications as to what it is for and to whom it should apply. Though qualifications are designed by the donor, the college strongly urges that his provisions be very general. If the provisions are particularly restrictive, the college suggests that the contributor list them in order of preference rather than making them mandatory. The college's purpose in recommending liberal provisions is to see that the fund is best suited to existing student and educational needs.

The endowed scholarship is said to be "in perpetuity" which simply means that it extends over a long period of time. It is likely that over a long period of time needs will change with changes in the college. Listing provisions in order of preference rather than as absolute requirements allows for alteration or modification if present needs should disappear, while still honoring the donor's original intentions.



In some cases the donor may actually grant the dean or other college officials the power to change a scholarship's original provisions if such action would deem the money more serviceable. This arrangement puts the central responsibility in the hands of persons close to the primary source of problems and possible deficiencies. These persons are, therefore, better adapted to recognize inadequacies and to suggest effective solutions than the donor himself.

The college also strongly encourages prospective donors to contact the college in some way before presenting definite specifications to accompany their scholarship funds. In order that existing needs be met most satisfactorily from the very beginning, some sort of consultation is advised. Only by discussing student financial needs and existing financial assistance with college representatives can the donor realize how to best fit his intentions to real needs.

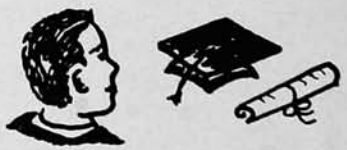
Once the money has been received by the University, it is put into the pooled endowment fund. All money in this fund is then invested by experts in the field. As the scholarships are applied, the appropriate amounts are drawn from the original principal and directed to proper accounts.

The revolving scholarship is instituted somewhat differently. In this case, the donor generally makes arrangements with the University to have the fund administered by the Faculty Committee on Scholarships. By mutual consent of both parties, the contributor and college representative sign a "memorandum of agreement". This agreement identifies the scholarship by name, indicates who is eligible, and expresses the criteria preferences. As long as the donor signs the "memorandum of agreement", he is entitled to publicity by the college and to have the scholarship listed in the annual college catalog.

To insure against last minute indecision or unreliable donor prospects, the college requires that money for the said scholarship be on deposit before the catalog goes to press. In other words, the organization or individual must send his money prior to January 1 every year to be listed in the catalog.

Failure to sign the "memorandum of agreement" does not negate the college's administrative capacity. The college will still grant the award if the donor so desires, but it will not provide any sort of general publicity.

Once these basic procedures have been completed, the scholarship may be applied for and awarded. And all scholarships, in the face of current financing demands, are welcomed as important encouragement to the college-oriented student. However, it is extremely desirable, as Prof. J. P. Hertel, chairman of the Faculty Committee on Scholarships, points out, that any person interested in establishing some sort of financial assistance discuss his intentions with the college beforehand. Initiating the scholarship in this way correlates the donor's objectives with student needs. The result is a more adequate and serviceable scholarship.



The Suspension Bridge

—A CORNELL TRADITION

by Jane Silvernail '68

Roses are red, Violets are blue,
Sugar is sweet, And so are you.
But a true Cornell coed,
You never will be
'Til you're kissed on the bridge
By a Cornell he.

So goes one version of the many rhymes about one of Cornell's most fascinating traditions, the kiss on the suspension bridge. No one knows who started it, but the legend is that if a couple walks across the bridge without kissing the bridge will collapse. How true this is is not known, but it lends more excitement to the history of one of Cornell's most interesting bridges.

Because students and faculty lived on the Heights, a bridge was proposed in the late 19th century to make access to the campus easier. It was decided that the bridge would be a suspension bridge.

There have been two bridges of this type built over Fall Creek Gorge. The old bridge—the first one—was erected in 1900 by the Cornell Heights Improvement Company. A site was selected below Morse Hall, a newly-built chemistry building and laboratory. The other end of the bridge was near what was then the Wyckoff residence.

Perhaps the first *Cornell Daily Sun* words about the new construction appeared late in October of 1900, when a short report was given on how the work was progressing. Four stone anchor piers, two on either side of the gorge, composed the major part of the masonry.

The finished bridge was made of wrought iron. Instead of a cable running along each rail for support and strength there was a series of long, iron bars fastened together, one on each side.

The old bridge saw much excitement. Ithaca, in the early part of the twentieth century, was the scene of a number of motion pictures. With its picturesque scenery, especially the gorges, Ithaca was a director's dream. The suspension bridge naturally found itself written into several scripts, once as the scene of a fight to the death. Thrilling and dangerous action was wanted, and, hanging across the depths of the gorge, the suspension bridge provided just that.

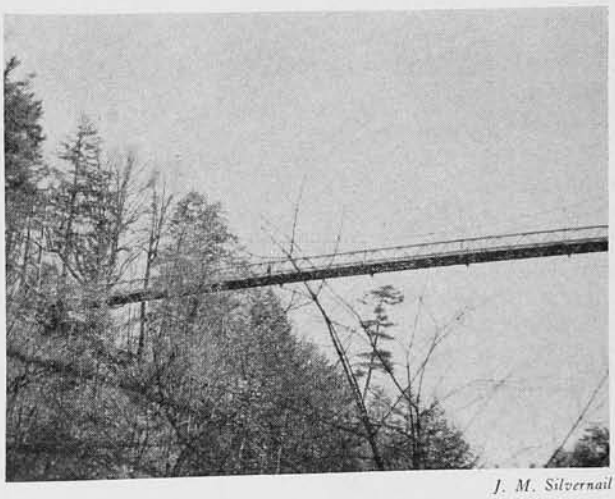
Campus construction and development went on, and finally it was decided that a new suspension bridge should be built. The old one had served long and well, but the weather and hard use by pedestrian traffic had taken their toll. The bridge was condemned.

The new bridge was built on the same location in 1960-1961, but much was different. Horses and carriages were gone, coal oil and kerosene had been replaced by electricity. Students and professors had come and gone, new buildings had been erected. Morse Hall was gone—destroyed by a fire in 1916, and its location was turned into a parking lot.

The new bridge is sturdier and of more durable construction. Designed by Dean S. C. Hollister, who was ably assisted by Prof. William McGuire, the new bridge was erected on the same location as the old one. New foundations were put in. The old bridge was used for support in the construction of the new one. Using the old towers, temporary cables were put up. Then, after the base of the bridge was laid, the new towers and new cables were built.

Bethlehem Steel Company, which built the bridge, used it in advertisements as the "smallest suspension bridge" they had ever built. Designed for pedestrians, the bridge is nonetheless wide enough to drive a jeep and snowplow across, which facilitates winter snow removal. There is more of an arch than the old bridge had, and it is stiffer and stronger, without so much sway.

Although the bridge was changed, the tradition remained the same, and is today. There is a hint of danger as well as romance in it. Whether or not the bridge will collapse if a couple does not kiss is hard to say, but the legend lends atmosphere to one of Cornell's most interesting traditions.



J. M. Silvernail

The present suspension bridge.

Veterinary Medicine At the Large Animal Clinic

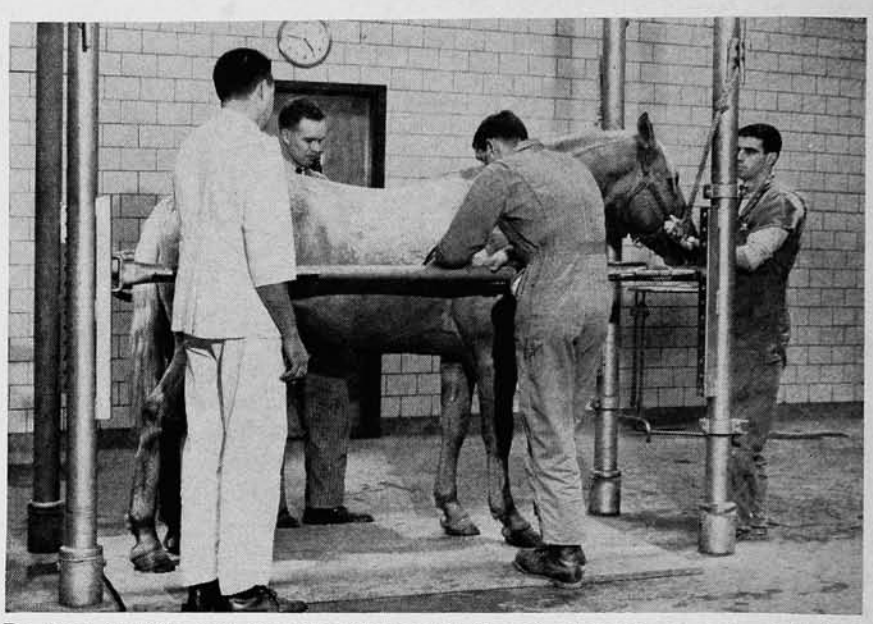
by Alexander Harwood '68

Most of us think that the job of a veterinarian is taking care of Fluff and Spot when they are hurt or feel bad. But what about Elsie and Dobbin? They too get hurt or sick, and while it would be difficult to convince a person with a sick dog or cat, the afflictions of farm animals often have a greater bearing on our well being than those of our pets.

Years ago people were not particularly concerned with either small or large animals, or veterinary medicine. However, this is not the case today. According to Associate Prof. Wendell Loomis of Cornell University's Large Animal Clinic, "In the early days we didn't have the interest we have in veterinary medicine today. We used to have to solicit students, this has changed greatly."

The public's increased interest in animals and veterinary medicine can be largely attributed to their concern for the well being of their pets and their dealings with the private practitioner in their community. This is the facet of veterinary medicine that most of us see and are most familiar with, however, it is only one part of a field which encompasses a great deal more than Rover's fleas.

The New York State Veterinary College's Large Animal Clinic deals with an aspect of veterinary medicine which is less familiar to us but by no means less important. The drama of saving the life of a beloved pet is a rarity here. Indeed, the dealings between the veterinarian and the owner of the animal may seem somewhat cold and calculating because of the practical and economic problems which are of primary importance here. "Save my pet regardless of the cost," is something one might hear in the Small Animal Clinic, but rarely in the Large Animal Clinic.



Dr. Ross, in white coat, supervises the examination of a horse by several vet students

The Large Animal Clinic handles the gamut of farm animals and sometimes finds itself confronted with an odd rarity. It even handles a broader spectrum of species than the Small Animal Clinic. Patients have ranged anywhere from lambs and bulls to seals and tigers. The clinic even handled an evil tempered camel from the Rochester Zoo who had to have a canvas curtain hung across his stall because he could spit with more accuracy than a tobacco chewer.

The prestige and reputation of the Large Animal Clinic and its staff has grown each year. Animals from all parts of the country, including famous race horses which can have the best care possible, as well as cows and pigs from local farms, can all be found there. However, the clinic does not overtly seek patients either for profit or prestige.

When asked where most patients come from Dr. Loomis said, "Our clinic is basically a teaching clinic, and we don't like to compete with private practitioners, but we have such good laboratory facilities that we have a much better chance of arriving at a positive diagnosis. As a result we do a lot of referal work."

Dr. Loomis summarized the role of the Large Animal Clinic when he said, "We're not in business to make money, we're in business to teach." The staff, naturally composed of teachers, includes: Dr. Donald Delahanty, Dr. Wendell Loomis, Dr. John Lowe, and Dr. Robert Whitlock.

Dr. Loomis said, "We try here to give students every opportunity to participate under close supervision in the care, treatment, diagnosis, and surgery of the patients." Students take courses in the Large Animal Clinic during their junior and senior years and are rotated in groups through different departments. They also have the opportunity to study under several doctors. In this way they acquire instruction and experience in one of the less thought about but more important areas of veterinary medicine.

ALUMNI

ESTHER ARONSON ROTHENBERG, '35, 504 Gramatan Ave., Mt. Vernon, New York, is a self employed physician in Mt. Vernon. Both her daughter and son-in-law are currently at Cornell. Mrs. Rita Calvo is a graduate student in micro-biology and Joseph M. Calvo is an associate professor in biochemistry.

PHILIP DORF, '24, 132 Farm St., Ithaca, New York, is presently working as a self-employed real estate investor, farmer and free lance writer. He is the author of "The Builder: A Biography of Ezra Cornell", and "Liberty Hyde Bailey: An Informal Biography". He received his M.A. in education from Columbia University in 1925 and from that year until 1942 taught history in a New York City high school.

GRACE FOX PARSONS, '55, R.D.#1, Penn Yan, New York, has worked for eight years at the Agricultural Experiment Station in Geneva, New York studying the effects of radiation on fruits and vegetables. Recently she has been studying flavor in soybeans.

THOMAS P. TESAR, '62, Sr. B.O.Q., N.A.S. Jacksonville, Florida, is a naval aviator attached to Patrol Squadron Five. He was formerly a computer programmer for Pan American World Airways and hopes to return to commercial aviation as a pilot when he completes his Naval service.

ALFRED A. RICHLEY, '44, South Lake Rd., Corfu, New York, who majored in floriculture and nursery landscape, now runs Richley's Nursery for ornamental shade trees, and does landscape design and construction. Previously, he was landscape supervisor for a western New York firm.

FREDRICKA LOFBERG DECKER, '42, 40 Robinson St., Beacon, New York, received a B.S. in bacteriology and is presently teaching math and science in junior high school. She has traveled widely in Scandinavia and holds membership in the American Scandinavian and National Wildlife Foundations.

MYRNA GOTTFRIED, '63, 100 Fairview Sq., Ithaca, New York, is now at Cornell under a National Science Foundation Academic Year Institute Fellowship. She is working for an M.S. in earth science. From 1963 to 1965 she taught general science at the Grand Avenue Junior High School in Bellmore, Long Island.

HERBERT SALTFORD, '33, 6 West Winding St., Poughkeepsie, New York, is currently Superintendent of Parks for the city of Poughkeepsie. He was formerly manager of the Saltford Flower Shop and production manager of the Schatz Manufacturing Co. He is a former editor of the *Countryman*.

EDWIN A. KINNE, '50, 636 Ivy St., Denver, Colorado, was associate professor of agronomy at S.U.N.Y. at Alfred from 1955 to 1960. Presently, he is an agricultural marketing representative of the United States Steel Corporation.

GEORGE F. PATRICK, '64, Dept. of Agricultural Economics, Purdue University, Lafayette, Indiana, is studying at Purdue under an NDEA Fellowship in international development. He is a member of the American Farm Economics Association and the Holstein-Freisian Association of America.

RUSSELL CLAIR HODNETT, '47, 126 South Main St., Black River, New York, is an agricultural extension leader for the Cooperative Extension Service, College of Agriculture, Cornell University. From graduation until 1964 he served as a county agricultural agent.

President's Column

In many states there are Cornell University Alumni Clubs which are formed for the purpose of furthering the Cornell story in graduate, undergraduate, and pre-college days. They also give one the opportunity to make acquaintances with men and women who have the common background of a Cornell education.

The image of our College can only be made by you, the graduates, and how you conduct yourselves in your chosen profession and in the life of your community. By taking an active part in your Cornell Club's affairs and by projecting your thinking and efforts to the interest of the Club's programs you can contribute much to their successful completion.

Those of you who have no Cornell Alumni Club to join can perhaps be the spark to attract other Cornellians to join together for enjoyment and work. It is one way that you can carry on secondary school work to the best advantage. All colleges and universities need students, good students, as well as the tools of education, to be of best use to our nation. The better the student who enters the university, the better the end product.

It is by attracting and interesting the top student in the many fields of subject matter offered in the College of Agriculture that the graduate can best help his College and University.

If you still have no Cornell Club with which you can identify yourself and be active in its Secondary School Program, you can be most helpful to your College by becoming a Keyman in the College of Agriculture Alumni Association's Secondary School Program. Write to Prof. Stanley Warren at Warren Hall, Ithaca, New York and you will be contacted by the regional representative to start you on the work most rewarding to you, the new students, the College, and to agriculture.

COUNTRYMAN CAPSULES

Richard H. Barnes, dean of the Graduate School of Nutrition, Cornell University, revealed that a type of mental retardation may result from underfeeding during early life.

Barnes, who spoke at the Cornell Nutrition Conference for Feed Manufacturers stated, "Preliminary studies in rats and pigs", with the male being more susceptible than the female, "have shown a type of mental retardation, or at least a behavioral abnormality, that can be induced by simple underfeeding during early life."

Later studies, he said, revealed that the female animals have much smaller changes in learning behavior than males. Permanent stunting of body size, which is a result of early undernutrition or malnutrition, is irreversible; an adequate diet in later life fails to restore normal body size. Barnes's studies also stated that the normal function of the pituitary gland may be interrupted as a result of undernutrition.

He concluded, "More attention must be given to this problem by nutritionists, biochemists, and psychologists. It has implication for all underprivileged people of the world where undernutrition or malnutrition of infants may be prevalent."

* * *

Is leading a "dog's life" such a bad life after all? Our canine companions are receiving dental care comparable to our own.

Dr. L. K. Firth, speaking at a three day meeting at the New York State Veterinary College at Cornell, told an audience of several hundred veterinarians that dental care in dogs is just as important as in humans; in fact, a number of the rules of good dental care for dogs was taken from a set of advisory instructions given by many dentists for their human patients.

Using ultra sonic sound waves for vibrating dental scale loose from teeth and air-driven turbines with high-speed burrs for removing teeth, Fido's mouth is thoroughly cared for. While doggy dentures are, as yet, not made, Firth does know of cases where the teeth of valuable animals have been capped with stainless steel.

* * *

A retired vegetable crops professor at the New York State College of Agriculture at Cornell University, Prof. Arthur J. Pratt, has transferred his teaching and research abilities to the problems of other countries. He will assist with regular student classes at the Jamaica School of Agriculture, helping develop course content, teaching manuals and aids. In addition, he will organize field work for students.

* * *

Cornell is to have a new three million dollar Entomology—Plant Pathology building at the New York State Agricultural Experiment Station at Geneva.

Dr. Donald W. Barton, director of the station, said that construction of the building, which will contain more than 100,000 square feet of space, is scheduled to begin in 1966 with the completion date set for early in 1968. The State University Construction Fund has appointed an Auburn architectural firm, Beardsley and Beardsley, to design the building.

The experiment station, which will be located on the corner of Collier Drive and Castle Street in Geneva, is under the control and management of the New York State College of Agriculture at Cornell University.

Prof. Roland M. Leach, Jr., poultry department, N.Y. State College of Agriculture at Cornell, reported to the Cornell Nutrition Conference for Feed Manufacturers about cartilage abnormalities which often results in leg weakness in young chicks.

In his report, Prof. Leach stated, "Corn, soybean meal, water extract of soybean meal, and skim milk have been found to be crude sources of abnormal cartilage-preventing activity. However, substantial quantities of these materials are required for the prevention of the abnormality."

Since young chicks were his main genetic and nutritional study subjects, Prof. Leach said the impact of these findings in broiler and roaster production are unknown at the present time.

* * *

Dr. Gerald W. Olson, soil technologist at the New York State College of Agriculture at Cornell, speaking at a joint meeting of the Soil Science Society of America and the American Society of Planning Officials, stressed that the "knowledge of planning, engineering, design, economics, and other disciplines that study man's use of land in order to achieve harmonious and efficient land use."

The Broome County project, which Dr. Olson cited as an example of special research conducted by Cornell agronomists in soil survey, can be used as the formula to help solve many problems of expanding population.

"Even in cities, man depends on soil for support, waste disposal, food, and many other raw materials, yet relationships between man and soils are little understood and have not been adequately studied," Dr. Olson noted. "If we knew more about these relationships, we could be more capable of planning for the future."

"STRAIGHTBURGER AND FRIES!"

by
Wesley N. Pollock '68
Illustrations by
Susan D. Rosen '66

Choosing a place to eat at Cornell is almost as difficult a task as deciding what to eat. The department of housing and dining offers a wide variety for the faculty, staff, student, and visitor to choose from.

The range runs from the quiet, home-like atmosphere of the three dining areas in the women's dormitories, to the Ivy Room in Willard Straight Hall with the unemptiable coffee urns and the everplaying juke box.

The diner has his selection of short order or steam table. This is usually the determining factor in where he chooses to eat.

Noyes' Lodge and Baker Cafeteria have short order, while the three women's dormitories, Martha Van Renssalaer, Hughes Hall, and Sage Graduate Center offer steam table service. Willard Straight Hall presents both types of service to the diner—steam table service in the Cafeteria and short order service in the Ivy Room.

The department of housing and dining offers the University nine dining areas to choose from—all different for the diverse student body it serves.

The department of housing and dining offers a wide variety of food, ranging from the four different style hamburgs and innumerable egg creations of the Ivy Room to the roast beef, chicken, rice, potatoes, and vegetables of the Elmhirst Dining Room in Willard Straight Hall. Through the ever changing variety of food offered daily, Cornell avoids what S. Russell Ryon of housing and dining calls, "One of the worst evils in the business . . . monotony for the student in his meals."

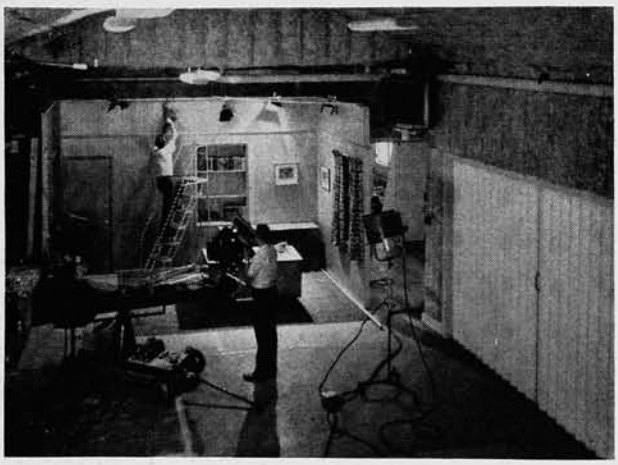
The Cornell community consumes huge quantities of food annually. In one year, the dining areas serve about one and one-third million eggs. Of course, the ritual meal of a hamburg, french fries, and a milkshake remains the students' main choice.

The student experiences innovations of the University, as the Cornell Formula Bread which is now proven to be better than the standard white bread.

The food at Cornell can be called versatile through the many sources it draws on for its ideas and the many people to whom it is served.

TELEVISION, PEOPLE, AND PROGRAMS

Campus laboratories are ready for TV filming.



Putting up a new set in Central Studio.

Educational television's effectiveness as a mass media depends mainly on the value of the material presented and the quality of the communicators in this medium. Both are in evidence at the Television Film Center on the campus.

Since the Center began in August, 1962, it has been constantly striving to improve program and technical *quality* by working in cooperation with faculty members of the Colleges of Agriculture and Home Economics. It has also been trying to increase the *quantity* of production used by television stations throughout New York State.

Recent research studies show that the Center's educational-type TV films have a very large audience and a high rating in regard to their usefulness and quality. Research also has shown that these films have changed favorably the knowledge and attitudes of the people.

Productions of the Center represent a balanced schedule including: (1) reports on research; (2) consumer economics; (3) public affairs and public problems; (4) international development; (5) non-credit short courses; (6) career explorations; and (7) material designed to create a better understanding of modern agriculture and home economics.

No. 5 in this year's series from the New York State College of Agriculture, a contract college of the State University at Cornell University, Ithaca, N.Y.

CORNELL COUNTRYMAN

MARCH 1966

Special in this issue—A Horse of a Different Color

TEXTILES AND CLOTHING IN A CHANGING WORLD

SIXTH ANNUAL INSTITUTE

sponsored by

The New York State College of Home Economics at Cornell University

April 21, 1966

9:30 a.m. - 3:30 p.m.

ALICE STATLER AUDITORIUM

OPEN TO THE PUBLIC

CORNELL COUNTRYMAN

Vol. LXIII March, 1966 No. 6

IN THIS ISSUE

Staff

Cover drawing by Jane M. Silvernail

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Cornell's Powerful Synchrotron

by Gregg Morris

The world's most powerful circular electron synchrotron is being built on Upper Alumni Field at the southern edge of the Cornell University campus. The synchrotron will cost an estimated $11,298,000. The project is being financed by The National Science Foundation.

This circular electron synchrotron will produce energy equal to 10 billion electron volts (Bev.).

Dr. Robert R. Wilson, director of the Cornell Laboratory of Nuclear Studies, and his colleagues designed the huge particle accelerator.

A synchrotron is one of several high atomic particle accelerators. Other particle accelerators are the Kevatron, Betatron, and Cyclotron. In each of these, atomic particles (electrons, protons, or alpha particles) are accelerated at high speeds. The Kevatron, one of the earliest, used a single high voltage applied to electrodes in a vacuum tube in which the particles were accelerated. It could produce energy in terms of hundreds of thousands of electron volts.

In the cyclotron the particles are accelerated through small voltages quite a few times. Each time, the particles are given an additional "push."

In a Betatron, a principle similar to one governing the electric generator applies. A changing magnetic flux produces an electric motive force around any closed loop surrounding the flux. In a Betatron, electrons are bent in a circular orbit by a magnetic field and an increasing magnetic flux thru an orbit which provides the accelerating force on the electrons. In the Betatron, electrons are confined to a circular orbit of constant radius by making the magnetic field vary with distance from the center of a circular magnet. The largest Betatron produces 350 million electron volts.

In the synchrotron, however, electrons are confined to an orbit of constant radius by an alternating guide field as in the Betatron, but the accelerating force is supplied by a radio-frequency electrode system. The electrons will be focused in a narrow beam a fraction of an inch in diameter and will travel thousands of miles in the course of being accelerated to high energy.

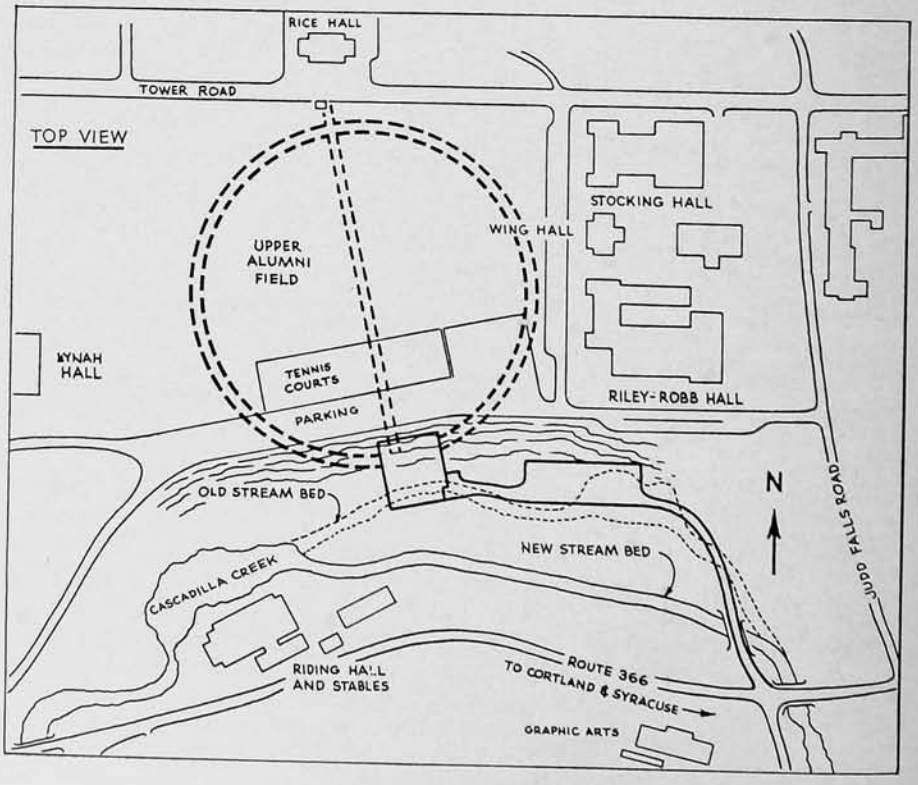
In a linear acceleration, the electrons go in a straight path and receive thousands of pushes along the path. In the circular accelerator, the electrons are sent around and receive a "push" each time around.

The ring of the new synchrotron will be 800 feet in diameter. The guiding magnets that will be placed around this ring will be eight inches high and 12 inches wide, which is smaller than magnets of some low energy synchrotrons. With the use of these magnets, the narrow beam of accelerated electrons will be produced.

A new feature of this synchrotron is the inclusion of long straight sections within the circular periphery. These regions have no magnets and are ideal locations for positioning of materials. These positioned materials will act as targets which will be struck by the accelerated electrons, causing a breakup of atomic nuclei. The resulting nuclear particles will be studied in an attempt to learn more about the basic forces of nature.

The huge ring, half mile in circumference, will be buried 50 feet beneath the surface of Alumni Field.

Location of Cornell's huge electron accelerator.



The Road to English Proficiency

by Candace Moore '66

In the past, there has been dissatisfaction on the part of students, faculty and administration in the College of Agriculture with the ability of graduates of the College to express themselves in writing. The inability to write correctly, clearly, and meaningfully is felt by graduates themselves to be detrimental in whatever career they have chosen to pursue, or whatever their undergraduate course of study may have been.

As the need for increased emphasis on writing skills became apparent, the faculty, in February of 1963, established the Committee on English Proficiency. This is a standing committee of six faculty members. Two are elected each year for three-year terms, and Prof. Tyler acts as representative of the Office of Resident Instruction, and as secretary of the Committee. The Committee has been meeting regularly approximately once a month, since its creation.

The proficiency requirement applies to students who matriculated in the College of Agriculture in September, 1964, and thereafter. It may be satisfied in either of two ways. The first alternative is satisfactory performance on the Writing Sample, which is administered by the College Entrance Examination Board. The Writing Sample must now be submitted with the application for admission to the College of Agriculture.

If a student's performance on the Writing Sample is judged unsatisfactory, he may meet the requirements in a second way. After taking freshman English, the student takes a proficiency test, administered by the Committee on English Proficiency. The test has been given once per term since the requirement was instituted, and will continue to be administered on this basis. The test must be passed before graduation.

The first proficiency test, given in May, 1965, was a combination of objective and essay sections. The format of the test was changed, and the new test, given in December, 1965, consisted of a one-hour essay on one of six topics. Three of the topics required purely expository writing, and the other three were persuasive in nature.

When the first proficiency test was given, last May, 79 students failed to perform satisfactorily. This fall at registration, these students were invited to sign up for an English tutorial program, to help prepare themselves for their re-tests. Of the group who had failed, 46 signed up for the course.

Four women, all with previous teaching experience in English, conducted the tutorial classes, which met

A tutorial session in progress.

three hours a week for nine weeks. The weekly sessions were divided between group instruction and individual tutorial help. A paper was assigned each week.

Although a larger number originally expressed an intention to participate, 35 attended at least one session of the program. The tutors, at the end of the program, felt that 24 of these had actively and faithfully taken part in the course, attending at least half of the sessions, and completing the assignments. All 24 passed the December proficiency test.

The test given last May caused a considerable amount of resentment and hostility among those who did not fully understand its purpose. Many of the students who were required to take the test viewed it as a penalty, rather than as an aid in determining their own abilities and limitations. However, it is evident that this attitude is changing. The success of the tutoring program has made it apparent to most that the test must be seen as a necessary preliminary step in reaching and helping those who need further aid.

Although 77% of the 188 students who took this December test, either for the first or second time, passed it, 44 did not perform well enough to be judged proficient. Each of these students was contacted personally by a member of the Committee, who notified them of their failure, and invited them to participate in the spring term tutorial program.

Because these students were aware of the success of the first such program, their responses were generally favorable, and 38 of the 44 who failed are now participating. They are taking advantage of an opportunity to improve their ability to express themselves effectively. In so doing, they are also improving their chances for success in whatever careers they choose.

From Handouts To Understanding

by Alexander Harwood '67

Each year Americans devote their time and energy to helping unfortunate people around the world. Aid to underdeveloped nations runs the gamut from Care packages to airports and dams. Peace Corps volunteers dig irrigation ditches, and American GI's dig in in Vietnam. All over the globe Americans in hundreds of ways are trying to help those less fortunate than we are.

In spite of the money we lavish on these countries they often have more problems after we leave than before. Sanitation and medication may reduce infant mortality; however, the resulting spurt in population may stretch an already limited food supply to the breaking point. Modern agricultural techniques will undoubtedly help the primitive farmer, but they may cause only jealousy and unrest between him and his neighbors.

A List of Problems

Unrest in Africa, revolution in Latin America, and Communism in Southeast Asia are complex problems. Certainly providing food and a better standard of living is a step toward solving them, but without understanding, good intentions may do more harm than good.

Handouts without understanding will only bring resentment and never produce a long term solution to the many and varied problems of people around the world.

Most of us are aware of the large scale projects that Americans embark on each year to help people all over the world; however, most of us are also forced to the realization that in spite of the fact that we give away more money each year than any other nation, we are not the most loved country in the world.

Large scale conflicts, political unrest, and social upheavals are present in many of the nations we try to help. Unfortunately, one of the facts most Americans fail to realize is that these people are very different than we are. Their social codes, mores, sense of values, and morals are unlike anything we know.

Overnight, progress has brought dynamic changes to these people. Their world is one of tremendous contrasts. Tribal rule becomes national government, intellectualism is found in the midst of ignorance, and backwardness is replaced by progress.

These changes are what strike the foreigner. They are, for the most part, commendable, but they are also extremes. Most of the population is caught between a whirlwind of progress and confusion.

It is easy to see skyscrapers or monolithic hydroelectric plants and dams towering above what was once an African village. Schools and universities seem to be built overnight. A rapidly advancing government, new ideas, new found conveniences, and more education are characteristics of these new and developing nations, but social upheaval and confusion sometimes seem to be an inherent part of their character.

Environment may change overnight, but people do not. Their sense of values, morals, laws, and mores are all subject to real and unreal forces created by a changing world. This is the realm of the social scientist — not the engineer, economist, or politician.

With the aid of 100 students at the Winneba Teacher-Training College at Ghana, a research report under the heading of "The Ghanaian Family in Transition" was recently completed. The report was conducted by Prof. Harold Feldman, department of child development and family relations at the N.Y. State College of Home Economics.

Polygamy, bridal prices, and tribal affiliations are all part of the Ghanaian culture, but education, commercialization, industrialization, and urbanization are rapidly changing the traditional Ghanaian outlook and molding a new one. Dr. Feldman's report can help Americans to better understand Ghanaians and Ghanaians to better understand themselves.

A Research Report

When writing about the research in Ghana Dr. Feldman said, "One of the areas of needed research. . . . is to explore the attitudes of samples of Ghanaians about some social problems. There is no necessary implication that the professional workers and policy makers in the Department would follow the opinions of the lay persons, but in carrying out programs it is frequently useful to understand the kinds of solutions and attitudes toward problems by lay people.

It may provide information about the direction of change which is occuring within the society, i.e. the movement from the traditional modes of solving social problems, and may have implications for educational programs oriented toward the public."

In the "Progress Report on the Cornell-Ghana Project" Prof. Feldman wrote:

"When in Ghana for short assignments during the fall of 1963 and the spring of 1964, I became convinced of the necessity for the initiation of a program of studies. As long as most instruction is based on texts printed in and about other countries, the translation to the Ghanaian setting is difficult.

"The problem is further aggravated by the rapid change occuring in Ghana. If all of the knowledge about the current Ghanaian setting were available today, it would be outdated in a short period of time and an on-going program of gathering new information would be necessary.

"Perhaps the most important reason for a program of studies relates to the atmosphere which is created in an educational institution. When faculty and students are engaged jointly in acquiring new knowledge, there is an air of excitement. Curiosity and critical thinking are encouraged. Since Winneba Training-College presently offers the highest educational level home science program in Ghana, I involved students and faculty in studies in ways that could be managed within their already tight schedule.

Objectives

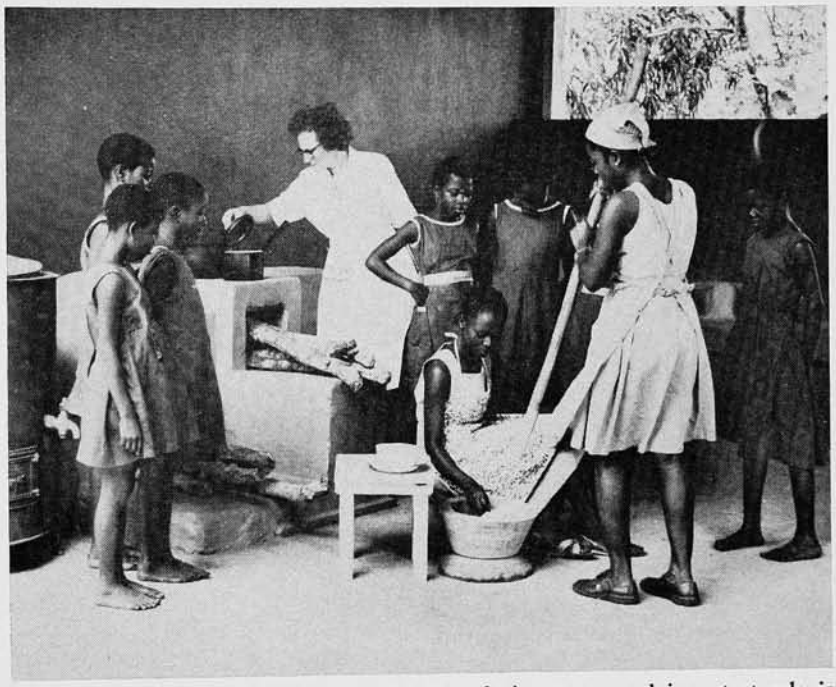
"The following specific objectives guided my year: 1. To stimulate interest in research and bring fresh ideas about the Ghanaian setting from experts outside the training college. 2. To initiate a program of research training for staff and students with a particular focus on survey methods. 3. To instigate a set of studies by staff and students on the current status of the Ghanaian family with home science implications. 4. To carry on my own studies with a particular focus on present-day Ghana. 5. To contribute to curriculum development in the social science area and to teach courses in this area."

The findings of the research report were printed and they are being studied by teachers at the University of Ghana, representatives at the U.N. General Assembly, Ghanaian government officials, and Cornellians in the U.S. and Ghana.

According to Prof. Feldman, the findings in the research report provide "knowledge which gives you a certain power of planning." It is obvious that he feels that the value of the report is not limited to Ghanaians, as he said, "They have a fair amount of use over here." However, even though the report provides study material for many different people and implications for the future, the true value of the report is not restricted to the findings.

Dr. Feldman in effect said that the most useful aspect of the report was not the findings themselves, but the studies and the practice which the students got. He went on to say, "Introducing change has to exist with the people themselves. It seemed to me the best way to get people to change their attitudes was to get them involved and do studies of their own. The important things we left behind exist within the people themselves."

Prof. Feldman's report was completed several months ago, but it is difficult to see what it has done for Ghana or the people who worked on it. A great deal of time, energy, and money was spent but all that can be shown are a few printed copies of the report. But there is a great deal more than printed paper. Prof. Mary Wood, director of home economics international activities, when asked about the value of work of this kind said, "Expanded knowledge is more difficult to measure than a dam. You can build a road or a dam in a lot less time than you can educate a human being." Education and increased knowledge are investments for the future; they pay dividends in understanding which are of far greater value than monoliths or handouts.



Formalized instruction in home economics is playing a new and important role in Ghanaian society. The girls above are working with indigenous equipment in a typical home economics class.

Virus as a Suspect:

THE LEUKEMIA MYSTERY

by Joan Solomon '67

There is no known cure for most cases of leukemia. Tragically, it takes the life of almost every living creature it strikes. Young and old, male and female, rich and poor, all are susceptible to its ravages.

In recent years there has been a concerted effort to find out what causes leukemia and how to prevent it. Some inroads have been made. Certain chemical treatments are now used which halt the progress of the disease for a limited amount of time. Yet, the dynamics of leukemia still elude even the most dedicated and meticulous scientists.

One piece of research uncovered an important clue. In a study on tumors of mice and chickens, several viruses were found to be directly related to the presence of leukemia.

Faculty members of the New York State Veterinary College of Cornell University saw the significance of this work, and began to look for viruses in the cancerous tumors of higher animals. The research, which is headed by Dr. Charles G. Rickard of the Department of Pathology and Dr. James H. Gillespie of the Department of Microbiology, is concerned with three species, the dog, the cat and the cow. In each of these animals the aim is to connect a specific virus with the occurrence of leukemia.

Tumors are supplied from two sources. One is the living animals which have been surgically operated upon. The tumor is removed in order to lengthen the animal's life. These tumors are then donated to the research effort. Tumors removed from animals which have undergone autopsy serve as the second source.

Several different techniques are being used in the search for the responsible viruses. An important one is electron microscopy. The first step in this process is the fixation of a slice of tumor tissue. The tissue is then passed through a series of solutions in order to embed it in a plastic material known as Epon. Then it is placed in an ultramicrotome where a knife with a glass or diamond edge slices off thin sections of the material.

The electron microscope is located in a laboratory in the lower levels of Schuman Hall, the main veterinary building. The function of this instrument is to pass a beam of electrons through the extremely thin slice of tissue. The image of the tissue that is created can then be photographed. The plates are developed in a small darkroom in the laboratory. This entire procedure results in a magnification of up to 200,000 times. The photographs are carefully studied for the presence of viruses. If a virus is indicated, the scientists try to ascertain to what species it belongs.

Another method used by Cornell researchers in locating viruses involves the growth of tumor cells in nutrient fluid. Pieces of tumor are introduced into nutrient fluid and placed under optimum growing conditions. A virus that has not previously been visible may appear in this type of environment.

The third major technique is based on the fact that if a cell is infected with one virus, the effects of a second virus on the cell are inhibited. The serum from a leukemia victim is introduced into healthy tissue culture cells. At this point electron microscopy may reveal changes in the healthy cell. If there is no observable effect on the cell, it is then infected with a virus which is known to be destructive to it. If a tumor virus is already present, in some instances it will protect the cell by interfering with the action of the destructive virus. In this way it can be determined if there was a virus in the original leukemia serum.

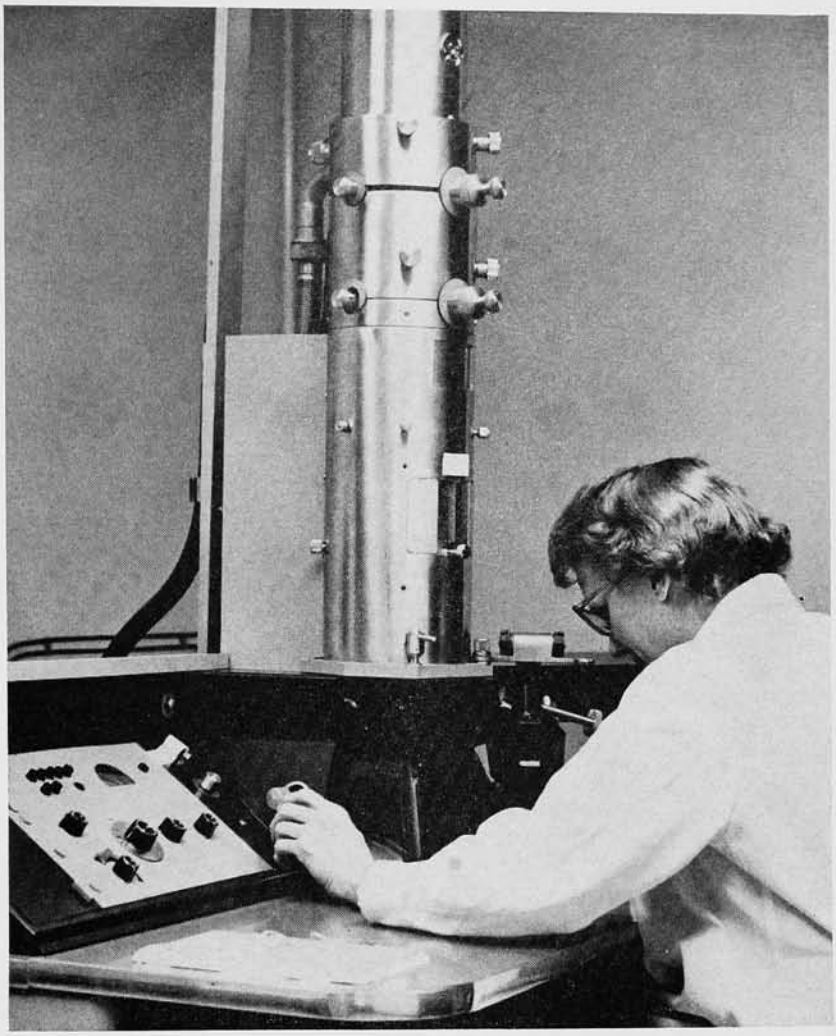
Research in leukemia and related diseases has been going on at the Veterinary College for over three years. The projects have been financed by the National Cancer Institute and the Agricultural Research Service of the United States Department of Agriculture. Work is being headed by faculty members of the Departments of Pathology and Microbiology. Several research associates, graduate students, technicians, and animal care-takers are assisting in the investigations.

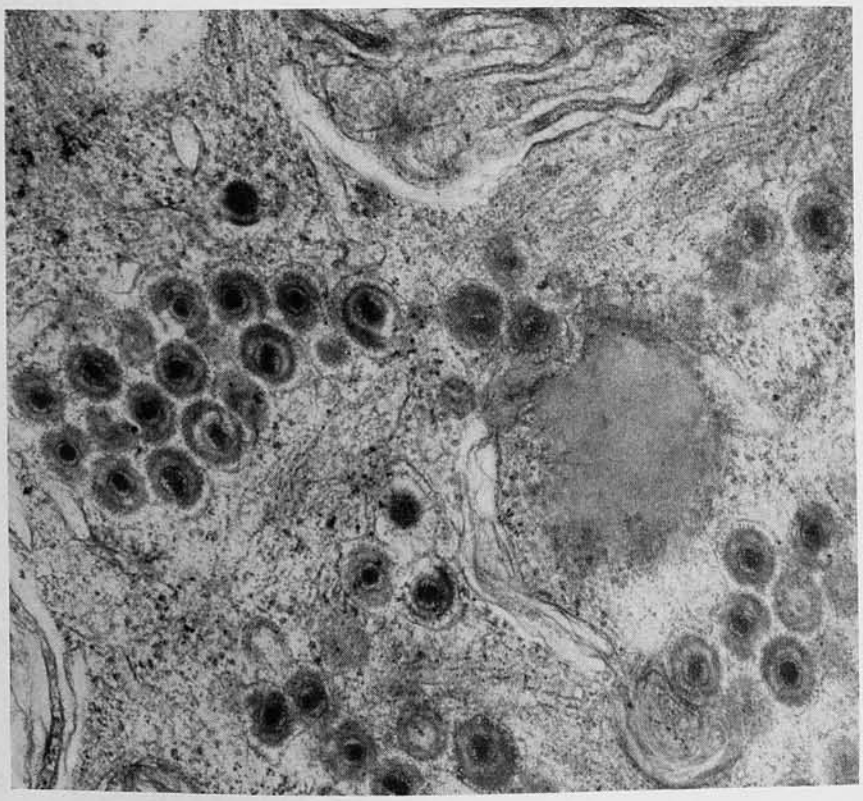
In studies conducted elsewhere, it has been reported that virus particles do show up in tumors of human leukemia victims. The connection of viruses with leukemia is very suggestive, but not conclusive. The following questions must be answered: How regular is the association? Is it always the same virus that is isolated?

If it is found that viruses do cause leukemia, a method for prevention is clearly indicated. A vaccine of inactivated leukemia virus could be administered, which would develop immunity to future invasions by the virus. Such a vaccine has been shown to be effective in preventing leukemia in mice. According to Dr. Rickard, it is scientifically possible for a similar vaccine to be used in humans, but it may not be feasible. One obstacle already evident is the difficulty in obtaining a large enough volume of viruses, since they do not grow well.

The work presently being done at Cornell is but a step along the way. It will probably be years before there are any fruitful results. As Dr. Rickard has said, "The problems may not be solved in five, 10, or even 20 years." The path is long, the labor tedious, but the prize at the end, priceless.

A research technician working an electron microscope. The image obtained by this process will be photographed and then examined for the presence of viruses.





An electron micrograph showing part of a cell of a leukemic dog. The black enveloped structures are herpes virus particles. This new herpes virus was isolated during the course of the Cornell studies.

PROFESSOR THOMAS FLORES

TEACHING COMMUNICATION COURSE

by Bob Christianson '69

"It's just like going from the corner store to a giant supermarket. Nothing can stop me, I can really spread my wings." These were the first reactions of Dr. Thomas Flores as he became acclimated to the New York State College of Agriculture at Cornell. Even though he had been an undergraduate at Cornell, he was still amazed at the new surroundings.

Prof. Flores was graduated from Cornell in 1954 with a Master of Education degree, and received his Ph.D. in Agricultural Journalism and Extension Education from the University of Wisconsin in 1959.

While majoring in swine husbandry, Dr. Flores took an assistantship in an entomology course and, after graduation, accepted a position at the agronomy department at the University of the Philippines College of Agriculture.

In 1962, he became Chairman of the Department of Agricultural Information and Communications at the University of the Philippines in Los Banos.

Prof. Flores came to Cornell on an exchange program which was instituted by Cornell after the close of World War II. The program provided for a strong graduate student relationship along with a professor exchange plan.

The University of the Philippines searched for nearly three years to find the professor who would most aptly represent them and could best fill the needs of the exchange program. Their choice? Of course, Thomas Flores.

Although he had been a student at Cornell, he was pleased and overwhelmed by the facilities available to a professor. He was also interested in the marvelous extension system in the United States. He says, "It is most impressive the way the ag staff works to get research out to the farmers." In the Philippines, he explains, the scientists and research personnel do a great deal of research, but after its completion, the research is filed in a notebook and placed on a shelf.

Unlike most foreigners who come to the U.S. with preconceived ideas about our mode of life, Dr. Flores set out to explore his conceptions and test their validity. "Many people coming to this country base their beliefs and feelings about your country entirely on the mass media." To combat this handicap of reliance on the views of a newspaper reporter or news commentator, Prof. Flores went out and made a conscious effort to "become acquainted with the people and farms of the Ithaca area."

Prof. Flores' three children had very little trouble adjusting to their new environment. One reason for this he says, is that English is the medium of instruction from the first grade up in the Philippines. His son, ten, and his two daughters, twelve and nine, adapted readily to their new circumstances; but, "we old folks had a difficult time getting used to things."

Dr. Flores, prepared for a tennis match.

The most difficult rift to overcome was not the language barrier. "We just couldn't get used to the food. It was just plain different."

Although Dr. Flores' interests range from tennis, baseball, and softball through stamp collecting, his primary concern lies in the course he is teaching.

A course in international communications will pay special attention to social and cultural influences and emphasize communications for bringing about changes in developing countries.

In reaction to the type of students that he has in his class, Dr. Flores feels that the American student appears more mature at corresponding educational levels. They are "more experienced and more independent in behavior. The student of the Philippines depends completely on the professor and does little outside reading."

In conclusion, Dr. Flores says that "the field of communication is so wide open, and there are so many possible avenues of exploration that I would encourage any student to consider and investigate this field."

PARKING --

An Unsolved Riddle

by Andrew Batty '69

PER CAR

Type of Parking	Capital Costs	Annual Interest	Annual Operating Cost
Surface	$ 400	$ 28	$ 10
Above-ground Structures	1,500	105	60
Underground	3,400	238	160

Comparative Parking Area Construction Costs

Where are you when you have ten minutes to make a lecture, and yet will have to run the four-minute mile to be there on time, having parked your car on a remote side street? The answer to this riddle, at this time, could be Cornell.

The future for the parking dilemma at Cornell looks dismal. It is estimated that if the auto population continues to grow at its present rate, some 500 more spaces will be needed, for faculty and staff alone, by 1970. Contributing to this bleak picture is the fact that construction of new buildings is substantially reducing the number of spaces available at the present time. Evidently some broad and direct changes will be necessary for efficient operation to continue.

Possible Solutions

Several suggestions have been presented as possible solutions or temporary remedies to the parking problem. One such suggestion is the construction of underground parking facilities in several locations. Lower alumni field was proposed as a probable site. Two levels of parking could be established with the field surface restored to the level of the upper alumni field. The costs of this project would have been high, however, and the traffic problem it would have posed would have been insurmountable. Two other possible locations for similar facilities, in the new wing of Martha Van Rensselaer Hall and the new social science building, have also been rejected because of high costs and the congestion that would result from the heavy traffic flow to mid-campus.

Above-ground garages are a second suggestion, but they too, are practically out of the question at the present time. Costs are again staggering. A structure the size of Olin Library would have an initial cost of one million dollars, with an annual operating expense of $135,000. Even if the enormous expense could be overcome these structures would have to be built in conjunction with a circumferential parking-traffic flow plan. This would do away with the convenience of central campus parking.

Several locations have been proposed for this type of above-ground facility. Yet, construction of above-ground lots also seems to be a venture for future years. Extensive study of structures of this nature is needed in developing an effective campus plan.

A third possibility to help alleviate the parking problem is the institution of fee parking. Those desiring the choicest spots would be required to pay a corresponding fee to obtain them.

Major Decisions

At the present time a peripheral parking plan is in use. It has, for the moment, eased the problem. Buses now run between these peripheral lots and central campus. Further development of this plan may be considered in the future.

Three major decisions concerning parking have been made thus far. These are: (1) to take care of the immediate parking problem with shuttle buses and remote lots, (2) to study the circumferential parking-traffic flow plan, and (3) to work towards the reduction of on-campus traffic. More action will be needed, however, and further decisions are forthcoming.

Development of the campus as a whole is kept in mind at all times when the problem of parking is being dealt with. In general, development is planned according to four ideas. The establishment of a pedestrian academic campus is the foremost of these ideas. Academic buildings will be within walking distance of eating places, offices, and libraries. Secondly, in connection with this aim, academic buildings will be confined between the two gorges, making pedestrian travel possible. Thirdly, aesthetic values, for which Cornell has long been noted, will be preserved. Finally, wherever possible, vehicular and pedestrian traffic will be separated.

The plan, for the Cornell campus of the future, seems, in many respects, to follow a trend toward the elimination of the automobile from the American campus. Several large universities have come to the time of decision now facing Cornell and have answered it in this way. Cornell could be the next.

Pomology Department:
Yesterday, Today and Tomorrow

by Emily Miller '69

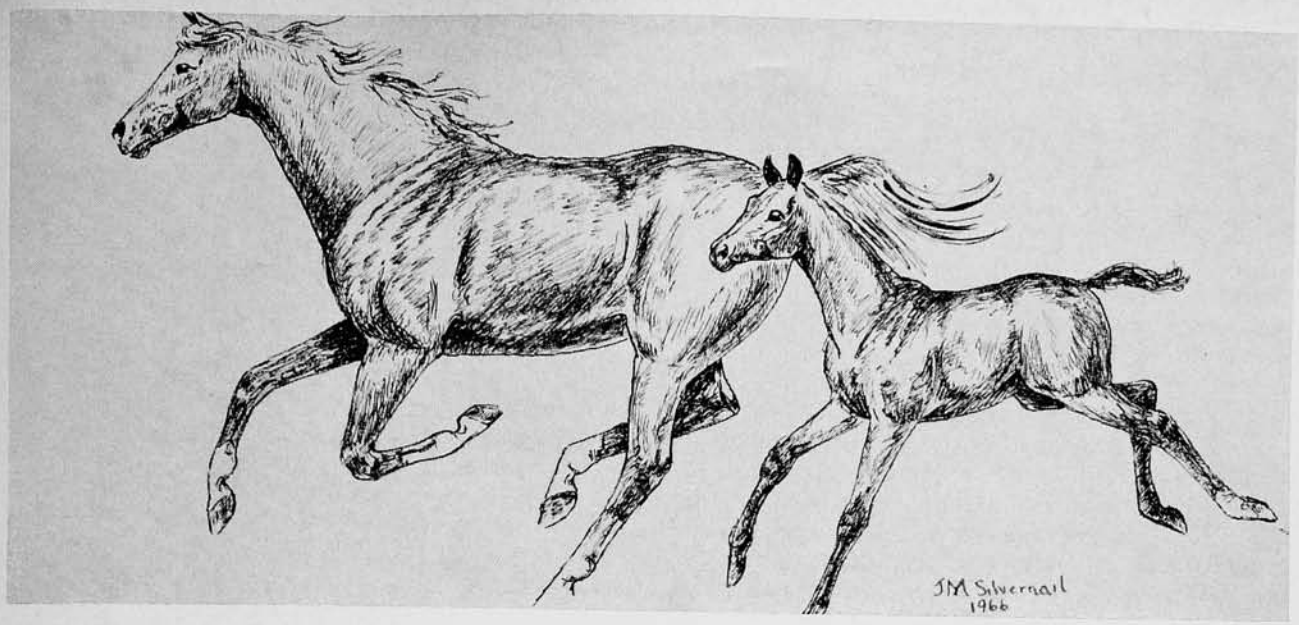
For years the Cornell Orchards have been developing different varieties of apples. While New York apple growers persisted with the traditional Baldwin apple, Cornell's pomology department experimented with the McIntosh, which has now become a muncher's delight.

An interesting side-light to the orchard's activities occurred in 1930 when New York State sponsored an experimental block, appropriately named the "Depression Orchard". By hiring labor paid at five dollars a day for three days a week, the field constituted one of New York's first constructive actions to counteract the Depression.

The pomology department also provides ample area for the fifteen members of the Pomology Club to keep abreast of innovations in the orchard industries by inviting guest speakers. This year's agenda includes lectures on developments in mechanical harvesting and on the Florida Citrus Mutual Sales Corporation, a new concept in group marketing.

The club, advised by Dr. Robert M. Smock, plays an intergral role in the College of Agriculture by providing the Pomology Club Scholarship. The club also pays one-half the cost of the Swedish Exchange Program. In addition to these activities the club publishes *The Appleknocker* every four years. The booklet informs alumni of the club's activities, and exchanges friendly gossip about the department.

Club president, Peter Concklin, remarked that "the orchards have been established to create a commercial situation for experimenting and learning." Hence, the organization operates as would any other business, yielding a year-end profit. The apples, although sold above the local prices so as not to compete with local enterprise, sell very well. This profit plus money earned through the sale of apples from the department's apple machines goes toward the scholarship and exchange program.



A Horse of a Different Color

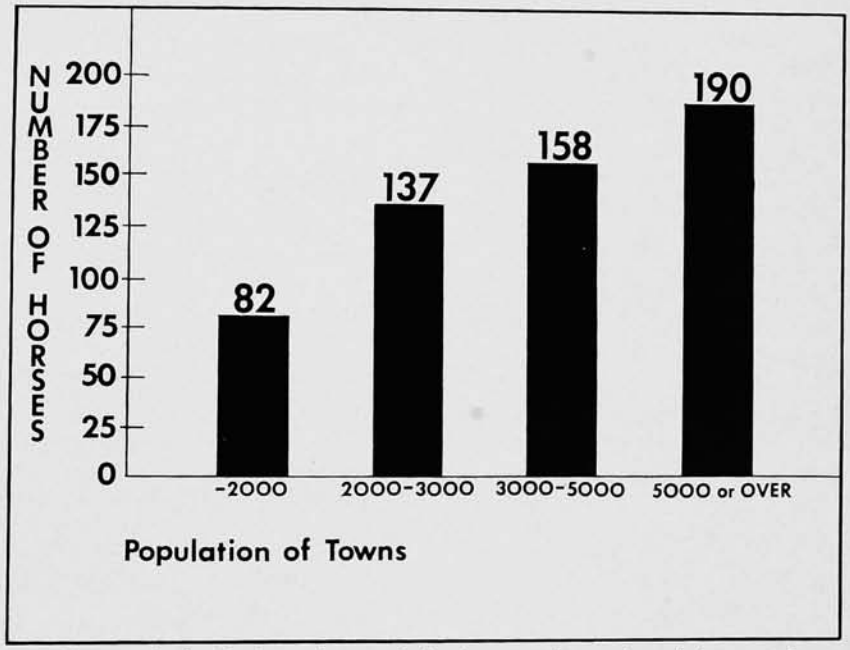
by Michael Barclay '69

With the advent of the tractor and the increase in the number of automobiles, the horse was once thought to be a disappearing factor in our eastern economy. However, a recent survey indicates that the horse population is on the increase. Upwards of 30,000 new horse owners have appeared in New York State since mechanization replaced the draft horse. This fact alone seems to indicate that one phase of the horse industry has replaced another since the turn of the century.

Today's horse industry, once thought of as unimportant in the economy of New York State, has developed into a multi-million dollar business, which, in addition to supplying employment for thousands of people, provides relaxation and enjoyment for millions of others.

It has been estimated that the value for New York State horses is close to 45 million dollars. Millions of people enjoy watching horse racing. An aggregate annual attendance in excess of 60 million people attend some form of equine activity. This is approximately 30 million people more than attend baseball games and automobile racing, the number two and three sports in the nation. Besides the taxes paid to local governments, come a status symbol for people of all ages. Many equestrians believe more than 100 thousand dollars is paid yearly to the state from pari-mutuel tracks.

The state is evidently in the midst of an explosion of the horse population. This expanding population is not, as one might think, centered around the race track and breeding farm. The horse has be-



This graph clearly shows the correlation between the number of horses and New York's urban population.

that a majority of the horse population is located in and around the urban areas of the state. This belief is supported by the agricultural census, which records only numbers of farm animals, and shows an actual decline in farm horse population.

With more and more leisure

This modern society is filled with stress and tension; the horse offers a means of escape and relaxation. As a result, a large number of horses are in or near urban areas where they are easily accessible. It is well to note that there are some 2,000 horses in the New York Metropolitan area.

time and more emphasis on physical fitness, coupled with the increasing number of acres removed from agriculture, the horse will come to be an important part of the recreational life of society. The horse's longevity and its gentle nature offer forms of recreation which can be enjoyed for years.

COUNTRYMAN CAPSULES

Women have finally come into their own as members of the nation's labor force.

According to Dr. Dorothy Gregg, assistant staff director, educational service, United States Steel Corporation, almost half of the 13 million new workers of the sixties will be women.

At a speech presented before a household economics and management seminar at the N.Y. State College of Home Economics, Dr. Gregg said that married women can expect to be employed about 25 years on their lives, while unmarried women usually work 40 years.

Dr. Gregg explained the revolutionary change in women's status as follows: "There has been a shift from production economy to services economy, from blue collar to white collar jobs, making more clerical jobs for women. There has also been an increase in the number of technical and professional positions."

The speaker forsees a stronger working partnership between husband and wife. The husband will tend to assume more responsibility in the moral and cultural upbringing of the children. Also, because of the additional income, the husband may be enabled to return to school and improve his employment possibilities.

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William I. Myers, professor emeritus and former dean of the New York College of Agriculture at Cornell University, has predicted the gradual withdrawal of the government from price support and acreage control during the next decade.

Addressing the combined groups of the New York State Horticultural Society, the Empire State Potato Club, and the New York State Vegetable Growers' Association, at Rochester, New York, Myers stated that, although these laws would result in higher labor and other costs, they will increase the competitive advantage of efficient family farms over the large-scale operations which depend on hired labor. He also said that agriculture cannot expect to be exempt from social change and social legislation.

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The Philippine's College of Agriculture has been playing host to two Cornell University professors, Prof. W. Keith Kennedy and Prof. John K. Loosli. The visits of American educators are part of a research and training program which is helping the University of the Philippines become the leading graduate training center in Southeast Asia.

Professor Kennedy, associate dean of the N.Y. State College of Agriculture, has been working with a technical committee in reviewing research projects.

Professor Loosli, head of the animal husbandry department at Cornell, is a consultant in the animal sciences in the cooperative-education program between Cornell and the University of the Philippines.

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Prof. W. Arthur Rawlins, of the New York State College of Agriculture at Cornell University, is spending a year in India seeking methods of destroying the large insect population that consumes food desperately needed by the human population.

Millets, which has more acres devoted to it than any other grain and is the main food item for nearly one-third of the Indian people, and sorghums have been the focal point of research on the insect problems in India. The sorghum midge and several stalk borers are the main insect pests now reducing the production of grain. Controlling them will require the use of insecticides and the development of resistant grain varieties.

Two out of three highway accidents involving slow-moving vehicles are read-end collisions. In order to reduce this serious source of injuries and fatalities, a triangle-shaped emblem may be mounted on the rear of farm and highway construction materials.

The emblem will be made of yellow-orange fluorescent and reflective red material. It is highly visible in daylight as well as at night. It is especially effective in the dangerous dusk period.

The New York State Rural Safety Council has strongly recommended the use of the emblem. The council's president, Prof. Edward W. Foss of the N.Y. State College of Agriculture has said, "It can be seen and identified at 500 feet or more under practically all driving conditions—in daylight, at dusk, or at night."

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A new course has sprouted in 39 New York State high schools. This new and growing course is horticulture, the art of cultivating or managing gardens.

The horticulture program is designed to satisfy the needs of several types of students interested in this vocation. With the addition of such necessary courses as science and mathematics, a student may be able to continue his education in a two or four-year college. A college education then opens the door to careers in such professions as a plant scientist, plant materials inspector, horticultural educator, or landscape architect are opened to him.

Hard work in this field could provide a fruitful business venture, for it has been estimated that the wholesale value of nursery and greenhouse crops is one-fifth the total value of farm crops sold or about $60,000,000.

ALUMNI

FRANK J. WOLFF, '53, 11 Schoolcraft Street, Guilderland, N.Y., is the Executive Secretary of the New York Association of the Future Farmers of America and is an associate on the Bureau of Agricultural Education in Albany. Previously he was a teacher of agriculture in Corning and Victor. He is the member of several state and national educational associations including the American Vocational Association, the New York State Teachers Association and the National Vocational Agriculture Teachers Association.

JOSEPH SLATE, '23, Box 181, Madison, Wisconsin, is presently working with the Madison County Highway Department. He formerly operated his own farm and is a past master of the Grange. Now he serves as a Madison Village Trustee.

HUGH W. FREELE, '38, 2 Morgan Terrace, Castleton-on-Hudson, N.Y., is a research biologist in the Sterling-Winthrop Research Institute, a division of Sterling Drug Inc. He received his M.S. from the College of St. Rose in 1963. He spent five years with the United States Army before undertaking his present position 20 years ago. He is a member of the Entomological Society of America, the American Society of Parasitologists, and the World Society of Veterinary Parasitologists.

ROGER S. VAUGHN, '61, RD 2, Richfield Springs, N.Y., is presently working in partnership with his father on their poultry farm. He served as a Company Commander at the United States Army headquarters in Brooklyn, N.Y. Presently he is a church trustee and Sunday School teacher at the Methodist Church in Richfield Springs.

WILLIAM T. SMITH, '38, RD 1, Elmira, N.Y., is currently serving his third term as a member of the New York State Senate. He is also operating his own farm and restaurant. His son, William T. Smith III, is a senior in the College of Agriculture.

NAOMI LEITH CULKIN, 53, 1846 Genesee Street, Lima, New York, is a lab technician at the University of Rochester Medical Center at the Strong Memorial Hospital in Rochester. She has also taught General Science in the Lima High School.

The above picture of Mrs. Culkin appeared 15 years ago, on the March 1951 *Countryman* cover. The issue was for Farm and Home Week.

NORMAN H. FOOTE, '32, 156 Hillside Road, Farmingdale, New York, is Professor and Chairman of the Division Agriculture at the State University Agricultural and Technical College at Farmingdale. He previously served as a vocational agriculture teacher and 4H Club Agent. He is a member of many organizations including the Rotary International, Nassau-Suffolk YMCA director, and New York State Horticultural Society.

President's Column

by Robert H. Everitt

In this month's column I shall attempt to bring to your attention some areas of concern to the agricultural community.

It has been predicted that by the year 2000—only 34 years from now—the world's population will have doubled. It is also thought that at that time the United States will be one of few countries producing a surplus of agricultural products. It is doubtful that this surplus will be sufficient to supply other areas.

Famine is now predicted for three areas of the world within five years. If we are to have enough to eat, the leaders of agriculture are obligated to evaluate the many physical and social changes in our environment. As our numbers increase and our way of life becomes more complex and interdependent, the large and well managed farms will be the only ones that are able to operate successfully, and then only with more efficient ideas and methods.

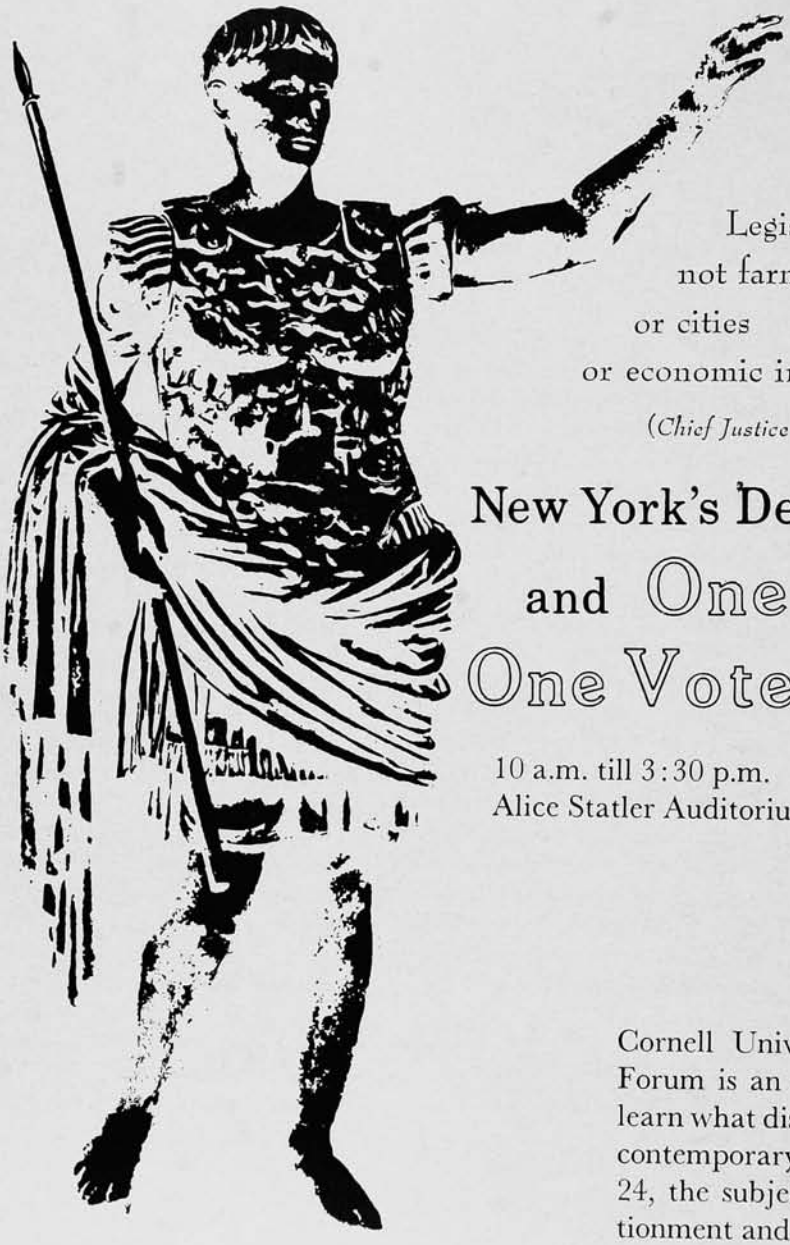
Land which will yield the best crops will be necessary. Now is the time to plan in order to have the best land available when it will be needed. Instead of allowing the most fruitful land to be covered by highways (such as the interstate highway through the Cortland Valley) or by other "improvements" (the proposed jet port in the Orange County mucklands) it would be better in the long run to utilize areas not suitable for agriculture for these projects. This would preserve valuable land for the time when it will be needed.

Also, if we are going to produce more agricultural products on less acreage, it will be necessary to attract a more brilliant and dedicated student than ever before to our agricultural institutions. Only through the efforts of these students in fields of animal husbandry, plant breeding, environmental studies, and insect and disease control will superior varieties of plants and animals sufficient to feed the people of the world be developed.

It has been said that the sea is the food source of the future, but even if tis is true careful planning and zoning of our land is necessary now. This will provide us with time to develop such resources, and even after they have been developed the use of our land will not have decreased significantly.

Dynamic leadership in agriculture is desperately needed to counteract the shortsighted programs that endanger our prime land and possibly the fate of man in the future.

No. 6 in this year's series from the
New York State College of
Agriculture, a contract college
of the State University, at
Cornell University, Ithaca, N.Y



Legislators are elected by voters,
not farms
or cities
or economic interests

(Chief Justice Earl Warren, Reynolds v. Sims, 1964)

New York's Development and One Man, One Vote

10 a.m. till 3:30 p.m.
Alice Statler Auditorium

Cornell University's Agricultural Leaders Forum is an opportunity for the public to learn what distinguished Americans think of contemporary issues. This year, on March 24, the subject will be legislative reapportionment and its significance.

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April, 1966

CORNELL COUNTRYMAN

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IN THIS ISSUE

Staff

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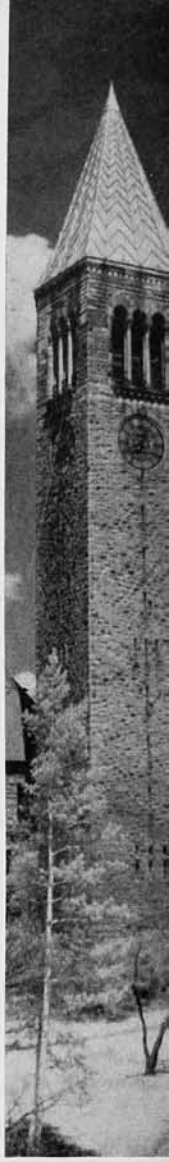
THE FALL OF THE IVY TOWER



Cornell's Disadvantaged Group Recruitment Committee is doing its best to extend Cornell's reach.

by Marjorie Case '67

Andrew Dickson White: "Is it true that you're going to found an instutution where anyone can find instruction in any subject?"

Ezra Cornell: "Yes, that's right."

White: "But you'll have millions of people coming from all over; the campus will be mobbed."

Cornell: "Not where I'm going to build it!"

Ezra Cornell was spoofing, but his statement serves as a reminder of the limitations imposed by the isolation of the Cornell community, and of the student obligation to extend Cornell's reach beyond the Ithaca area. The Disadvantaged Group Recruitment Committee, headed by Kenneth Brecher '67, is attempting to live up to this obligation.

The Disadvantaged Group Recruitment Committee (DGRC) was organized three years ago by Judith Miller '66 in answer to the growing student concern regarding our nation's problems in increasing educational opportunities for culturally disadvantaged youths. Their entire program, which includes visiting high schools in their home areas, talking with school officials, and establishing friendships with these culturally or socially deprived youngsters, is geared toward interesting capable disadvantaged students in continuing their education on a higher level, acquainting them with aspects of university life, and giving them continual motivation with the hope that in a few years they will desire and be able to apply to an institution of higher learning.

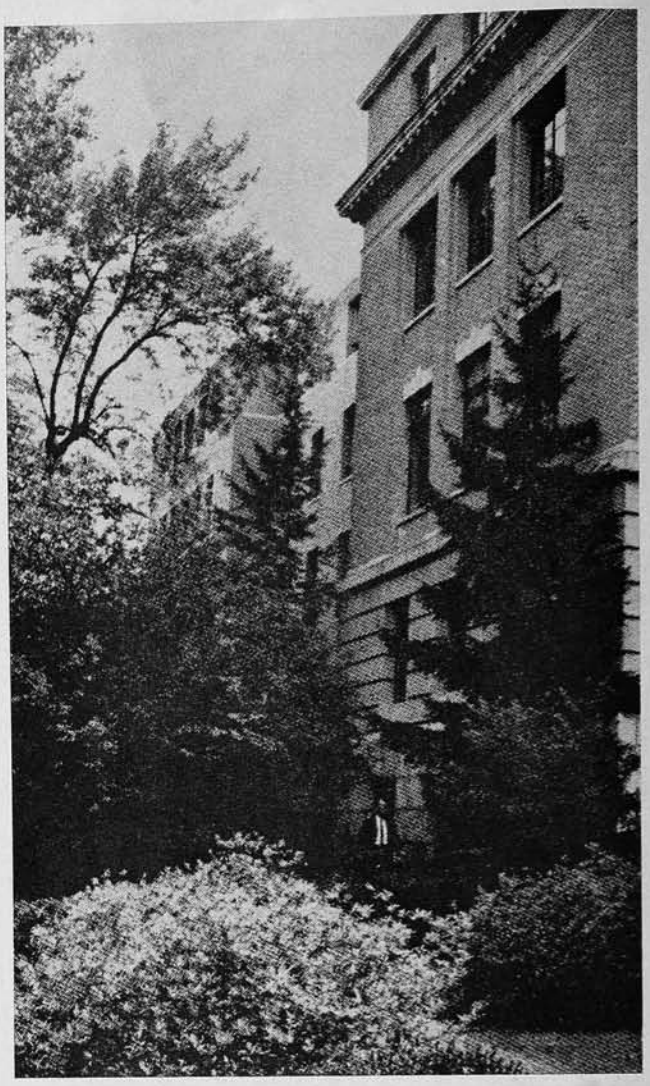
This program is a new approach to student government on the Cornell campus, for members of the Committee are completely on their own. There are no checks on their individuality or personal satisfaction. What actually happens is that a letter of introduction is sent to the Cornellian's hometown high school. Then, when the Cornellian goes home for vacation, he visits the school guidance counselor and/or the school psychologist and requests the name of six culturally disadvantaged sophomores whom they feel should be encouraged to attend college. The Cornellian then meets with these selected students and tries to acquaint them with college life and the opportunities it holds for them. Often this advisory relationship in which the Cornellian helps the student plan his next two years of study, summer activities, and college choices and scholarships, grows into a friendship. The Cornellian may decide to write to the student or even invite him to visit Cornell. Every vacation, the Cornellian visits his six students and stresses the importance of colleges in general, NOT just Cornell.

This is a big year for the Committee which is composed of more than 50 Cornell students helping over 200 youths. Success for the Committee is now forth coming as their first students will be graduating from high schools this June and entering colleges next Fall. Furthermore, the Committee is actively engaged in having more non-white high school students of a high caliber attend this year's coming Cornell Day—Sub Frosh Weekend. This weekend in May, where 500 exceptional high school students are invited to Cornell, is administered by a system of alumni recommendations and subsequent Administration acceptance. Once here, the high school students are shown the highlights of the Cornell experience. In past years, mostly white students attended. Since the number of non-white incoming freshmen has grown tremendously over the years, the DGRC would like many more of them to get the opportunity of attending Cornell Day. Any alumnus who is interested in recommending or recruiting outstanding non-white students for an invitation to this unique event should contact Mr. Robert Jones, Assistant Dean of Admissions, Day Hall, Cornell University, Ithaca, New York.

The DGRC is doing a wonderful job. Previously, these deprived youths had little hope other than to get some job and help support their six or seven brothers and sisters. Through the efforts of this Committee, and similar groups on many campuses across the nation, new hope and opportunity in the form of a college education has become possible. Anyone who would like to participate in the rewarding work of the Committee can contact Kenneth Brecher '67. I did.

Functional Landscaping

Alan Hall '67



When the snows melt, Cornell University becomes a vast garden. Multi-colored tulips and yellow daffodils grace the buildings and crocuses cover the lawns. Magnolia, forsythia, redbud, and crabapple burst into flower. The air is filled with the mingling scents of thousands of flowers. This is no accident. The mammoth task of planting and maintaining Cornell's grounds requires a staff of 55 men working on a 24 hour basis. During the summer months over 100 acres of lawn must be mowed each week. Last year over ten tractor trailer loads of plant material were shipped to Cornell. These were planted, as were several fully grown trees.

Plants Useful to Students

Since the size of the job, the changing styles of landscaping, and the erection of new buildings make long range landscape planning impossible, Cornell strives to keep its grounds functional as well as decorative. Mr. George Swanson, Superintendent of Grounds and landscape architect, works closely with the University faculty when selecting plants. His objective is to provide in the landscaped campus a living laboratory that can be used for field trips and exercises in plant identification by University students.

As a part of this program, 12 kinds of trees were planted on the campus for study and observation in 1965, including honey locusts, Norway maples, and ash. Scattered around the campus is one of the area's most extensive flowering crabapple collections which consists of 40 to 50 varieties. Also of interest to the student are the various gardens on campus, such as the poisonous plant collection, the holly garden, and the azalea garden.

Hardy Colorful Plants

Plants are also selected on the basis of their ability to survive in Ithaca. This provides plantings that require minimum care. Yew is predominant and is planted close to buildings because it is able to withstand the weight of snow. Flowering shrubs are planted in the open, where they are less likely to be damaged. However, Mr. Swanson's objective is also to "provide spring interest, summer interest, and fall color." Attempts are made to coordinate blooming with graduation and alumni functions in the fall, although this is difficult due to the variation in growing season from year to year. Many flowers and shrubs are planted with this objective, such as the colorful hydrangeas that usually brighten the campus at graduation.

Growing Gifts

While most of the plants on campus are obtained with University funds many are memorials and class gifts. Each year two oak trees at least six inches in diameter are donated by Prof. Clinton Rossiter of the government department and by Mr. John Ewanicki, owner of the General Tree Service of Ithaca. Also a $100 gift for small flowering shrubs came from the Garden Information Center of Ithaca. However, potential donors often cause problems by offering plants that require removal to the University. These gifts are never accepted because it is more convenient to purchase a similar plant.

Although the University's landscaping follows no long range plan it is carefully coordinated to provide a well-landscaped campus that is of use to students and faculty as an outdoor laboratory. Cornell does not try to be a showplace. It emphasizes the planting of low maintenance plants that are well cared for and are of use in study and research. Thus Cornell has a beautifully and functionally landscaped campus.

The Story of Marketing Research

by Alexander Harwood '68

All too often we take for granted the wide array of consumer products we have to chose from. Each trip to the super market or department store is a journey into a land full of new and exciting ideas and products, but most of us are unaware of them or the work that goes into creating them.

Prof. L. B. Darrah's work with egg cartons is typical of the work going on in marketing research and packaging.

The Story

Prof. Darrah, of the department of agricultural economics, working with the Foam Products Department of Mobil Chemical Co., and the P. & C. Food Stores, designed and developed a new egg carton made of a polystyrene foam sheet. This material has several advantages over the old fashioned chip board and paper pulp carton. Polystyrene has better temperature insulation, superior cushioning, has a satiny smooth finish that can be printed on and colored throughout, and finally can be manufactured at a low competitve price.

It would seem that the advantages of the polystyrene carton would have made it an instant success, but first the ground work had to be done. The carton had to be checked against damage to eggs. It also had to be placed in P&C stores to measure customer acceptance and to discover any unforeseen problems.

Eggs in the new carton were sold alongside those in the traditional carton. The positions of the cartons were reversed halfway through the test to negate any advantage the position might have given either carton. In the first two tests the number of polystyrene cartons purchased declined because of faults in the original design. The clasp didn't close well and the sides lacked adequate strength. However, according to Prof. Darrah, "The retailer's and customer's reactions showed that the polystyrene foam carton was more attractive than the conventional cartons, and it was evident that further improvements in the carton would result in a container that would win wide acceptance."

A new clasp and thicker sides were added to the carton, and a new test was run. This time, instead of having white cartons, pink, aqua, and yellow were introduced. This meant that Prof. Darrah was not only testing for acceptance of the new carton, but color preference as well.

Prof. Darrah concluded, "The polystyrene foam carton was well accepted by customers as indicated by the high and growing proportion of the sales for which it accounted. The polystyrene foam sheet possesses a number of characteristics that make it an ideal material for egg cartons. Since the carton can be manufactured at a competitve price and has other desirable traits, it merits being used in any aggressive egg marketing program."

At the beginning of the second test, only 45% of the eggs sold were in the new carton, but, by the end, 75% were in the new carton. The tests not only showed that the new polystyrene foam sheet cartons were a success but also confirmed some of Prof. Darrah's predictions. "The rate of customer acceptance of the polystyrene foam carton varied among the four stores used in the test. The highest acceptance rate occurred in a store located in a new housing development made up largely of young, medium-to-high income families. The lowest acecptance rate occurred in a store located in an old downtown area that was largely an apartment and rooming house district inhabited by older and smaller families of medium-to-low income."

It was also found that by the end of the last part of the test over two thirds of the polystyrene cartons sold were the aqua color. "This," according to Prof. Darrah, "Is just what we would expect to happen, with the younger more educated groups being most willing to try something new. As to the color, we also knew what to expect. The aqua is a cool color and makes the eggs look cool. We expected this color to be the most popular, and it was."

The Value of the Test

You might wonder if the results of the tests were worth the time and work involved. After all, the old cartons weren't all that bad. But, unfortunately, if we want to maintain our standards in our large mass markets we can't be saitsfied with second best. The egg industry uses 2.5 billion egg cartons annually, and this number will grow. Mechanization and mass production techniques require efficient distribution and packaging. A small saving in money and time and a small increase in convenience for the individual results in large beenfits for the group.

The new egg cartons, because they protect the eggs better than the old ones, will provide the consumer with more usable eggs at the same cost and insure the producer, transporter, and retailer against losses due to breakage. Less money will be spent on refrigeration because it is a better insulator, and there will be less spoilage. Finally, the attractive appearance to the new carton at no increase in cost may spur consumers to buy even more eggs.

Marketing research is not limited to egg cartons but research is constantly creating new ideas and improving existing ones. Now the aisles in the super markets are not only colorful and neat, but functional as well.

NEW YORK CERTIFIED SEED GROWER'S COOPERATIVE

by Michael Barclay '69

When the harvest finally comes in, there is a great deal for the farmer to give thanks for. Looking back over the past, the successful farmer remembers his successes and failures and often finds that his successes were due to good advice before planting. This is the sort of good advice given by the New York Certified Seed Grower's Cooperative.

Thsi long-dreamed-of organization finally became a reality in February 1923. The founders, Bruce P. Jones, Arthur M. Reed, Elmer E. Hults, Lyman L. Foote, and H. Bruce Munger, would be happy with the progress their project has made. The coop now has its hands full serving all of New York State and many of its farmers.

The Seed Coop providies farmers with new strains and varieties of seeds. The farmers then experiment in their own fields to see just what sort of seed is best suited to their particular needs. The seeds are free, and to get them, the farmer need only get in touch with the office and indicate an interest in the program.

But, before the seeds can be sent to the farmers, a great deal must be done to give a seed its "pedigree". All the seeds eligible for certification are sent to the Seed Coop office in Roberts Hall at Cornell. The office serves as a coordinating center for the organization. They are next sent to the experimental station at Geneva for examination. Here they are analyzed for factors such as starch content, germination potential, disease resistance, and ability to withstand insect attack.

When they have been properly cataegorized and labeled, the seeds are shipped to the New York State Department of Agriculture and Markets. Here they undergo a series of tests to grade them as to their content of objectional weed seed, planting ability, and length of growing season.

By this stage, a great deal of the original seed has been rejected, but those seeds receiving certification are sent back to the Seed Coop office to be tagged and sent to the farmers.

The Coop does not stand alone in its work. Many other institutions pitch in and help in this new and highly valuable work. In conjunction with the Coop are the New York State College of Agriculture at Cornell, the New York State Experimental Station at Geneva, the University College of Forestry in Syracuse, and the New York State Deaprtment of Agriculture and Marketing, not to mention the hundreds of farmers and farmer's organizations participating every year in experimentation.

The goal of such an organization as the Seed Coop can never be singular, and, accordingly, this nonprofit organization is not designed to help just the farmer. Rather, the Coop sets a much more encompassing goal. They wish to promote better seed production and higher quality grains as well as set an example of New York State's leadership in the agricultural spectrum.

Through rigid standards of quality and long hours of tedious and exacting work, the New York Certified Seed Grower's Cooperative is doing just that, and doing it well.

And then there was one:

thirty years and the elm tree

by Emily Miller '69

To anyone for whom an experiment means a three hour session of tedious work in a college laboratory, the prospects of spending thirty years on a single project would seem overwhelming. But for thirty years Cornell researchers have sought to discover a naturally occurring elm tree resistant to Dutch elm disease. . . .

In the 1930's the Dutch elm disease, which destroys the common shade tree, elm, was discovered in the New York City area. A group in Yonkers decided to investigate this disease with the hopes of locating an elm naturally resistant to the infection. Such a variety would have great significance on the commercial market; once discovered it hopefully could be bred and sold. Although the desired variety would not withstand the disease itself, it would limit the available breeding sites for the bark beetles (tiny brown beetles) which carry the infection.

To investigate the resistance of various elms, 15,000 to 16,000 seeds and seedlings were collected throughout the United States. When they had matured sufficiently, they were innoculated with the fungus. Survivors were innoculated again. With the advent of World War II the project efforts were diluted, but in 1947, interest again boomed. Cornell's Professor D. S. Welch, now professor emeritus, headed the research group which finally uprooted the 200 most prominent trees for transplantation in Ithaca. Despite their rough and abrupt removal from Yonkers, the trees continued to flourish and were again ready for innoculation in 1951 and 1956.

In 1962 the present research chairman, Professor Wayne Sinclair of Plant Pathology, assumed responsibility for the program. Thus far 130 elms had survived disease and transplantation, and were accordingly reinoculated in 1963, 64, and 65, until all but a dozen had died. Of these twelve, all but one were either runts or had been "killed back to ground level" which, according to Professor Sinclair, means that only their roots lived. Only one elm has shown "good form and good vigor." This single elm has indeed been encouraging, but as seems typical in complex and exacting science, it must survive still more tests before it is of real significance.

Resistance, one must understand, does not imply immunity to the disease. It means only that the disease resistant tree will not die back to the point where it can service the bark beetles in their breeding. Consequently the remaining elm has shown definite symptoms of the disease and must begin to recover alone in the spring. If it does not, the project has met a dead end. If the tree does survive, two procedures will follow. First, "rooted cuttings" will be taken from the tree to determine whether this tree can foster offspring. These off-spring would be genetically identical to parent and should exhibit similar resistance to the disease. Secondly, the resistance of these cuttings would be compared to the resistance of known susceptible strains of elm to measure the comparative resistance of the test elm.

The project, if the elm survives this May, depends on the ability to propagate elms genetically identical to the parent. In accord with this qualification, Professor Sinclair and Professor A.M.S. Pridham, department of floriculture, devised a new method for obtaining off-spring from cuttings. This method involves cutting soft, new twigs and inducing them to grow roots. Some work has been done in this area, but the bulk of the effort will ensue if the tree passes its test this spring.

Aside from its importance to the researchers directly involved with studying Dutch elm disease, the lone elm growing in the Cornell Plantations should represent something more to the academic community. It represents the patient and careful work of dedicated men through over thirty years of effort and expense. Whether the elm dies or thrives, it maintains stature for this single fact; success or failure cannot be measured in terms of the experiment alone.

BEFORE (L) and AFTER (R): A loss of limbs and foliage characterizes the toll of the Dutch Elm Disease on the victim tree.

MEN AT THE HELM:

Deans of Agriculture

1874 - 1966

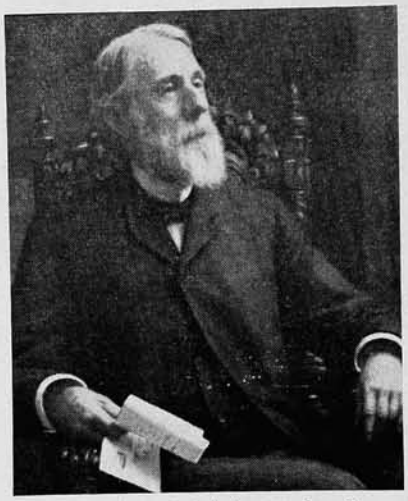
The portrait, as an immortal reminder of a mortal individual, is a traditional means of paying tribute to outstanding persons. But the simple presence of a painting, regardless of its accuracy or realism, fails to provide the entire story. In order to understand and appreciate the portrait's significance, we need to look beyond the physical representation of an individual.

So it is with the portraits of the deans of the College of Agriculture which hang in Mann Library. Each picture represents a policy-maker, an administrator, a builder of the educational structure we identify as the New York State College of Agriculture at Cornell. Each of the men portrayed in Mann Library reflects a period in history of the growth of the educational process at Cornell.

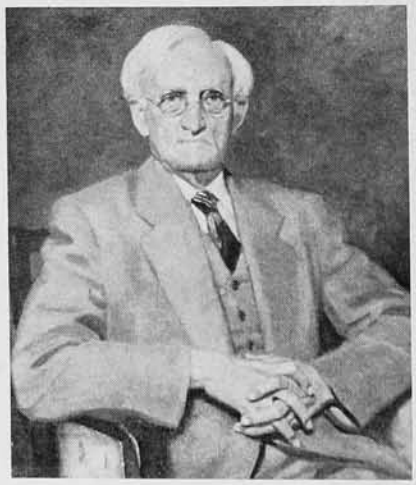
The nature of agricultural education in the 1860's as an uninvestigated area of the college curriculum presented new-born Cornell University with a challenging task. Andrew Dickson White, Cornell's first president, had little interest in this field. Ezra Cornell's devotion to agriculture, however, along with the attraction of land grant opportunities of the Morrill Act, convinced White that the field of agriculture could not be excluded from the University curriculum.

George Chapman Caldwell became Cornell's first agriculturally oriented faculty member. During agriculture's beginning years in the University experience, Caldwell, served as the prime organizer and administrator of the new area. He is often considered to be the first dean of Agriculture, though the position at the time was largely honorary. Caldwell directed his efforts to securing an adequate faculty for agriculture in the absence of a recognizable administrative unit separate from the University.

Once the college had identified itself as a separate entity, the dean's title fell upon the shoulders of Isaac Phillips Roberts. With a background of farm experience in New York State and an agricultural education at the Iowa Agricultural College, Roberts, the "practical farmer turned teacher," had ability and energy reflecting a faith in the future of education in his field. The death of the strong personalities of Ezra Cornell and John Stanton Gould, and a general lack of interest on the part of his colleagues, enabled Roberts to build on and alter established traditions. The small college enrollment allowed him to concentrate on the work he knew best—building the University farm and making contacts with state farmers. Development of the extension theory through Farmer's Institutes and the Experiment Station at Geneva characterized the nature of agricultural expansion during Roberts' service as dean. His retirement in 1903 concluded an era of evolution of agricultural knowledge.



NYS College of Agriculture at Cornell



NYS College of Agriculture at Cornell

National repute as an agricultural educator as well as previous work at Cornell made Liberty Hyde Bailey a natural choice for dean of the Faculty of Agriculture. Bailey, recognized as one of the foremost teachers of horticulture in the country marked his term in office with an expansion of faculty and curriculum unmatched in preceding years. With an abundance of energy he researched, wrote and edited information to determine how "his" College of Agriculture compared with similar institutions.

Following Bailey's retirement in 1913, the College was confronted by conflicting pressures in its choice of a director. Bailey had maintained a policy of keeping the college as independent as possible from University authority. The president, however, felt that the college should be more *closely* aligned with the University. The outcome found Beverley T. Galloway, the president's favorite, filling the dean's position. The fourth dean's views of the institution's relation to the farmer and the University resembled those of Bailey, as did his work in expanding the curriculum. But Galloway made the mistake of applying administrative techniques as he had known them in the Bureau of Plant Industry, rather than in accordance with the type of institution he was administering. His establishment of clerks as a stepping stone between the faculty and the dean created resentment and friction. An attempt to reorganize the college in terms of service units, eliminating administrative departments brought a wave of dismay and a faculty demand for Galloway's resignation.

For the "best interest of all concerned" Galloway resigned his office after two years.

NYS College of Agriculture at Cornell

As Galloway's successor, Albert Russell Mann became dean facing a number of expectations. It was expected that Mann would direct college operations in such a way as to render agricultural education as a part, and only a part, of the total field of education of the University. Mann administered the institution wth closer alignment to the interests of the farm people and the state.

NYS College of Agriculture at Cornell

The policies and theories of Carl Edwin Ladd, Mann's follower, contrasted with those of the former dean. Mann's independence from the pressures of organized agriculture was replaced by Ladd's belief in providing active leadership in areas beyond education which served the interests of the farmer. Whereas Mann considered publicity techniques extraneous, Ladd stressed the value of public relations. He weighed his decisions according to the effect they might have on groups outside the college. Well aware of farmer opinion, Ladd referred to his position at Cornell as "the crossroads of national agricultural sentiment." His term as dean spanned a critical national dilemma—the depression of the '30s. In response to this environment, Ladd's years evidenced the development of Cornell's crucial relationship with the state and federal governments.

NYS College of Agriculture at Cornell

Upon Ladd's death in 1943, in the midst of the World War, the dean's office was assumed by William Irving Myers, head of the Department of Agricultural Economics. Administrative experience and relationships with leaders of farm organizations gained from his former position constituted a solid background for the new dean. Myers' personal acquaintances with men capable of affecting public policies toward agriculture were well-suited for his primary objective of service to organized agriculture and agricultural business. At a time when the proportion of the state's population engaged in agriculture was lower than three percent, opposition to a College directed so predominantly to the practice of agriculture was becoming popular. Myers' concern for this growing attitude was expressed in his retirement speech of 1959. "There are some who would play down agriculture and emphasize other fields. I believe we would do so at our peril. I think the basic philosophy should be one of service to agriculture and to the public and other related work; but not weaken the service for which this college was established and for which it has been supported."

The "man at the helm" today is Charles Edmund Palm. Experience as director of the Cornell University Agricultural Experiment Station and Director of Research of the New York State Colleges of Agriculture and Home Economics, enhanced Palm's administrative capabilities and developed contacts valuable to his position as dean. The teaching, research, and extension work associated with his role as head of the Department of Entomology and Limnology provided Dean Palm with a sound knowledge of these essential areas of an agricultural education.

In recognition of the modern emphasis on international needs and cooperation and the implications thereof, Dean Palm has encouraged the expansion of the program for international agricultural development undertaken at Cornell. Agriculture's crucial role in the lives of undernourished countries lacking the facilities or knowledge of new techniques faces the College of Agriculture with a new concern. In response, Dean Palm has traveled

NYS College of Agriculture at Cornell

widely, conferring with agricultural leaders throughout the world about current problems of the field. His administration faces the challenge of securing and defining Cornell's place in the domestic and international scene in light of the diverse problems of a rapidly changing world.

The Idea of CHANGE

in an

Adapting College of Agriculture

The CORNELL COUNTRYMAN *has recently initiated a policy of periodically interviewing Dean of the College of Agriculture Charles E. Palm and his administrative associates. It is hoped that discussions of topics currently of interest in the College, reflecting administrative attitudes, will increase an understanding of present College policies and their implications.*

Change, as an essential element of progress, seems to characterize current developments of the New York State College of Agriculture at Cornell. In order to meet the demands of an ever-changing environment, educational objectives and policies are continually re-evaluated and revised.

The issues discussed in the *Countryman's* first interview with Dean Palm, Professor of Personnel Administration and Secretary of the of Resident Instruction H. L. College J. P. Hertel, and Director Everett clearly reflect this predominant "idea of change."

The new Division of Biological Sciences is a striking example of Cornells' attempt to cope with the changing needs of a modern environment. The Division, an "intercollege" arrangement, pools the resources from several spheres of the University under a single administration. This coordination of faculty, facilities, and funds, formerly unrelated in the University structure, hopes to satisfy the demand for a focus on "basic biology." The concerted efforts of biologists administering themselves will allow for more complete coverage of certain fields, assuring more continuity of their individual endeavors.

As a major source of biological information, research facilities, and personnel, the College of Agriculture will contribute from 2/3 to 3/4 of the manpower and funds for the unit's operation. Assuming this role naturally presents the College with a number of complex problems. As a land-grant institution, the College must incorporate a theory of practical applications of biological sciences in order to maintain state support for its share in the Division. Further complications arise as departments are broken down and re-combined to suit the Division's all-encompassing objectives. How to distribute materials and organize curriculum so as to avoid duplications presents additional problems in the unit's effort to "maximize information output with a minimum of course conflict." And beyond these basic structural difficulties, each participating college is responsible for its own enrollment requirements. The College of Agriculture's position as a state school with relatively low tuition costs is seen as a possible complication. The cost variations among contributing sectors of the University may have far reaching consequences on the application and acceptance policies of each college. Presently, the College of Agriculture expects to maintain its current balance in applicants, though the cost differentials could be a factor in future enrollment policies.

Further evidence of the climate of change is the adoption of the new academic calendar, effective in the fall of 1967. The revised schedule is viewed by many officials as an attempt to relieve the pressures on faculty and students alike which seem to have built up in recent years. The recess and study periods have been scheduled to decrease tensions of examination weeks, critical times of the semester. They are designed to provide adequate time for student preparation as well as allowing sufficient time for faculty evaluation and grading responsibilities. The College of Agriculture does not foresee any adverse effects on its own policies due to the University change since summer research projects and actual course duration will not be affected.

The letter-point grading system instituted this year is still another facet of the changing environment of Cornell. The College of Agriculture, after one semester of the new system, indicates that there was relatively little variation in the grade distribution of its enrollment from that under the numerical system. The only real difficulty encountered by faculty seems to be one characteristic of any transition period – evaluating according to a different set of criteria. The more recent adoption of an S-U option for agricultural students seems to reinforce the trend away from absolute measurements of a student's performance, toward an emphasis on the individual's responsibility of self-evaluation.

Perhaps the issue which best exemplifies the impact which the changing modern environment has had upon the College of Agriculture exclusively, is that which concerns the possibility of renaming the college, selecting a title more appropriate in today's world. Many persons associated with the College, including faculty, feel there is a definite need for a new term which would encompass the breadth implied by agriculture in modern times. There is a feeling that the common connotation of agriculture as farming leads to grave misinterpretation as to the real elements and implications which the word denotes. While farming is still essential to agriculture, it is no longer the "whole story." The simple title of Agriculture, it is suggested, fails to indicate the full sweep of the areas involved in the basic food production purposes of agriculture. Since less than 1% of New York is devoted to farming today, it is essential that the traditional image be modified to include the entire input-output processes.

The issue of assigning a new name to the College of Agriculture is but one aspect of an intensive University study of the College now underway. A Presidential Committee, headed by Prof. David Pimental, is currently concerned with the past, present, and future role of the College of Agriculture in the University, state, and nation. Though only time can really tell what the findings will be and what effects they might have, it is likely that they too will reflect the inevitability of change for the College which persists in an ever-changing world.

Cornell's War On Poverty

by Joan Solomon '67

and Jerryanne Taber '67

"We are in the midst of the greatest upward surge of economic well-being in the history of any nation.

"Our flourishing progress has been marked by price stability unequalled in the world. Our balance of payments' deficit has declined and the soundness of our dollar is unquestioned. We worked for two centuries to climb this peak of prosperity.

"But we are only at the beginning of the road to the Great Society. . . . Most Americans tonight enjoy a good life. But far too many people are still trapped in poverty, idleness, and fear."

President L. B. Johnson
State of the Union Address

One out of five families in the United States is destitute. We cannot shrug this shocking statistic off as something which can happen only to a wretched family struggling to exist in the foothills of Tennessee. It hits hard, and usually close to home.

One out of every seven New York families is poverty-stricken. We cannot be content with the misconception that all these low income families are concentrated in the slum areas of New York City. While five-sixths of the state's poor are from urban areas, a full one-sixth live in rural areas.

And where does Cornell fit into this scheme of the war against poverty?

Cornell has been aware of its responsibilities to low income families since long before the passage of the Economic Opportunity Act. The Colleges of Agriculture and Home Economics, as land grant institutions, are governed by the philosophy of service to the State and its people. Through the Extension branches of the colleges, there are many activities presently under way specifically designed to alleviate the plight of the poor.

For example, the 4-H Club has changed its base of operations from the farm to the city. In doing so, it has made its policies more applicable to low income youth. Also, the College of Home Economics has sponsored programs in housing developments which concentrate on improving the homemaking practices of the poor. The question is not, "whether we help," but "how much."

Our government has become increasingly aware of the problem this "poverty in the midst of plenty" has created. The Economic Opportunity Act of August, 1964 promises to build a bridge by which these poor can reach a more fulfilling life. Several of the major programs authorized under this legislation focus directly on America's youth. Work-study programs expand the educational opportunities for children of low income families. Work-training programs and a Job Corps will prepare youths for citizenship and increased employability.

On a broader scale, the Communty Action Programs are aimed at stimulating urban and rural communities to mobilize their resources to fight poverty. These projects would be encouraged by financial funds from the federal government. Some other facets of the act provide for loans to farmers, volunteer assistance to low income businessmen, work-training programs for adults, and the Volunteers In Service To America corps. VISTA, an American "peace-corps," recruits and trains volunteers of eighteen years and older to work in Indian reservations, migrant worker communities, and similar destitute areas.

The role of Cornell as a land-grant institution is not only to give out assistance but, also, to expand knowledge through research. Cornell's research function is threefold.

The first is to accumulate information on all aspects of low income groups; the second, to carry out a program evaluating the environmental effects of low income living; and, finally, to identify the causes and effects of poverty and construct programs to alleviate the problem.

A Task Force, headed by Professor Harold Capener of the Rural Sociology Department, has been established to interpret the relevance of the Economic Opportunity Act to the Extension and Research Services of the Colleges of Agriculture and Home Economics. This delegation has suggested that Cornell take advantage of the Act by making use of federal funds for further development of anti-poverty efforts. Professor Capener sums up Cornell's leadership role: "We recognize that one-fifth of the nation and one-seventh of the state have special needs, and the proposition of how to better administer to these needs may be interpreted as a proper area of investigation and concern for an institution of higher learning."

Thus, Cornell has taken up the challenge which President Johnson has presented before the nation, the task of relieving all Americans of the bonds which keep man from achieving his highest goals.

"Our nation was created to help strike away the chains of ignorance and misery and tyranny wherever they keep man less than God means him to be."

President L. B. Johnson
State of the Union Address

CLUBS:

DIVERSITY IN THE UNIVERSITY

by Charles Wilson '69

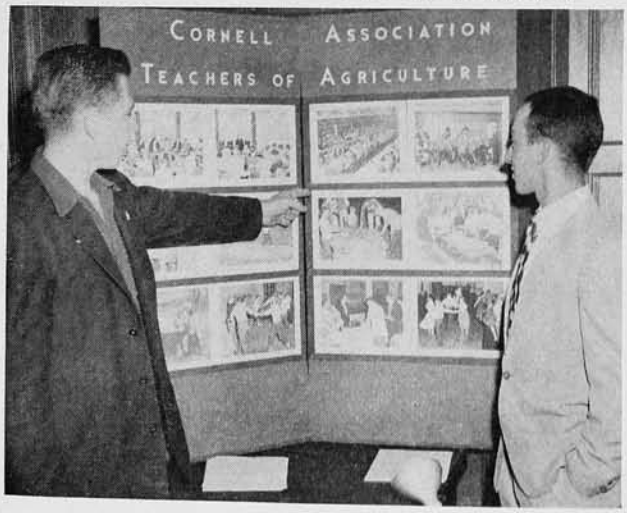
The College of Agriculture has numerous organizations concerned with a wide array of subjects ranging from apples to engineering. A student is almost sure, then, to find a club in the college which will give him many hours of enjoyable experience in a specific field.

The Cornell Association of Teachers of Agriculture

The C.A.T.A. serves as a meeting ground for all students with interest in vocational agriculture. The club strives to develop leadership, cooperation, and citizenship among its members. C.A.T.A. also provides true learning experiences for its members by informing them of modern teaching techniques through discussions and lectures by experts in the field.

Such social functions as bowling parties, picnics, and banquets are sponsored by the club. This year a student exchange program with another agricultural college is in the planning stage. A special committee of the C.A.T.A. prepares "The Catan," a handbook describing the club: its functions, purposes, and activities. In this handbook David G. Craig, advisor of the C.A.T.A., sums up the club's overall and basic purpose: "The teacher education program at Cornell aims to develop competent teachers of agriculture for New York State."

The C.A.T.A. exhibit at the state F.F.A. convention.



Pre-Veterinary Society

The Pre-Veterinary Society acquaints students planning to attend the Veterinary College with the field of veterinary medicine. Hence, orienting new members to such information as requirements for the Veterinary College is a large part of the year's program.

At each meeting a staff member of the College speaks about the character of his department or a particular phase of veterinary medicine. The agenda of the first meeting in the fall usually includes a tour of the college. The large attendance at meetings indicates the interest in this field.

Jordani Zoology Club

Although made up of graduate and undergraduate students, this club always selects its president from the undergraduate ranks. Activities include a weekly exhibit in Stimson Hall, a monthly lecture, and a fund raising natural history auction.

Agronomy Club

Cornell's Agronomy Club is affiliated with the National Student Activities Subdivision of the American Socety of Agronomy. Its program includes two annual trips to regional and national soil judging contests.

Pomology Club

The Cornell Pomology Club is an organization of students majoring in, or with an interest in, the pomological sciences. It is unique among Cornell clubs in that it operates as a business, selling apples at a price above the local level and attaining a year-end profit.

The organization finances about half the cost of the Swedish Exchange Program at Cornell and also helps pay for a scholarship given each year to a student in pomology at the College of Agriculture. Part of the money toward the scholarship is raised by the apple vending machines operated by the club in the lobby of the Plant Science building.

The Appleknocker, a publication informing alumni of the club's activities, is put out every four years. Several social events for members and faculty are also part of the annual program.

Lee Southwick student teaching at West Winfield, N.Y.

Poultry Club

A Faculty-Student Get-Together, a bowling party, and a chicken barbecue highlight this organization's yearly program. Last year the club visited the Long Island Duck Industry.

Round-Up Club

The Round-Up Club is concerned with the field of animal husbandry. Sponsoring the "Little International" student livestock show held each spring is a major task of the organization.

The primary financial activity of the club is the formation of intercollegiate judging teams which represent Cornell in the judging of dairy cattle, livestock, and meats. These teams, supported by the Agricultural College Student Council, are each composed of three members and an alternate. Any student on campus can try out for the team, regardless of his school or major.

The entire Cornell team has had the highest record of its kind in the United States in the last few years.

4-H Club

4-H Club provides educational and recreational experiences for its members as well as serving the state 4-H Club program. Its major activity is the sponsorship of a 4-H Sub-Frosh Weekend in the spring.

Agricultural Engineering Club

The student branch of the American Society of Agricultural Engineers promotes agricultural engineering as both a study and a profession. The club's activities are oriented toward this purpose. Each fall it holds a student-faculty introductory party to acquaint new students with the club and its benefits. The club also cooperates with the College of Engineering in an annual Engineers' Day, when they devote themselves to one particular facet of agricultural engineering demonstrated by means of display and a series of short lectures.

Early in November, 1965, Cornell's Agricultural Engineering Club sent 13 members and two advisors to the student rally of the Northeast Region of the American Society of Agricultural Engineers. Student members from Penn State, the University of Maine, the University of Pennsylvania, Cornell, Rutgers, and two Canadian colleges: Guelph in Ontario, and MacDonald College in Quebec, also attended the lectures by speakers from industry and education. A student member meeting highlighted the conference.

Early in February, 1966, the club visited the Empire State Sugar Plant at Montezuma, New York. A group of 29 staff and students toured the facilities for processing sugar beets to granulated sugar.

All these organizations positively confirm one of the College of Agriculture's strong characteristics—diversity. The scholastic clubs alone represent a wide assortment of fields in which any interested student can participate.

Judging of beef cattle is one of the Round-Up Club's major interests.

COUNTRYMAN CAPSULES

Americans are now consuming 400 fewer calories each day than they did in 1909.

Living in various forms of fear ranging from capital punishment to supernatural phenomena, Vicos serfs, in the Andes Highland in Peru, view themselves as impotent and accept poverty as inevitable reported Prof. Allan R. Holmberg, Cornell anthropologist.

"Unless these perceptions can be changed by programs of development, the hope for transformation of the Andean society to a dynamic and creative one is slim," said Prof. Holmberg.

Life on a manor for an Andean serf was one of perpetual fear. Serfs were kicked, whipped, and cursed by Spanish speaking field bosses—Mestizos.

Supernatural phenomena played a controlling role in affairs of serfs.

Solar and lunar eclipses were thought to foretell massive human mortality. Winds were believed to cause human illness.

They also envisioned the white men as "pishtacos," witches, who were thought to waylay any Indians at night.

These multiple fears of death and the supernatural produced a behavior of avoiding danger. As a result, they even saw communication as a danger, inhibiting social contacts with complete strangers.

The names of three departments in the College of Agriculture have been changed. The Animal Husbandry department has become Animal Science; Dairy and Food Science has become Food Science; and the Poultry Husbandry department has become Poultry Science. Dean Charles Palm said the names reflect the expanded work of each department.

Researchers have developed a square pineapple that is juicier and is said to save picking labor and peeling waste.

A fireplace 30 inches wide, well filled with fire, has greater heating efficiency than a 48-inch fireplace with the same fire.

A new Spring oat variety that outyields all other varieties grown in New York State has been developed by Dr. Neil S. Jensen at Cornell University.

Named "Orbit" the new oat is now available in commercial quantities for the first time this year.

The new variety boasts shorter straws (for greater standing ability), complete smut resistance, and can tolerate Septoria blight.

A medium-season maturity oat, the new variety ripens uniformily, and all the grains mature at the same time, enabling an earlier harvest (3 days earlier than Garry Oats).

Prof. Nyle C. Brady, a Cornell University administrator has been elected vice-president of the section on agriculture of the American Association for the Advancement of Science. He will have responsibility for planning the program for the agriculture section of the Association's annual meeting in December.

Brady was appointed to the Cornell staff in 1947 and was head of the agronomy department from 1955 to 1963. In December 1963 he left Cornell to serve as director of science and education in the U.S. Dept. of Agriculture and returned to his present position at Cornell in September 1965.

The frost-free refrigerator maintains a more uniform interior coldness and a lower door-shelf temperature, but it may take longer to freeze ice cubes than a conventional model.

A new process for shipping fresh fruits and vegetables with little deterioration has been developed and involves replacement of oxygen with carefully controlled nitrogen in truck trailers and railroad cars.

With planting time not far off, gardeners may find Cornell bulletin E-981 "Flowers from Seed" helpful. N.Y. State residents may order a single, free copy from Roberts Hall, Box 5, Ithaca, N.Y. 14850.

Explosion puffing, in which a product is first frozen, then dried, is a processing method developed by the U.S. Dept. of Agriculture.

Milk production on New York farms in 1965 was one per cent greater than in 1964 and was produced by two per cent fewer cows.

New York State's potato industry has an annual farm value of more than $32 million.

ALUMNI

RICHARD E. KLINE, '39, 17 Hudson Street, Warrensburg, New York, is now employed as the Warren County Cooperative Extension Agent in the Agricultural Division. Prior to this he worked in Extension Services in Oswego and Chenango counties and in Richfield Springs.

His son Richard S. Kline graduated from the Cornell College of Agriculture in 1964 and received his M.A. in business and public administration in 1965. His other son, John P. Kline is a freshman in the Cornell School of Hotel Administration.

HEADLEY E. BAILEY, '30, 225 East 106 St., Apt. 17E, New York, N.Y., is presently a volunteer teacher for the physically handicapped. He received his M.A. from New York University and has served as a tutor in Ethiopia, East Africa, and Payroll Auditor and Examiner of Accounts for the New York City Board of Education. He is a member of the Society for Italic Handwriting, the Photographic Society of America and the American Association of Retired Persons.

DAVID K. BANDLER, '55, 1403 Elmira Road, Newfield, New York, is a Dairy Extension Specialist for the Department of Dairy and Food Science at Cornell University. He is past director of Research for the New York State Joint Legislative Committee on Imitation Food Products and Problems in Albany, New York.

He is currently vice-president of the Board of Education of Newfield Central School.

ALLEN JAMES ALBRIGHT, '44, 450 Knickerbocker Road, Ontario, New York has been with the Security Trust Company of Rochester since 1954. He is serving as vice president in charge of the Mortgage Loan and Trust Real Estate Department. His son, Stephen B. Albright, is a freshman in the College of Agriculture.

MORTON ADAMS, Killarney Farm, R.D. 1, Sodus, New York, is President of Curtice-Burns Incorporated, Rochester, New York and General Manager of Pro-Fac Cooperative, also in Rochester. He is a trustee of Cornell and a member of the Cornell Club of Rochester and of New York City. His three sons, Morton, Michael, and John Adams, have also graduated from Cornell.

WILLIAM P. BARDEN, '42, East Lake Road, Ripley, New York is a special agent for the Rain and Hail Insurance Bureau of Chicago.

His son Paul W. Barden is a senior in the College of Agriculture, graduating in June.

An active member of his community, Mr. Barden spends a great deal of time traveling and visiting Cornell alumni.

ISAAC B. MITCHELL, '18, King Ferry, New York, is now semi-retired and living in Florida six months of the year. He has two sons that have graduated from Cornell. His present employment is President of Mitchell Farms, Inc. Formerly he operated a GLF franchise as well as his own 175 acre farm.

DAVID HARDIE, '49, Ludlowville, New York, is operating his own dairy farm 12 miles north of the campus. He is also serving a one year term on the advisory council of the New York State College of Agriculture and regards it, "a very interesting and educational opportunity."

ROBERT E. LYNK, '54, 70 Mosher Road, Delmar, New York, received his doctorate in Veterinary Medicine from the New York State College of Veterinary Medicine at Cornell in 1961. He is a member of the New York State Veterinary College Council, and the Hudson Valley Veterinary Medical Society.

DOROTHY TEITELBAUM TERMAN, '63, 260 Sidney Street, Cambridge, Mass. is attending Harvard Graduate School of Education and teaching Biology part-time. She received her M.A. in Zoology from Columbia University.

NED W. BANDLER, JR., '49, 35 W. 90th St., New York, N.Y., is currently corporate development manager for Lever Brothers Company in New York. He also serves as vice-president and director of the African Medical and Research Foundation.

GEORGE A. SPADER, '19, 50 Easton Street, Morrisville, N.Y. is the executive secretary of the Men's Garden Clubs of America. He was an instructor in horticulture at Morrisville Agricultural and Technical College in Morrisville from 1923 to 1928, and is now program director for the American Legion Boy's State of New York.

CHARLES GEORGE ASHE, '35, 215 Mott Road, Fayetteville, New York, is the Northeast Regional Sales Manager for Kendall Company, Walpole, Massachusetts. Previously, he worked for Johnson and Johnson. He is a member of Alpha Zeta and his son, Charles, is in the class of '69 at Cornell.

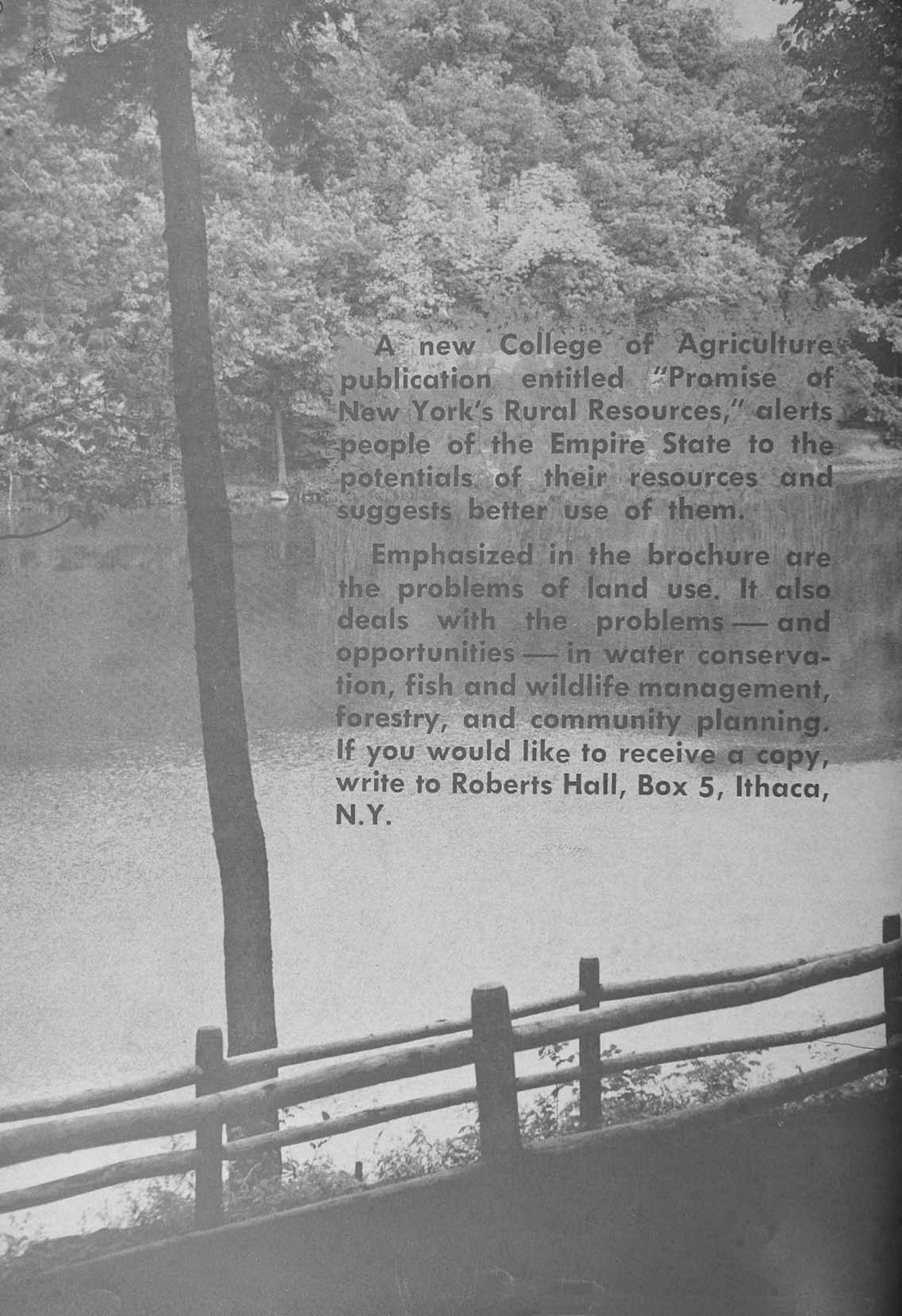
JOHN T. BETTS, '64, R.D. 1, Valley Falls, New York, is presently a salesman for International Minerals and Chemical Corporation of Woburn, Massachusetts.

He was previously employed in the Soil Conservation Service in Syracuse, New York.

CHARLES R. BALES, '51, RD 2 Oswego, N.Y. is the chief resident in surgery at Highland Hospital in Rochester. He obtained his M.A. at Syracuse University and his M.D. at the University of Rochester.

ROBERT W. HERDT, '61, 1180 Gibbs Avenue, St. Paul, Minnesota, is presently working toward a Doctor's degree in agricultural economics. He received his M.A. at Cornell and served in India in the Intensive Agricultural Districts Program 1962-1965.

LAWRENCE J. ABEL, '64, 203 Burwell Road, Rochester, New York attended Purdue University for one term and joined the Peace Corps. He is now serving in Kenya, Africa.



A new College of Agriculture publication entitled "Promise of New York's Rural Resources," alerts people of the Empire State to the potentials of their resources and suggests better use of them.

Emphasized in the brochure are the problems of land use. It also deals with the problems — and opportunities — in water conservation, fish and wildlife management, forestry, and community planning. If you would like to receive a copy, write to Roberts Hall, Box 5, Ithaca, N.Y.

MAY, 1966

CORNELL COUNTRYMAN

CORNELL COUNTRYMAN

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IN THIS ISSUE

Staff

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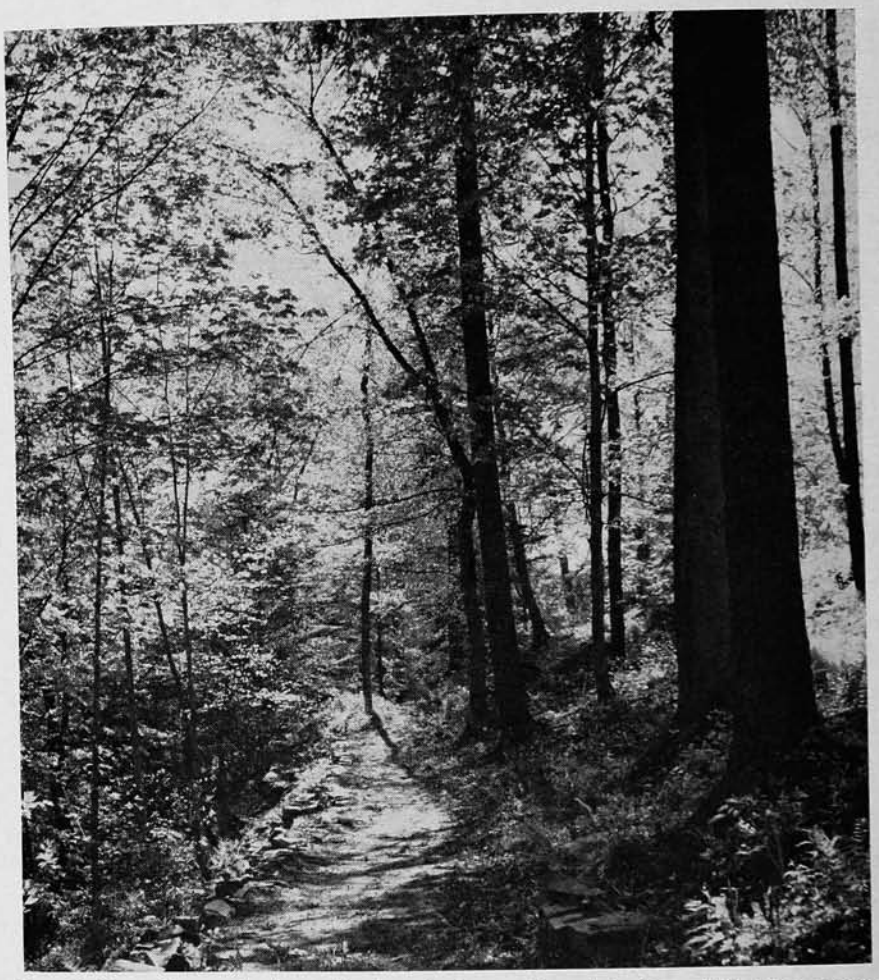
The Cornell Plantations:

"A project set up by friends of things that grow"

by Michael Haymes '69

The concept of preservation and study of growing things and of natural environment is rooted deep in the Cornell heritage. The Cornell Plantations is an arm of the University which is dedicated to preserving and enriching the natural beauty which surrounds the University. It has become an all-embracing outdoor laboratory for the study of natural sciences. The conceptual ideal for the Plantations was expressed by Dr. Liberty Hyde Bailey, who also suggested the name.



Cornell Plantations maintain trails through the woods and gardens which they protect and cultivate.

DR. BAILEY'S PLAN

"In the idea behind this project we have at Cornell a new type of botanical garden. This is not a botanic garden and arboretum that is merely an adjunct to a department that teaches botany. It is far broader in purpose. It is a project, set up by 'friends of things that grow,' to unify into one organic whole a series of enterprises that are based on the land. It includes the systematic observation and study at Cornell of wild, of economic, and of ornamental plants, of trees, of wild life, and of other forms of nature. And, with such study as a basis, research in the development of better forms of plants and of animals, and in the devising of ways of handling all of them for the wider service of man."

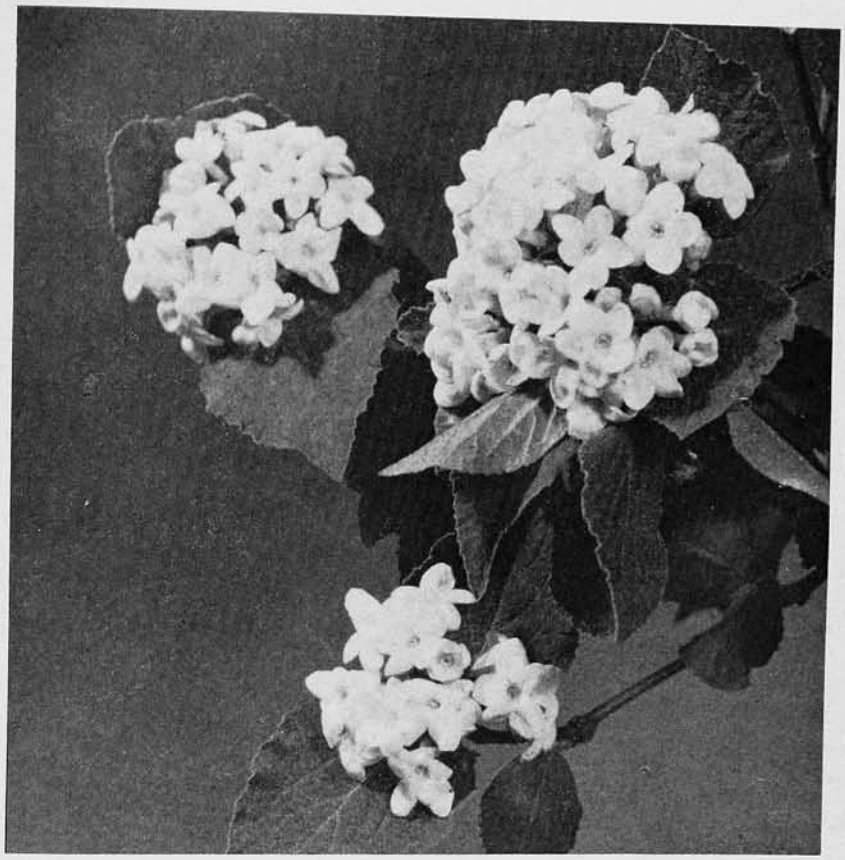
The plantations domain includes 1500 acres, bordered by Cascadilla Valley on the south and Fall Creek on the north. Within these boundaries the Plantations manage and both wild and cultivated regions for laboratory use and for aesthetic appreciation. The arboretum-botanical garden regions feature special collections, many of which are the results of horticultural studies and doctoral projects. The collections vary from the valuable Viburnum Collection to the Class of 1901 Memorial Nut Tree Collection. Dr. Richard Lewis, the present curator of the Plantations, refers to the collections as "museums." They are world famous as comparative reference material because their entire history is recorded and available to people doing research on the plants.

The Plantations also protect certain climax forests in the area. For example, the hemlock forest which they protect is 400 years old and at its peak. Keeping it in this condition requires pest control and control of other environmental conditions.

Part of the Plantations' $60,000 budget is used to maintain trails through the woods and gardens which they protect and cultivate.

The Cornell Plantations has a permanent staff of 7 people. Dr. Lewis is the curator, Mr. Don C. Shaaf is the superintendent and Mrs. Audrey O'Connor the editor of their quarterly magazine, *The Cornell Plantations.* The magazine is administered by the Interdepartmental Committee. It is supported by various colleges of the University and by private donations.

Cornell has a wide variation in terrain, soil and elevation. This permits a much broader objective than mere arboretums or botanical gardens to which many other institutions are limited. "The ultimate aim will be to make available for study all forms of plant life which will grow in the area."



Part of the valuable Viburnum collection

An all-embracing outdoor laboratory for study of natural sciences.

For the Birds,

respectfully,

by Maria Melnyk '69

Midnight in February—the snow stands silent against a street lamp—only the glow of a parlor window and the cheerful cries of the robins disturb this winter scene.

The cries of robins? How'd that get in there? As it turns out, the warmly bundled bird lover in the parlor was enjoying the sounds of Spring's birds from a record.

"Play records and hear birds sing?" That's exactly right. This is the slogan of Cornell's Laboratory of Ornithology, and it has an extensive library of bird sounds to back it up. Neatly arranged on shelves in Fernow Hall are cuts of the songs of 2000 species. This is 25% of the total 8000 species of birds that exist in the world. And for a few of these birds, their total vocabularies are recorded on tape. That is, everything that the bird can ever tell you is right there on a little reel.

What can a bird-call tell anyone? The answer may surprise you. Bird calls are now used to relate species. The sounds are studied with the help of an audio-spectograph, where the syllables are repeated over and over again. Similarities in the patterns indicate that species are closely related. There are many species, called sibling species, which cannot be told apart by just looking at them. However, the difference in their calls shows that they are indeed distinctly different species. This technique can even be used to trace the development of a bird's song.

Cornell's unique collection is not just a curiosity, but, rather, a useful project. As a matter of fact, its original objective was educational. Professor Arthur A. Allen and Professor Peter Paul Kellogg, who started the whole idea, intended to use the recordings in their classes. After all, instruction can't wait until the birds decided to sing in Spring.

Dr. Allen started teaching ornithology at Cornell in 1911. Actually, he was the first professor of ornithology. One of his students was Dr. Kellogg, who became an instructor of ornithology in 1929. At this time, there was no such thing as an official Laboratory of Ornithology. It was finally recognized in 1955.

A project of recording wild bird sounds was a useful idea, yet how could they do it? At this time, recording had to be done in a studio. To cut a record, a bird had to sing into a horn, enabling a needle to make an impression on the disk. Few birds were willing to do this, although some did cooperate.

In 1927, the electrical recorder was developed and was perfected by the motion picture industries. Two years later, the Fox-Case Movietone Corporation approached Dr. Allen and asked for help in recording the voice of a wild bird. In May 1929, nearly 40 years ago, the first record of bird calls ever made in the United States was recorded in Ithaca's Stewart Park. The first three stars were the Song Sparrow, the Rose-breasted Grosbeak, and the House Wren. The film, called "Sounds of Spring," was later presented as a "short" at the Strand Theatre in Ithaca. This was the first time that the Laboratory had cooperated with commercial industry. The experiment was exciting for it was new, but it was disappointing because of the poor quality and the great expense of the equipment—about $30,000.

Enter Albert Brand, who had retired from the New York Stock Exchange at the age of 39. He became interested in the project and was willing to finance it. Accordingly, an order for equipment was sent in November 1930. By the end of 1931, 41 species of birds had been recorded. Although the quality of the records was not very good, Cornell already had the largest collection of bird songs in the world!

Now the Laboratory had to face another problem—too much surface noise. The records were made in the field, and there was no way of eliminating the natural outdoor sounds. Very often it was difficult to recognize the bird's song above all the natural chaos.

It was Peter Keane, of the class of 1931, who first had the right idea. He saw a picture of a parabolic reflector being used in the Metropolitan Opera to catch the voice of a singer. He realized its possibilities and presented the idea to Professor Kellogg.

This parabolic reflector, which is a round disk resembling a bowl, could be used to concentrate the sound from one place and eliminate most of the noise from other directions. A microphone faced into the reflector would pick up the concentrated sound. The engineers did not like the idea. They pointed out the fact that this reflector was fine for high frequencies, but that it distorted low frequencies. However, Keane and Professor Kellogg proceeded with their plans, realizing that low frequencies are rare in bird calls. They constructed their parabola and even painted it many muted colors for camouflage, not from birds but from curious people who would come running when they saw the contraption. The experiment was a great success. The results were so good that the first phonograph record of wild bird songs, called "Bird Songs Recorded from Nature," was published privately by Brand and Keane in 1932. The clarity of this record indicated the success of the reflector.

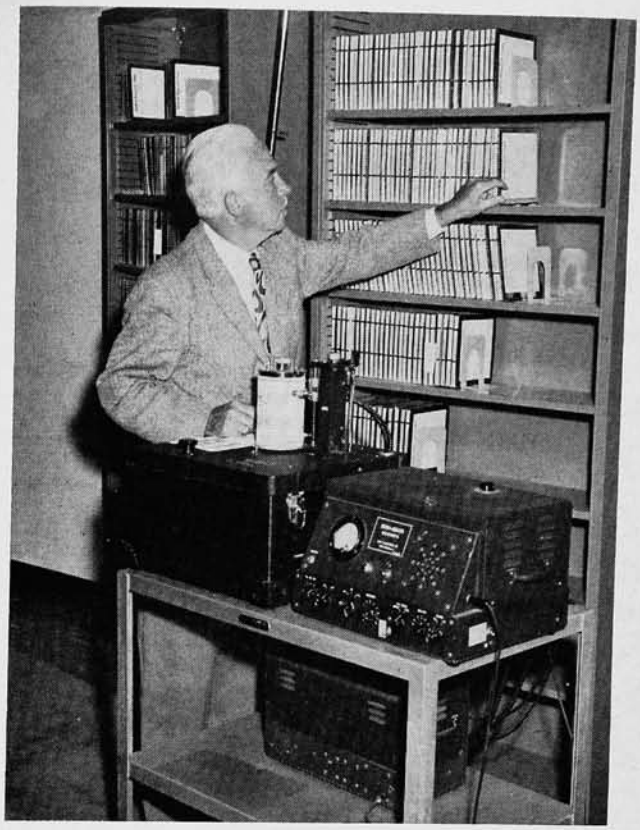
What has the laboratory done? What does it have to show for its 50 years of hard work?

Cornell has the only recording in the world of the ivory-billed woodpecker. Nobody even knows if the bird still exists, though there are hints that it may.

The laboratory was also instrumental in the rediscovery of the Puerto Rican Whip-poor-will. Dr. George B. Reynard, a research associate working in cooperation with the Laboratory, went on an expedition to the Caribbean. While there, he heard people talking about a strange sound they had heard in the mountains. The sound came only at night, and nobody knew what it was.

Some said it was the voice of the spirits. Dr. Reynard collected his equipment and went up into the mountains. He recorded the sound and studied it, but even his associates could not identify the strange call. Taking the recording back up into the mountains, he played it, and a small bird appeared and was shot. It was identified as a whip-poor-will which was not supposed to exist in Puerto Rico! It had been seen only once before in 1887.

Cornell has the only Library of Natural Sounds on such a large scale. This extensive library has, according to Professor Lancaster, two major purposes. The first is to make records, both popular and more specialized and technical. The second, and by far the more important, is to make the material in the collection available to research. The material is gathered by research associates, who work on research problems, and by field associates, who find animals, record sounds, and take pictures. The Laboratory then cooperates with scholars by supplying any tapes that are asked for. It has a rather unique system for doing this.



Say, for example, that you would like to have a recording of the Purple Grackle. All you must do is send a clear tape to the Laboratory and they will reproduce their recording. The copies are extremely close to the original, and they don't even have to be returned!

The Laboratory has much work before it. It still has recorded sounds that cannot be identified and many species yet to be recorded. But the people associated with it now are quite capable of carrying on in the tradition of excellent work done in t he past by some others. Professor Peter Paul Kellogg, assistant director of the Laboratory of Ornithology and directly in charge of the sound library is planning to retire from his teaching duties in July. However, he helped start the recording project and he plans to stay with it. Now, however, he may move his bio-acoustics laboratory to the Stuart Observatory, where there is a special room already prepared for it.

Professor Lancaster is already at the observatory and he invites anybody interested to come and walk along the four miles of trails or observe the pond from within the Observatory and listen to the bird songs piped into the room. In four months, six thousand people have come, and, as they say, six thousand people can't be wrong.

Guidelines for the Future

by Gene Goldenberg '67

"Get thee to a nunnery" is the advice of Hamlet to his troubled friend Ophelia.

However, students at Cornell who find themselves troubled by doubts of where they are going can find much more varied and specific advice from Cornell's Educational-Vocational Guidance Office and the Testing and Service Bureau in Day Hall.

"Many students come to Cornell with a definite, but uninformed idea of what they want to study," says Dr. Howard G. Andrus, director of the Guidance Office.

"After one or two years, many students find they are unhappy in their college or area of specialization, or have doubts as to where their studies will lead them after graduation."

Such individuals are referred to the Guidance Office by members of the Cornell staff. The counseling process begins with a lengthly interview, and the student fills out an extensive background-information questionnaire. Then, to better determine the student's interests and aptitudes, a "personalized" battery of tests is administered by the Testing and Service Bureau.

"We have more than 1500 different tests on file," says Dr. Marvin D. Glock, Testing Bureau director. "From these tests, we can choose the ones most appropriate for each individual's problem."

After the tests are selected, Dr. Andrus explains to the student the nature of the tests and why they are being given. This, he says, helps to avoid the student's trying to "fool himself" by answering the questions according to what he thinks he should be like.

Tests form the basis for the Guidance Office's work.

The staff analyzes the results of the different tests, and then Dr. Andrus holds a series of three to four counseling sessions with the student. "We try to help the individual identify career alternatives which appear fitting to his aptitudes," he says. "This counseling may be either vocational or educational in nature, depending upon the student's problem."

"The over-all process is extremely time-consuming," he continues. "There are six to eight hours of tests and four or five hours of counseling for each student who wishes help. In addition to the great deal of time involved, there is a $25 fee to cover the costs of testing. Even so, we are 'booked solid' five weeks ahead, and find it difficult to accommodate all the students who come to us for help."

Most of the stdents who are referred to Dr. Andrus and Dr. Glock are freshmen (30%) and sophomores (40-42%), while the ratio of males to females approximates that of the University.

"We like to get a student by the second semester of his freshman year," the guidance counselor says. "We feel we can be of the most

help at this early stage in the individual's education." However, students from every group, including graduate students, benefit from the counseling service.

When asked if he worked with students, Dr. Andrus says that it depends on the office schedule.

"We try to give each 'walk-in' a few minutes to determine the nature of his problem," he explains. "If we think it requires attention, we will send the student to the Dean of Students Office so that he can be referred to us officially."

However, he indicates that his schedule does not permit him to spend time with everyone who has "heard about the Guidance Office from a friend and thinks he might try it."

Some students who come for help are satisfied with and are doing well in their studies, but are unsure of their future vocation. "We will counsel such students after testing them," says Andrus. "Then we may send them to the University Placement Service with its more extensive vocational reference resources."

In addition to working with the Guidance Office on testing students for counseling purposes, the Testing and Service Bureau offers several other services to the Cornell community.

With the aid of an IBM 805 test-scoring machine, the Bureau provides for machine scoring objective tests. And, Glock and his staff can perform item analyses on test questions to help eliminate those which do not differentiate between good and poor students.

The Testing and Service Bureau also supervises the administration of large-scale tests such as the placement examinations for freshmen and the Graduate Language Exam. Along the same line, the Bureau provides for and handles the administration of various national examinations such as the Graduate Record Exam.

The Bureau keeps more than 1500 standardized, educational and psychometric tests on file for easy reference. An index, the "Cornell Test List", is printed and made available to faculty members and other interested persons. Consultation on test construction, selection, and interpretation is also provided.

Machine-corrected tests add to the convenience of both student and administrator.

Shakespeare's Ophelia may have had her problems, but she never had access to the type of aid available to Cornell students and faculty. When Hamlet asked, "to be, or not to be", someone should have referred him to Cornell University's Educational-Vocational Guidance Office and Testing and Service Bureau.

Personal conferences provide an answer to almost every counseling need.

Everything's Con

Miss Minns, Miss Minns, Where does your garden grow?

Miss Lua A. Minns, an instructor of herbacious plants in the early 1900's, dreamed of a student garden in which each of her students could tend an individual plot. By actually working the garden plots students would be able to obtain first hand experience in plant care.

Miss Minns' dream might never have been realized if a certain ill-kept lot had not come to the attention of Dean Liberty H. Bailey of the College of Agriculture. In an effort to beautify the unsightly area facing Bailey Hall, Miss Minns was given her garden.

When Miss Minns died in 1933, Cornell University's President Livingston Ferrand and his wife dedicated the garden to her, placing a memorial sun dial among the flowers.

The observant Cornellian might question this story, for no garden faces Bailey Hall today. The sprawling half-acre of flowers, new and rare varieties, neatly labeled with both their scientific and common names, fell to progress: Mallott Hall, constructed in 1964, now stands where the flowers once bloomed.

Yet the garden was not lost; it was moved. Today it greets visitors near Plant Science building. As well as presenting an aesthetic welcome, the garden serves as a public relations garden for the College of Agriculture and the department of floriculture and ornamental horticulture. In this plot, new and old plant varieties share the spot-light, up-holding the tradition set by the original garden in front of Bailey Hall.

CAVE FLORES

When the Minns Garden found a new location in front of Plant Science, the Muenscher Poisonous Plants Garden moved from that building to the Veterinary College.

Professor Emeritus Walter C. Muenscher had established the garden between Plant Science and Mann Library before his retirement in 1954. In 1958 the garden, originally titled the Poisonous Plant Garden, was dedicated to Professor Muenscher, the "Wizard of Weeds." Dr. John M. Kingsbury has managed the garden since 1954.

Neither Rain nor Snow nor Sleet nor Hail

Most people are accustomed to plants growing around and outside of buildings; few have seen whole gardens contained within a building's walls. The courtyard enclosed by the walls of the plant science building contains just such a garden. The Patio Garden displays varieties of flowers native to New York State but uncommon to Ithaca, yet in this garden the flowers flourish. The normally ill-adapted Ithaca climate is replaced by a micro-climate — a temperate, controlled environment created by the enclosed area. This micro-climate fosters vigorous plant growth.

A Rose is a Rose is a Rose

The "Test" Garden, begun in 1923, once boasted the largest peony collection in the world. But the peonies have resigned, giving way to the garden's major variety today: **ROSES.**

Gardens surround the hea

The American Rose Society uses this garden as a test area. Here, as in numerous other test areas throughout the country, different varieties of roses are cultivated. Their growth is compared to the growth of flowers in other test gardens. From the results, the Society determines which rose persists best in varying environmental conditions. The most sturdy, durable variety is selected as the All-American Rose.

The Cornell roses, however, have met an uncertain enemy which threatens to destroy their population. In 1962 a terrible blight, believed to be caused by insect pests, yielded the poorest roses ever grown here. In 1963 the roses were removed and the beds sterilized. The next year's plants seemed the best ever, but the pest reappeared the following season with no apparent cause. Unless an answer can be

And then there was Mallott: Miss Minns' Garden sprawled for a half-acre in front of Bailey Hall. The recently constructed Mallott Hall now occupies the former garden beds.

Up . . .

by Emily F. Miller '69

study of plants: Plant Science.

found, the rose may disappear from the Cornell Test Gardens.

White for White

Nearing the Arts and Sciences Quadrangle one can see several other gardens. Behind Willard Straight Hall lies the Rock Garden, established in 1933 by Edith Outz Humphreys, social director of Willard Straight Hall from 1932 to 1935. The garden, which reached its peak in 1943, is managed by the department of floriculture and ornamental horticulture.

Gardens also surround the Andrew Dickson White Museum. In a small alcove near the museum lies the White Garden, which boasts white dogwood, white tulips, white lilac, and white candy tuft. On the adjacent slopes, near Tower Road, croccuses, daffodills, grape hyacinths, and stars of bethlehem add their colorful presence.

The museum gardens, as well as the flowers grown around the dormitories, and the gorges, are under the supervision of the Buildings and Properties division.

The Cornell Plantations also attempt to restore and maintain the University's natural setting. The purpose of this department is twofold. While preserving Cornell's natural charm, it also strives to provide academic situations for the study of botany, biology, ecology, and other related fields. For this scholastic purpose, the Cornell Plantations have developed two major kinds of plots. One is the ecologically significant forest plots in which nature, rather than man, plays the key role. The other type compiles collections of certain species isolated from their natural environment so they may be studied individually.

A Collection of nuts . . . .

When a group of five Cornell alumni assembled for a fiftieth reunion of the Class of '01, they recalled the days of 'nutting'!, or gathering the many nuts which had fallen from staggered nut trees. So inspired, the class set about collecting and planting more nut trees. Mr. Benjamin R. Andrews, who acted as class secretary, stated the purpose of the planting: "These nut trees are dedicated to Cornell's teaching and research and to human enjoyment. They should stimulate the home planting of nut trees and the establishment of public nut groves. They should enrich student life — their tree collonade inviting daily and weekly walking." Perhaps these intentions express the sentiments of the plantations as a whole.

The collection consists of many varieties of nuts, with black walnuts particularly abundant, and the Plantations continually adds to the collection.

From Peonies with Pedigrees . . .

One of the more fascinating collections boasts both aesthetic and academic interests, with a "pedigree" to back each. Cornell's collection of peonies started with a Japanese peony and thirty Saunders hybrids, representing an almost complete collection of the peony hybrid. It can, therefore, be used as a reference collection — a library to which any tree suspected of being a certain peony can be compared, checked, and identified. Each specimen in the collection has complete records

. . . To Hedges and Wild Flowers

In the 1930's a Cornell graduate student began a project to study the use of standard trees as hedges. Today, his collection continues to grow in the Test Gardens. This hedge collection is one of the oldest in the country.

According to a Cornell Plantations bulletin, the Plantations "propose to make the Wildflower Garden a home for as many of the plants native to the Cayuga Lake Basin as will flourish there." The garden, which will be a great help to wild flower enthusiasts, was initiated after a large donation established the Cornell Plantations Wildflower Garden Fund. Varieties with such intriguing names as angelica, little gromwells, and bloodroots are native to the area.

Other collections in the Cornell garden population include the Viburnums, the result of a graduate project in cytogenetics; the Hemlock Forest, a climax forest (a forest which has evolved as far as it can under stable environmental conditions) ; The Conifer slopes; a dwarf collection of evergreens; the Mary Rockwell Azaela Garden, next to Mallott Hall; and many others.

All one must do to realize the extent of Cornell's varied and flourishing gardens is to walk around the campus and its outskirts. From frequently visited Willard Straight Hall to the seldom traversed woods and orchards, Cornell blooms incessently. As a background for every mood and sentiment, the Cornell gardens lie waiting for student use and enjoyment.

A Rose Array: 1947

Ideas for the Future:

THE AGRICULTURAL LEADERS' FORUM

by Jane Silvernail '68

The relationship of the university and state to agriculture was the general theme for this year's Agricultural Leaders' Forum, held in Bailey Hall on March 24.

As successor to the old "Farm and Home Week," the Agricultural Leaders' Forum explores areas of interest to modern agriculture. It gives prominent leaders a chance to express ideas and opinions in their field.

This year's forum was planned around the topic of "New York's Development and One Man, One Vote." Due to the large interest, the site was changed to Bailey Hall, on the upper campus, instead of the Alice Statler Auditorium, as had been planned originally.

Six men were slated to speak between 10 a.m. and 3:30 p.m. They included: Milton Alpert, Deputy Commissioner and Counsel Office for Local Government; Robert F. Kennedy, U. S. Senator from the State of New York; Sam Lubell, a noted columnist; Dean Charles E. Palm of the New York State College of Agriculture at Cornell; James A. Perkins, Cornell University's President; and Nelson A. Rockefeller, Governor of the State of New York.

At 10 a.m. Dean Palm opened the forum with a short introduction. There was much disappointment when it was announced at 10:15 that Senator Kennedy would be unable to attend the meeting. Chairman A. A. Johnson, the Director of Cooperative Extnesion, took the situation in hand and read the speech the Senator had planned to give. It concerned a cooperative approach to rural community development.

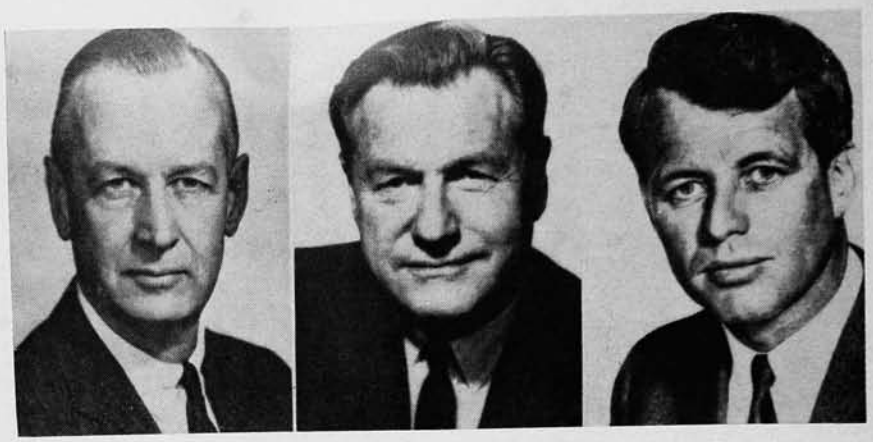
The remainder of the morning continued as scheduled with Milton Alpert discussing implementation of the Supreme Court rulings in New York. Sam Lubell then spoke on the meaning of changed representation.

The afternoon session was underway promptly at 2 p.m. when Chairman Johnson, introduced Governor Rockefeller, whose speech topic was New York's development in the decade ahead.

After a touch of history, the governor delved into the partnership of the state and the agricultural college, particularly the one at Cornell. The need for planning, to grow with the economy, is a cooperative undertaking, he said. One of the major problems is that of preserving agricutural land. This productive land is irreplaceable and is lost through carelessness. The governor promised that a New York State Commission on Preservation of Agricultural Land will be set up. The commission will define essential land, propose preservation measures, and also recommend the best ways of using irrigation water. By controlling its land, New York would hope to make its growth serve the people, rather than dominate them.

President Perkins spoke about the part the University plays in the state's future. He spoke first about any state and any university, then specifically about New York and Cornell. Experts should be developed by colleges to meet future needs, he said, especially in biology and water resources.

The meeting adjourned earlier than had been planned on account of freezing rain and snow inconveniences. The dismal weather, however, did not dampen the spirits of the many who attended the forum Although no problems were completely solved, the purpose of the discussions was accomplished: the raising of questions and ideas, for future solutions.



Above: James A. Perkins, Nelson A. Rockefeller, Robert F. Kennedy.

Below: Charles E. Palm, Milton Alpert, Sam Lubell.

DEAN PALM'S ADDRESS TO THE ALUMNI

Shortened for the purposes and length of this magazine.

The College has had a busy year. As you know, Tom Watkins retired last September as director of resident instruction. We visited the Watkins while in Florida during Christmas and found them busy and well. Herb Everett, as the new director, returned to the campus from duty as the Cornell Project leader of our graduate education program with the College of Agriculture, University of the Philippines, at Los Banos. We are delighted to have Director and Mrs. Everett working in the college administration.

During the fall semester Professor Hertel provided strong leadership as acting director of resident instruction. John most certainly deserves a vote of thanks for a job well done — on top of his other duties! I would acknowledge the good contributions of Keith Kennedy, the associate dean, in working closely with John and the lower campus on problems of undergraduate and graduate education.

Showing deep concern in the quality of teaching, University and College faculty committees have spent endless hours studying and reporting on the strength and weakness of the academic program. Attention has been focused on the areas judged by students and others as most in need of support. The entire program in freshman English is being discarded; freshmen may now take a seminar-type course in the humanities, with English being one of the fields that may be selected. Freshman English, as it was known in the past, will be no more! Maybe some of you will say, Thank Heavens!"

We have moved to strengthen the communication skills of undergraduate students in agriculture. Those in need may receive tutoring in English usage, composition, and related skills. New courses in communication arts are being developed. Several courses of related departments are being reexamined; duplications are being eliminated by dropping some courses or revising others. Effort is being made to provide more small laboratory sections for direct contact between the student and the instructor.

The College administration has worked with the leaders of the student organizations, and has met with them for lunch and discussions during the year. Smaller groups of students will meet on open invitation from the dean five or six times during the spring semester. At each meeting a topic will be reviewed for half an hour by the dean or other administrators of the College. Then there will be questions and discussions by the students and professors present. We will get into such issues as: Agriculture's role in American foreign policy, the changing atttitudes of lay people toward modern agriculture, foreign exchanges for undergraduate students, and even the change from numerical to letter grades.

The faculty has voted to drop the two-year course in agriculture, and substitute a number of admissions into the four-year curriculum. Such admissions will carry a year of trial with opportunity to full standing in the four-year program as the student makes good. We feel that much can be accomplished in giving the youngster a chance where all indications point to his deserving one, the same as was done by suggesting that he enter the two-year program with the opportunity to transfer if he attains a satisfactory grade.

The practice requirement also has been modified to provide a uniform number of 13 weeks of professional practice for undergraduate men and women, along lines established by the department or field. The students themselves have said that they value the benefits of a sound practice requirement, and we are doing our best to update our ability to serve them in this regard.

A comment on student quotas is probably in order. We appreciate the fine work of the alumni in recruiting outstanding young men and women for the College. We are not unmindful of the difficulties involved, the time invested, and the occasional disappointments in this effort. Joe King, chairman of the College Advisory Council, recently reviewed for us some the thoughts he and other alumni have for improving our liaison, and we want to continue to work with you in every way possible. But I would add a word about our fine professors who work in admissions — their job isn't easy! We cannot exceed our quota again, on orders from the president! We foresee quotas and the problems that go with them for the next decade. We ask your continued interest and support for recruiting top-quality youth. We are proud of them!

Aside from these remarks about our teaching program, I want to mention that we are pleased indeed that Nyle Brady returned last September from the office of the Secretary of Agriculture to become our director of research. Nyle is a fine addition to the team. Our research program is undergoing both expansion and revision. The trend toward more grant-supported research, which comes through via the route of the professors and as institutional grants, is greater than the formula-type distribution of funds for agricultural research. The director and his associate, Director Barton of the Geneva Station, are doing a fine job coordinating the research program and seeking new types of funds for the total program.

Cooperative extension likewise is moving ahead with rather dramatic strides as a result of study and decisions reached in the College, in the counties, and at local levels. I would certainly compliment Al Johnson and his associates for excellent progress in identifying the broad trends of programs that fit into the educational needs and interests of the communities of the state. We work with urban counties on programs of natural beauty and the development of home lawns and landscaping. At the same time we try to help focus the interests of youth on a diversity of educational opportunities. We are working with the underpriviledged youth, a program in 4-H that came into being as a direct interest of Governor Rockefeller. We are expanding our capabilities in resource management and development, including lands, water, and the multiple use of these rural resources for the interest of people everywhere. The human resources in communities likewise are receiving increased attention. A broadened representation of the lay leadership is adding support in field efforts.

The Governor and the legislature, as well as the State University, have supported us well. Our building program at Ithaca and Geneva is making excellent progress. The Agronomy-Plant Breeding Building is moving ahead; we dedicated the first phase of the Bioclimatic Laboratories last October. Geneva is in the final stage of planning its new Entomology-Plant Pathology Building, and will have funds for other needed facilities. Our second phase of the Bioclimatic Laboratories will be under construction soon, and planning is going ahead for a new Animal Laboratory, and some smaller but essential remodeling projects.

We are looking ahead to the regrouping of our abilities to serve such areas as resources management, food science and others, to make possible the most effective approach to problem solution.

Finally, the president's committee to study the College of Agriculture and to recommend its future structure and mission is functioning. I hope the Alumni Association will make its feelings known about the type of college it wants to see in the future. Our international programs are moving ahead with credit to all concerned. Ken Turk presently is in Africa looking over several areas for potential study. The Conference Board, Agricultural Businessmen's Council, Farm Bureau, Grange and other organizations and friends still are our greatest source of support and guidance. We particularly appreciate the excellent assistance of the College Advisory Council, appointed by the Cornelll Board of Trustees, with Joe King as chairman.

I would close on a note of real optimism. The College is a strong, moving force that continues to assume its role in serving the complex phases of modern agriculture. Studies are in progress to recommend a name that would be more representative of the college programs than the name "agriculture." A number of states have already changed. But today, by whatever name you choose, agriculture in the United States and in the world is gaining in importance to society more rapidly than at any time in the past two decades. It is being recognized by great leaders as the industry that can, and hopefully will, solve the most baffling problem of our time — how to feed humanity while it proceeds with the adjustments of becoming a rational world. We are in a profession whose importance can only rise. Your College seeks to remain in the forefront of progress to provide the leadership that long has characterized it.

A Cornellian Views Asian Students

by John Short '68

During its recently completed concert tour of Southeast Asia and the Orient, the Cornell University Glee Club has had many contacts with colleges and universities in several lands.

The higher education systems in many of these countries, like the countries themselves, are just beginning to come into their own. For example, in Malaysia and Thailand, two of Southeast Asia's most highly developed countries, there are only a few institutions of higher learning. However, many of them are quite new, indicating that the governments of these two countries have recently done much to broaden the opportunity for college or university education.

Thai students play their native instruments for the Glee Club.

In Malaysia, two institutions have just started operations within the last few years—the University of Malaysia and the Malaysian State Teachers College, both located in Kuala Lumpur, the capitol city. Though the Glee Club did not visit the University, it did come into close contact with the Teachers' College and its students.

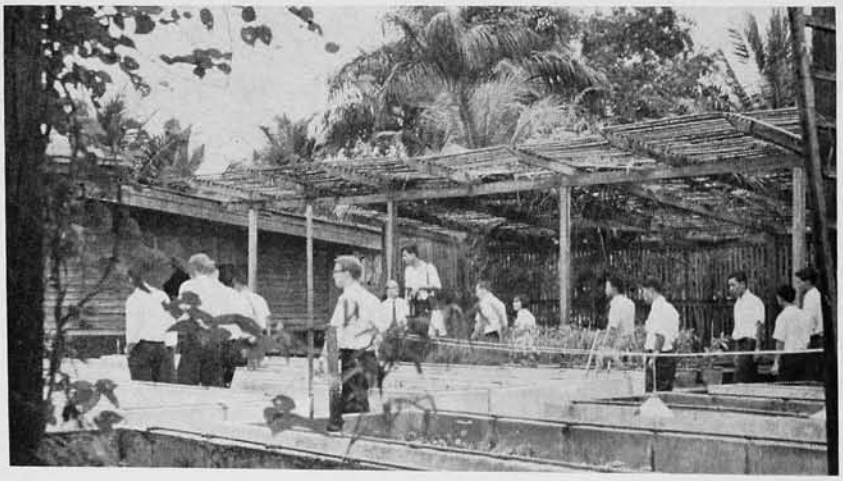
The construction of this college was completed in 1961. Students go through a two year curriculum and can choose to major in one of three fields—history, geography, or music education. Their entire education is paid for by the federal government.

In addition to the courses they take in their special discipline, all students are required to take English. Since all secondary school students must also study the language, the Malaysian college student speaks about the best English of any student in Southeast Asia.

Several hours of physical training a week and courses in teaching physical education are also a required part of the student's curriculum.

A typical day for a music student would include morning lectures in English, educational psychology, music theory and music history. In the afternoon he would probably be engaged in physical education activities.

Though Malaysia is no longer a colony of Great Britain, its educational system reflects the system used in England. For example, a music student at the end of his two years must take an extremely comprehensive examination given by the Royal College of Music in England. This examination usually determines whether or not the student will get a degree. This practice



The Glee Club tours Kasetsart's experimental gardens.

of giving large comprehensive examinations which carry so much weight with respect to a student's academic success is typical of English universities, and is an important difference between higher education in the U. S. and colleges in Malaysia.

In Bangkok, Thailand the Glee Club visited three large universities. Thammasat University, located in the midst of Bangkok's magnificent Buddhist temples, is primarily an Arts and Sciences college. It has many of the same departments that Cornell's Arts College has. However it also offers an undergraduate law curriculum which is supposed to be one of the best in the University.

Chulalongkorn University provides students with curriculums in the various engineering fields and in Architecture.

Kasetsart University, just outside of Bangkok, is a large agriculture school offering courses in many of the same fields that are found in our College of Agriculture. The strongest departments are said to be agronomy, animal husbandry, and horticulture. The horticulture department at Kasetsart embraces two fields which are placed in different departments at Cornell—vegetable crops and ornamental horticulture. It maintains some fine test gardens and greenhouses for both farm crops and ornamental plants. A department of home economics is also part of the University.

The students at Kasetsart as those in our agriculture college must complete a summer work requirement. They must gain about 400 hours of on the job experience in their special field before they can graduate. However, unlike students at Cornell, they must also complete a thesis relating to their major to qualify for an undergraduate degree.

Those students who complain about intollerable 8 o'clock classes —take note. It is not uncommon for classes at Kasertsart or at the other aforementioned universities in Bangkok to start at 7 a.m. In fact, students at each of these universities and the Malaysian State Teachers College generally spend more hours in the class than does the Cornell student. In other words, most of their education takes place in the classroom rather than in their own private rooms. One reason for this is that the large volume of excellent books available to college students in the U. S. are either not as available in these countries, or are too expensive for the students.

Three Cornell students approach a Kasetsart co-ed.

Though students in Malaysia and Thailand may not put in the long hours of study that some Cornellians do, it is quite evident that they are extremely dedicated to the education which they are quite privileged to be receiving. Though both governments are now doing much to make a college education available to all the youth in these countries, the process will take time. Meanwhile the few who now have the chance for such an education realize they must make the best of their opportunities.

Members of the Cornell faculty "talk shop" with Thai floriculture specialists.

A view of Kasetsart's experimental gardens.

Fallout Shelter in a Syringe ?

by William N. Jardine '67

Wasn't the fall-out shelter craze something? There is a chance now that none of those shelters need be used.

Drs. Willard J. Visek and Hung Chen Dang at the New York State College of Agriculture have taken the first big step toward developing an innoculation to prevent radiation poisoning.

At a science conference April 15, the doctors reported the discovery of a way of partially immunizing animals against some of the harmful effects of radiation poisoning.

The two scientists achieved this breakthrough by innoculating rabbits and mice with an enzyme called urease.

Urease, a protein found in both plants and animals, causes the production of ammonia in the intestinal tract. In large quantities, the ammonia becomes harmful, and there is increasing evidence that it is a major toxin released in radiation death.

Thus, an extra dosage of urease, from either a plant or animal source, causes an increased production of ammonia. To combat the ammonia, the animal produces antibodies which give it a temporary immunity to the ammonia.

Since both ammonia and radiation act together in destroying cells, the lowering of ammonia production by the antibodies enables the cell to fight radiation more successfully.

Also, the decreased ammonia content of the body allows better growth and red blood cell production. These two factors are important in combating radiation poisoning.

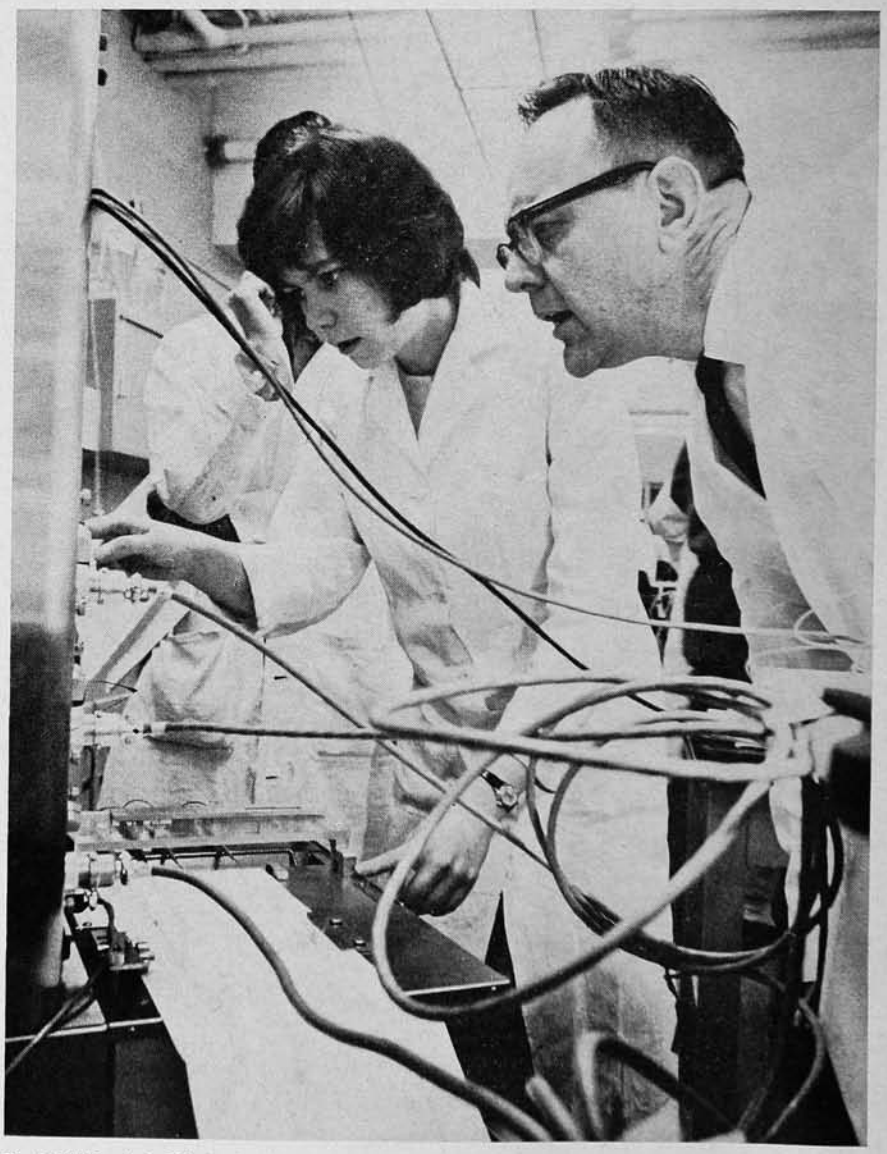
When injected with the antibodies, only 30% of innoculated mice die from a dose of cobalt gamma radiation, whereas 80% of the untreated mice succumb.

Although Dr. Visek and Dang found that mice received some protection when they made their own antibodies (when injected with urease), the scientists found increased protection when the antibodies themselves were injected into the mice. These antibodies are produced in rabbits innoculated with urease.

The implications of this breakthrough apply to more than just the aftermath of a nuclear explosion or war. The doctors point out that "The possibilities in *both* times of war and peace are tremendous."

Perhaps men can be innoculated against accidental explosions in nuclear power plants. Doctors, nurses, and personnel working in nuclear laboratories could receive protection from prolonged exposure.

"This is the first time an approach has been developed that can



Prof. Willard J. Visek, M.D., animal scientist, and physiology student, Alison Davidson, watch a polygraph recording the electrical activity of a turtle heart, in a class in the Biological Sciences Division.

prepare an animal or human weeks or months ahead of time" said Dr. Visek. The doctors pointed out that the best chemical agents now used must be administered just hours or minutes before exposure to radiation. "Perhaps a cancer patient may be protected while exposed to greater doses of radiation required to stop growth of the cancer," says Dr. Visek.

The primary source of the urease used in the nine radiation experiments has been the jackbean. To assure the purity of the enzyme, the scientists make the extractions themselves.

Radiation-protection was not the Doctors' primary goal when they began their work at the University of Chicago years ago. At that time, both scientists were working on the effects of urease and animal growth.

Dr. Visek sees many implications of the work which do not involve radiation: "Our work on enzyme immunity shows that we can develop immunity against harmful microbal enzymes in the bowel. It points the way to future work regarding ammonia as a very critical molecule not only in radiation, but in many body processes."

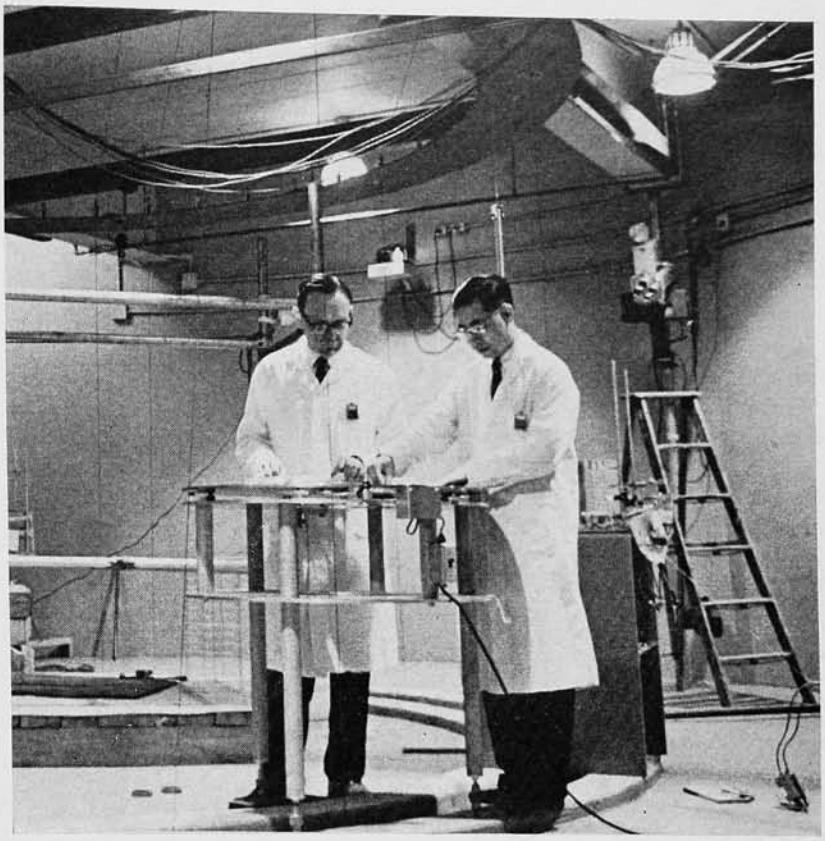
Dr. Visek and his former colleagues at the University of Chicago found that urease causes a halting of ammonia flow into the liver and thus aids in combating liver diseases.

Immunizing liver patients against the production of ammonia not only reduces or eliminates the use of antibiotics, but allows an increase in protein intake which is crucial for maintaining body defenses.

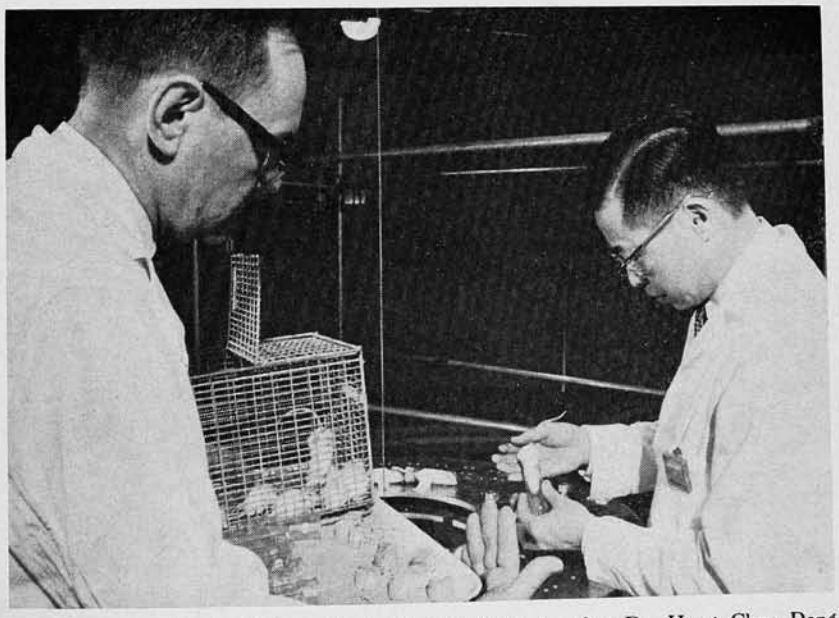
Dr. Visek earned his master's and Ph.D. degrees at Cornell, his M.D. at Chicago, and did undergraduate work at the University of Nebraska.

A father of three, the former Nebraskian and his wife now live on Hanshaw Road in Ithaca.

Dr. Dang, a Formosan, was graduate assistant to Dr. Visek at the University of Chicago. He received his Ph.D. degree in pharmacology at the University of Chicago, his M.S. degree at Montana State University, and his B.S. degree at the National Central University in China.



Eight-foot walls protect workers from radiation in laboratory where Prof. Willard J. Visek, M.D. (left), and Dr. Hung Chen Dang, research associate, prepare mice for irradiation treatment, at the physical biology laboratory of the Veterinary College.



Prof. Willard J. Visek, M.D., animal scientist, (left) watches Dr. Hung Chen Dang, research associate, place mice in container for irradiation treatment.

COUNTRYMAN CAPSULES

Gerald R. Smith, a senior majoring in molecular biology in the New York State College of Agriculture, has won first prize nationally in the Louis Ware Fellowship competition. He will receive $9,000 ($3,000 for 3 years) to work toward the Ph.D. in molecular biology. The competition was sponsored by International Minerals and Chemical Corporation.

Mr. Smith, from Greenville, Ill., has been on dean's list every term and ranks first in the senior class with a 3.98 cumulative average.

Other schools participating in the competition were North Carolina State University, Michigan State University, Iowa State University, Purdue University, University of Wisconsin, and the Universities of Saskatchewan and Guelph in Canada.

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The science of clothing manufacture and of the conversion of fabrics into useful articles is only in its infancy, according to Dr. C. S. Whewell of Leeds University, England.

He was keynote speaker for the sixth annual institute held in April under sponsorship of the New York State College of Home Economics, Cornell University. The institute's topic was "Textiles and Clothing in a Changing World."

Prof. Whewell stressed the sophistication of the modern textile industry. The fabric producer is increasingly dependent on the ingenuity of chemists, physicists, and engineers whose efforts have greatly increased possibilities for fabric and garment designers, he said.

Dr. Whewell called for greater cooperation and understanding between scientists and technologists who produce the fabric, and designers and manufacturers. too few of whom take full advantage of developments in the chemistry and physics of textiles. This would benefit the consumer as well as the industry.

To this end, 35 new convenience products have been developed at Cornell so far, he said. These items include everything from chicken "hot dogs" to an "instant breakfast" with eggs in apple juice, Cornells' latest product now being tested on the campus.

Work on new poultry products was begun at Cornell in 1960 in response to growing interest on the part of poultry industry groups in New York State, the speaker said.

Prof. Baker also pointed out that one of the serious problems facing the poultry industry today is the decrease in egg consumption. In 1952, the average person ate 389 eggs, while in 1964 the consumption dropped to 312 eggs.

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The Department of Communication Arts is the new name of the Department of Extension Teaching and Information, Cornell University.

The name change, approved by the President's Office and Board of Trustees, was announced by Dean Charles E. Palm of the New York State College of Agriculture and Dean Helen G. Canoyer of the New York State College of Home Economics. The department is a part of both colleges.

In requesting the change, faculty members of the department pointed out that the new name more adequately represents their total responsibilities now in resident instruction, research, extension, and international development in the broad areas of person-to-person and mass communication.

The department offers courses to Cornell students in the basic theories of the communication process; international communication; oral expression; policies, philosophies and practices of communicaton media news writing and analysis; visual communication; writing for magazines; radio and television programming; advertising and publishing.

In addition to its teaching and research functions, the department will continue to have a major responsibility to statewide Cooperative Extension programs of interpreting and disseminating research-based information through publications, television, radio, exhibits, motion pictures, press, and other media.

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Clarence O. Grogan, former professor of agronomy at Mississippi State University, has been appointed professor of plant breeding at the New York State College of Agriculture at Cornell University.

Prof. Robert L. Plaisted, head of the plant breeding department, announced the appointment and said that Grogan will be responsible for the corn breeding program and will help strengthen the graduate training program.

While at Mississippi State University, Prof. Grogan served as a research agronomist for the U. S. Department of Agriculture. He earned his B.A., M.A., and Ph.D. degrees at the University of Mississippi.

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Kenneth L. Turk, Professor of Animal Husbandry at the New York State College of Agriculture at Cornelll University, will be one of the members attending the first meeting of the Faculty-senate Subcommittee on International Studies and World Affairs.

Prof. Turk, Director of International Agriculture at the College of Agriculture, will attend the meeting at Planting Fields, May 4-6.

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Creating increased demand for fowl and eggs is a real challenge to the poultry industry in the United States, and convenience products offer a possible answer.

"We have found that eggs can be used for a variety of new products, and poultry meat can be used any place that red meat can," said Prof. Robert C. Baker, poultry science dept., New York State College of Agriculture, Cornell University.

Prof. Baker made this conclusion in a talk at the symposium on "Frontiers in Food Research" at Cornell. He said that the role played by Cornell scientists in developing a number of new poultry products has created a tremendous interest in new items in the poultry industry.

ALUMNI

EDWARD A. CAPRA, '61, 17 Bobrich Drive, Rochester, New York, currently employed by the Security Trust Company of Rochester, received his M.S. in Agricultural Economics from Cornell in 1963. He is a member of the Cornell Club of Rochester and participated in the 1965-66 Cornell Fund Drive. His wife, Mary Deitrich, graduated from the Cornell College of Home Economics in 1964 and his sister, Cathy, is in the class of 1969.

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SHERMAN R. LEWIS, '14, of Old Homestead Farm, Washingtonville, N.Y. is presently developing his milk farm into a series of apartments and trailer areas. At present, he has 21 apartments and 125 trailers. At 78 years old, he says, "There's no fool like an old fool, but at least life is still interesting."

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LAURA JANE ROBINSON, '65, 227 Clark House, Read Center, Bloomington, Indiana, is attending graduate school at Indiana University, Bloomington, Indiana. She is in a two year Masters program in student personnel with a counseling assistantship in an undergraduate dormitory. Her sister, Connie, '66, and her brother, Don, '68, are attending Cornell. She reports that Nancy Blume Lechner, '65, 750 South Walker No. 118, Bloomington, Indiana, is also at Indiana University with her husband John, who is doing graduate work in biochemistry.

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HERBERT W. BEAN, '40, of 96 Chestnut Street, Owego, N.Y. is the manager of the Owego Agway Coop Inc. in Owego. His daughter Nancy Ann Bean will graduate from Cornell in 1968.

HAROLD E. CARLEY, '64, of 45 Park Village, Moscow, Idaho is currently a fulltime researcher in the department of plant pathology at the University of Idaho. He expects to receive his M.S. degree in June. Married to Mary E. Kersich '64, his main hobbies are hunting and fishing.

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MICHAEL E. SANGALINE, '63, of 12th USASAFS, USAH, Box 147, APO San Francisco is a food inspector for the army in Chitose, Japan. He had hopes of seeing the Cornell Glee Club, scheduled to visit in April.

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DONALD A. LOUKO, '63, Van Dyke Road, Delmar, New York, is working as a safety engineer for Liberty Mutual Insurance Company. Previously, he was employed as a management trainee at Agway, Incorporated.

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HOWARD SIDNEY, '41, of Cobleskill, N.Y. is chairman of the division of agriculture at Cobleskill Agricultural and Technical College of the State University of New York. A member of the Rotary Club in Cobleskill, he received his masters degree in education at Cornell.

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GERALD P. LINSNER, '58 of 25 Brompton Road, Williamsville, N.Y. is currently a Food Buyer-merchandiser for Niagara Frontier Services Inc. in Buffalo, N.Y. He is married to Eileen F. Funcheon '58.

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CLIFFORD E. LLOYD, '33, of Box 466, Pine Bush, New York has been teaching Chemistry and Geology at Orange County Community College since 1952. He is a member of many groups in Pine Bush.

JEAN F. ROWLEY, '54, of 752 Westbrook Drive, North Tonawanda, N.Y. is assistant vice president of Marine Midland Trust Co. of Western New York in the Industrial finance division. He received his masters degree in business and public administraton at Cornell. Among other things, he is a member of the Buffalo Junior Chamber of Commerce, and the National Association of Accountants.

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ALICIA VOGT LINZEY, '64, 717 E. State Street, Ithaca, New York, received her M.S. in Vertebrate Zoology from Cornell in 1965. She is currently engaged in research with Dr. James N. Payne. They have a grant from the National Science Foundation to continue the research she started for her M.S. In the past, she has been employed as an undergraduate and as a graduate teaching assistant in Vertebrate Zoology. She is a member of the American Society of Mammalogists and Sigma Delta Epsilon, a society for women in science. Her husband, Donald, will receive his Ph.D. from Cornell in 1966.

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WILLIAM H. SPEIDEL, '16, of 245 Eaton Lane, Westslip, N.Y. has retired from 35 years of service in the U.S. Army. The retired Colonel loves yachting and has seen too many other alumni to list them.

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FRANK W. BENEWAY, '15, 809 Furnace Road, Ontario, New York, is engaged in farming. His children, James, Ellen, Mary and David are all Cornellians.

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DONALD M. BAY, '55, of 514 Victor Road, Macedon, N.Y. has been made vice president of the Security Trust Company of Rochester, N.Y. A member of the American Institute of Banking, and the Rochester Chamber of Commerce, he is in touch with many alumni.

We recommend that all our readers take a close look at this news story from the...

No. 8 in this year's series from the New York State College of Agriculture, a contract college of the State University, at Cornell University, Ithaca, N. Y.

NEW YORK TIMES

Agricultural College Demand Is at Peak, Study Finds

By GENE CURRIVAN

Contrary to popular conception the agricultural colleges of the nation have a long way to go before they meet the demands being made upon them, a report released yesterday said. The need for the agricultural colleges, the report indicates, is greater than ever.

"The demands for well-educated agricultural specialists in business, education and government appear to be far above the supply," according to the report, which was based on a three-year study financed by the Carnegie Corporation of New York.

Instead of being outmoded in an urban age, as some critics have observed, the schools, according to the report, must move fast to meet the expanded needs for trained experts with agricultural backgrounds.

The report, "The College of Agriculture: Science in the Public Service," was published by the McGraw-Hill Book Company. It urges immediate action, especially in education of Negroes.

300 Schools Studied

Charles Kellogg, deputy administrator of the Department of Agriculture's Soil Conservation Service, and David Knapp, specialist on agricultural policy and academic administration, wrote the report, which covered 300 institutions.

Where most graduates of the pre-atomic age went to the farms, only about one-third now head that way, the report said. The other graduates move into the highly specialized related areas. The study showed that about one-third of the employed persons in the United States were engaged in some form of work that stemmed from agriculture or its related fields.