The Cornell Countryman

VOLUME X

SUPPLEMENT TO THE CORNELL COUNTRYMAN
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## INDEX TO SUBJECTS

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WOODLAND DEFORESTED BY GIPSY MOTH.
SOME LARGE PROBLEMS IN ECONOMIC ENTOMOLOGY

By E. P. Felt

New York State Entomologist

THE utility and scope of applied or economic entomology is exceedingly well shown in the larger problems which have been solved during recent years or are pressing for solution at the present time. There has been a marked expansion in our ideas respecting this phase of science. Our medical friends have learned that in more than one disease the entomologist is best qualified to outline effective prophylactic measures. Bold strides have changed the purely local attitude of earlier years to a consideration of questions of national or even worldwide importance. This is strikingly shown in the system of nursery inspection supported by almost every state, and the probability that soon there will be an international plant quarantine. The entomologist has long recognized the importance of exclusion and the prevention of dissemination possible with wisely administered laws. The introduction of several very destructive insects has compelled popular recognition of this and resulted in the above noted inspection system.

The establishment in New England of the gipsy moth in 1868, has eventuated in a gigantic undertaking, the like of which has not been seen before. There was first, 1890-1900, a serious effort made to exterminate the pest in the New World. Failure on the part of the public to appreciate the great importance of the work was followed by a suspension of effort and the ultimate resumption of activities directed toward suppression and restriction. Many communities in five New England States, assisted more or less by their commonwealths, are now engaged in a costly fight with an insect which not only defoliates fruit and shade trees, but which is also exceedingly destructive to many forest trees. The total expense of control is upwards of a million dollars annually, not to mention the serious losses on areas where thorough work is impossible because of low property values. The Federal government has also been drawn into the contest and is expending about a quarter of a million dollars annually, directed largely toward preventing the pest from being carried into hitherto uninfested localities. As an indirect result one may find in that region an unequalled assembly of spraying outfits using tons of poison, and an army of men qualified by practical experience for work of this character.

It is now impossible to prevent the ultimate spread of this insect into most of the northern United States, though owing to the female being unable to fly, its dissemination may be greatly hindered. There is no question but that prevention of infestation is much cheaper than any control methods heretofore practiced. This phase of the problem is of immense practical im-
importance to residents of uninfested sections, and its solution along the most effective lines is worthy our best efforts.

The presence of the gipsy moth in this country is responsible for a most interesting experiment, namely, an attempt to discover and introduce effective natural enemies. This was undertaken by the commonwealth of Massachusetts in cooperation with the Federal Bureau of Entomology and has been in progress for seven years. Large numbers of infested caterpillars, pupae and even eggs have been imported, many parasites reared and liberated under favorable conditions and a number of the species have wintered successfully. This work has been conducted along conservative lines, the greatest care being exercised to prevent anything likely to be injurious escaping. A corps of experts studied carefully the biology of the various forms, since this information was necessary to the most successful prosecution of the work and frequently afforded valuable hints in the handling of important parasites. Some of our most successful collectors were specially commissioned to search for parasites in foreign countries, the cooperation of a number of Europeans of the highest scientific standing was secured and at the present time several American entomologists are making special field studies in Europe. No stone appears to have been left unturned, no reasonable expense has been spared and it would seem that if parasites or natural enemies can control this pest in America, our investigators must have found them or discovered clues which will result in their early introduction. This investigation with its international ramifications and great potentialities, is not only of surpassing interest to the biologist and economic entomologist, but should appeal most strongly to all desirous of conserving our natural resources. It is still early to make predictions, though the outlook is distinctly encouraging. History fails to record an instance of a leaf-feeding caterpillar eradicating its food plant or group of food plants. This is a biologic impossibility. Some natural check must develop in time, though the process of adjustment may be painful and accompanied locally at least, by material losses. We should not expect the phenomenal success accompanying the introduction of the lady beetle into the California orange groves and the speedy eradication of the destructive insect. It is not too much to hope that several of the natural enemies now established in this country, and those soon to become acclimated will, in the course of a few years, prove of material service in controlling this destructive enemy of many trees and shrubs.

The shade tree problem of New England and the northeastern United States, caused by the activities of the elm leaf beetle, the leopard moth, the smaller elm bark beetle, the sugar maple borer, the cottony maple scale and the false cottony maple scale—to mention only the more important—has become acute. It has been created in part by the unrestricted introduction of European insects. It might be noted in passing that half of the species just mentioned are of European origin. The injuries by these pests are greatly facilitated in many communities because a large proportion of the trees are either American elms or sugar maples. It is well known that the almost exclusive planting of one variety, be it annual or perennial, herbaceous or woody, after a lapse of time, is very likely to result in serious injuries by insect pests or fungous diseases. Thousands of magnificent shade trees have been destroyed during recent years in the above mentioned section and many more will succumb unless the necessity of providing adequate protection is speedily recognized. A limited number of municipalities have realized the danger and met the necessities either through the appointment of competent shade tree commissions or the employment of a skilled forester, the latter usually in the park or street department. There is urgent need of controlling these insects before
irreparable damage results. It is also incumbent upon us to recognize the sources of the trouble and alleviate the danger so far as possible. An adequate international plant quarantine will do much to prevent the introduction of dangerous insects not already established in this country. The dangers following the planting of one variety mostly on contiguous streets, should be recognized and provision made for greater diversity. American elms and sugar maples, though both deservedly favorites for shade and park trees, may well give way in part at least, to other desirable species such as the Norway maple, the white or silver maple, the red maple, the American basswood or linden, the horsechestnut, the European plane tree or buttonwood, the American ash and oaks, especially the pin oak, red oak and scarlet oak. Such diversified planting would not prevent the use of one species on a street, and if adjacent streets were set with different varieties, such an arrangement would go far toward reducing the possibility of extended outbreaks by either insects or fungous diseases.

The better control of forest insects is another large problem pressing for solution in the near future. Forest conditions amply justify every reasonable effort to eliminate loss, one of the most productive of these being with little question, the better protection of our birds. It is not improbable that under certain conditions the shipment of efficient natural enemies from one section to another would be of great service in checking destructive species.
The entomologist is called upon to deal with an immense complex, since his constituents except some information regarding almost any insect which may be submitted for examination. Recent estimates show that there are nearly 50,000 described insects in North America, over 10,000 having been listed from New Jersey. With the latter as a basis, it is very probable that at least 20,000 species occur in New York State. Each should be recognized with greater or less facility in the four stages, namely, egg, larva, pupa and adult, while in a number of instances it may be necessary to know the species in each of several dissimilar larval stages. This would mean that an entomologist located in such a diversified area as is found within the State of New York, should know something of approximately 100,000 forms. He should be able to place them with some approach to accuracy and at the same time give at least an approximate idea of their relations to associated insects, other members of the fauna and the local flora. This latter is by no means simple, since insects may be zoophagous or herbivorous. Some are parasites of well known pests and other may prey upon parasites, they likewise being subject to smaller parasites which, in turn, may be attacked by still smaller parasites. Such a complex, not always stable in its relations, is exceedingly difficult to unravel.

The plant-feeding species may vary from comparatively innocuous forms which are content with taking a nibble here and there, to those which devour all the foliage, cut off limbs, live at the expense of the seed or destroy a vital part. The above gives some idea of the vastness of the field and explains, in considerable measure, why most entomologists are compelled to specialize in a few restricted fields if they would accomplish something of real value. The entomologist may pursue his quest to the end of a long and extremely active life with the assurance of learning much that is new and be, at the same time, obliged to recognize the
impossibility of finding the limits of this immense and vastly attractive class of the animal kingdom. Here, if anywhere, the call of the unknown fires the enthusiasm of youth, holds the attention of the middle aged and compels service from those advanced in years.

FRUIT GROWERS’ SUMMER MEETING

By Dudley Alleman, '14

On the fourteenth and fifteenth of August, fruit growers from all parts of the state foregathered at Albion, the county seat of Orleans County, to attend the summer meeting of the New York Fruit Growers' Association. The meeting was well attended and an exceedingly large number of those present came in automobiles, which parked along the main streets of the town in large numbers, proclaimed to all beholders the prosperity of those engaged in fruit growing.

Before noon on Wednesday it was evident that the court house, in which the meeting was to have been held, would not hold the crowd so it was decided to meet in the Baptist Church. The attendance was so much larger than was expected that even this large building could not accommodate all that desired admittance.

The meeting was opened by President Clark Allis of Medina, who introduced Mr. Edward Van Alstyne of Kinderhook as the first speaker of the afternoon. Mr. Van Alstyne spoke on “The Apple Industry,” and after giving statistics of the number of apple trees throughout the country, stated that he believed that it would no longer be policy to plant apples in such large acreage as has been done in the last few years. The next speaker, Mr. R. R. Riddell, of the New York State Department of Agriculture, spoke of the work of the department in boosting the agriculture of the Empire State.

After these two speakers came the question box. The greatest interest then centered in the talk that Professor Parrott of the Geneva Experimental Station gave on the insects of the present season. He stated that the aphid had done considerable harm and that the codling moth had been particularly active, and also that reports of plant bug injury had come from many parts of the state. However, there is some solace for the fruit grower in the fact that apple scab is not particularly destructive this year. In the evening a concert was arranged for the visitors in the high school building.

But by far the most interesting and instructive part of the meeting came on Thursday which was given over to the inspection of the fine orchards in the vicinity of Albion. The fruit farms that the committee thought of the greatest interest were numbered and described in a guide published by the Albion Chamber of Commerce. Two trips were laid out, an eighty mile trip and a twenty mile trip, and an almost endless string of automobiles passed around these two routes.

The trip covered Orleans County quite thoroughly and passed by some of the best orchards of the state. Between Albion and Ontario Lake is one of the finest peach growing regions of the state and many large orchards were seen. A large increase in acreage has been made in the last few years and it is surprising to note that of these, pears outnumber the young apple trees.

Perhaps no feature of the Association is more successful than the summer meeting as it enables fruit growers to see by personal observation how others solve the problems confronting them and stimulates them to try to make their orchards equal or surpass those they have seen in this, one of the best orchard sections of New York State.
PROFESSOR JOHN CRAIG

By A. C. Beal

Assistant Professor of Horticulture, Cornell University

Professor Craig was born at Lakefield, Argenteuil County, Province of Quebec, in 1864, and early in life began to exhibit the talent which was later to make him known to horticulturists throughout the world. He obtained his early education in the Montreal High School and McGill College. Later he studied under one of the greatest of the pioneer horticultural teachers, Professor J. L. Budd of the Iowa Agricultural College, from which institution Professor Craig graduated in 1887. After a short service at his alma mater he was appointed horticulturist at the Central Experimental Farm at Ottawa, Canada. In this position he rendered signal service in the testing of new fruits and in distributing hardy fruits and plants throughout the Dominion. He was called to Iowa in 1899 to take the chair of professor of horticulture made vacant by the death of Professor Budd. In 1900 he became professor of extension teaching in Cornell University, and in 1903, upon the elevation of Professor L. H. Bailey to the position of Dean and Director, he was appointed professor of horticulture which position he ably filled until his untimely death.

Professor Craig was the author of a revised edition of Practical Agriculture and contributed to the Cyclopedia of American Horticulture. His station publications were numerous, as were his contributions to the agricultural magazines. He had been the editor of the National Nurseryman for several years. Professor Craig was in great demand as a speaker and had delivered addresses before most of the state and national horticultural societies. Through his attendance at the meetings of the American Pomological Society, he became well known. His winning personality made him numerous friends, and it is probable that no man had a wider acquaintance among nurserymen and pomologists of the country than Professor Craig. He was a member of the jury of awards at the World's Fair at Chicago in 1893, and at St. Louis in 1904; also at the National Apple Show at Spokane, Washington, in 1908.

Not only was Professor Craig eminent in the field of pomology, but his interest covered the entire horticultural field, and his knowledge and advice were sought by many organizations. He was a member of the advisory board of the American Civic League, and chairman of the nomenclature committees of the American Sweet Pea and the American Peony Societies. He was one of the few Americans elected a fellow of the Royal Horticultural Society of Great Britain.

During the last years of his life he took a great interest in the development of nut culture, not only in New York but throughout the South. He was the recognized authority upon the various kinds of nuts and had developed a strong course in this subject. His pecan orchard interests were extensive amounting to thousands of acres.

Professor Craig was a man of social proclivities being a member of the Ithaca Town and Gown Club, Zodiac, Acacia, honorary member of Alpha Zeta of Cornell University, and a thirty-second degree Mason.

Among the students of Cornell, Professor Craig will be remembered as one of the founders and trustees of the Cornell Cosmopolitan Club. He was one of the strongest supporters of the movement for the new building and was one of the men who made possible the present magnificent quarters.

Although he had been in poor health for some time, Professor Craig bore his sufferings and afflictions bravely and uncomplainingly to the end. Probably when he should not have done so he insisted on carrying the duties of his professorship, and to the last he remained bravely at his post.
THE STUDENTS' ASSOCIATION AND ITS WORK

By M. C. Burritt

President of Students’ Association

THE last fifty years have seen our population change from one almost wholly rural to one more than half urban. During this same period the distribution of free land in the West and the opening up of new territories have practically ceased. Moreover, in spite of an unheard of increase in agricultural production in the United States, the increase in population has more than kept pace with it, so that instead of an overproduction we are now actually facing a possible shortage in farm products.

All these rapid changes have had and are still having a tremendous effect upon farming, particularly in the Eastern States, where agriculture had almost come to a standstill. A period of low prices has been succeeded by one of higher prices. Land values are rising rapidly. Eastern farmers are recovering from the depressed condition into which the competition of crops grown on the great areas of the free and virgin soils of the West had plunged them.

These changed economic conditions demand a careful reorganization and readjustment of the business of farming. This reorganization and readjustment calls for leadership and direction. It needs to be shaped along the lines of the most permanent and the most profitable agriculture which is likely to prevail in the future under these changed economic conditions. The state is looking to the graduates of its Agricultural College for this leadership as it had a right to do. The College itself is a leader in agricultural affairs; and within the college there is exercised a leadership which is unexcelled. So that there is no lack of examples to follow.

But many of us make the mistake of thinking that we are fully equipped to become leaders in our home communities when we have finished at college. No greater mistake could be made, for technical collegiate training is only the first step in education for leadership. The broader and longer training of experience and responsibility are necessary in order to complete our training for the constructive leadership which will be followed.

The young graduate or winter course man who cuts loose from the college as soon as he leaves it, not only loses much of his inspiration for work and leadership, but much of his power to become leader and to do things. It is right here that the Students’ Association is helpful. It is the bond between the graduated student and his alma mater; the practical touch between the worker in the field and the great institution which has trained him. It presents a medium by which the college can reach out into its field and help its graduates to do effective work; it affords a means through which the graduate can enlist the aid of his college in his own community.

In creating the Committee of Twenty-Five at its last annual meeting the Association aimed to create an active body of alumni, each of whom should be a nucleus in different parts of the state and of the whole country, around which Cornell men could organize for the mutual benefit of the community and the college. The definite purpose of the committee was to sustain and amplify the splendid work of Dean Bailey and of the institution of which he is head. This organization of sections and communities is now going on and it is the duty of every loyal alumnus to identify himself with his own local organization and put his shoulder to the wheel.

The definite methods by which the Association hopes to accomplish this purpose are several. In the first place, it is desirable to have a local organization with responsible officers so that definite expression of opinion can be obtained from alumni on important
questions of policy or action at the college, as the Dean or officers of the Association may deem advisable. Organization makes it possible to bring graduate sentiment to bear quickly and effectively on college policies and problems. This should appeal to all alumni whether within or without the state who have the interests of the college at heart.

Secondly, the association hopes to develop and encourage extension work in every farm community. Did you have a Farmers' Institute, an Extension School or a course of Agricultural lectures in your community last year? Is agriculture taught in your local high school? How many cooperative experiments are being carried on in your neighborhood this year? The association can help you to bring these things about if you are organized locally. Nothing brings what you most want and need into your community like organized effort.

Thirdly, active membership in the Association lends a vital and personal interest to your leadership. The knowledge that others are working for the same end, and that you are a part of a great movement for agricultural betterment is worth something to you, and the fact that you have contributed your life membership with its two dollars fee adds prestige to the Association.

In conclusion it seems to us that it would be a great mistake for any member of the Senior class to fail to see Secretary Mann at the College before he leaves and add his name to the already large list of loyal Cornell Alumni. The College needs the help of all its graduates; and whatever your work may be, you will find that you will need the College.

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CARE OF SHEEP FOR SHOW PURPOSES

By H. E. Haslett, Seneca, N. Y.

Let us first inquire why we exhibit and then our readers can better understand our point of view. We exhibit sheep first to attract attention to our stock in order that prospective purchasers and all interested may see our representative specimens. As nearly as possible we select those that are nearest our ideal. We exhibit again that we may compare our stock with that of other breeders who exhibit, and see wherein we are lacking and also noticing where we excel. Summarizing then, we show sheep primarily for advertising purposes, secondarily, for bettering our own judgment.

Now let us select our show flock. According to the fair classification we must, if we would exhibit in all classes, have in our flock at least one ram two years old, one that is past one year, and one ram lamb. In the ewe class, one aged ewe, one yearling ewe, one ewe lamb. Generally two of each class are shown. We have found it good policy to have even three of all classes where possible. The more one has the better the exhibit of the flock will be. In carrying more than one animal of each class, we have more latitude in selection. Our ideal (in so far as it is attainable in our flock) is our first choice in each class. Our second may be a sheep of some peculiar excellency, such as a sheep with exceedingly good back and fleece and not as good leg of mutton, or an extra good leg of mutton and fleece and back not so good. No two judges will give the same rating to a sheep, therefore, select your ideal from your flock to show for first choice, and then choose your second and each class, and prepare them for the show. On the showing out day, your judgment as represented in your selection will be upheld or thrown over. In any case whatever the decision, do not "kick"
in being beaten, but rather find out wherein lies the cause of your defeat and prepare to come back the next season and do better.

A good sheep of any breed should have a good back, well sprung ribs, no sinking away behind the shoulder blades, wide loins and a good leg of mutton well let down. The legs should show good hard bone and size and be well placed. The fore legs especially should be out on the corners enough so that the animals' chest is not cramped. The head should be broad, the eyes bright and the ears attentive, the nostril fairly broad. Altogether the head and neck should be carried in a distinctive and attractive manner, the neck being short and well coupled up on the shoulder. The above are in a general way the main points to bear in mind in making a selection. Aside from these points, in selecting a male have him show masculinity in every way possible, and have a female show femininity.

Now that we have selected our flock and as the grass commences to green we must make individual quarters for the show sheep. They must be separated from the flock, the rams put by themselves away from the ewes, and the lambs away from the older sheep. It should be planned to have a variety of green feed, such as rape, alfalfa, kale, and cabbage, and possibly some fodder corn. The sheep are penned in separate lots, in a cool shed during the day, and fed all the green food they will take, never leaving any to be mused over. Oats, bran and oil cake are fed in the beginning of the fitting period, and as the time for showing approaches and the stock is getting about as fat as it can, it is best to feed just enough grain to carry them along, letting the gain be made from the green feed. Cabbage usually is fed once a day. Rape or kale is fed in racks morning and night, and fodder corn or alfalfa fed at noon. Feed regularly and often as much as they will eat up clean. Keep the sheep in the sheds during all rain storms.

About five o'clock every evening, when not stormy, we drive the ewes out to pasture on rape or alfalfa. This drive compels them to exercise. After getting to the field they wander about taking a bite here and a bite there. Just before darkness comes on they are driven back to the shed where they find a little nice second cutting alfalfa awaiting them. Soon the hay has disappeared and the full stomached sheep lay down to peace and contentment. The rams are handled in the same manner, though taken to a different pasture.

Now that we have the sheep going right on feed, we must do a little primping up of fleece. The fleece must be kept clean. If the sheep have been washed, blankets had best be used. The blankets should be of some light tough material and shaped to the individual. Under all conditions keep the fleece clean. We all like to appear in our "best" on state occasions, so we think it only right and proper to have our sheep appear as well as we can make them. This fixing is not done to hide any defect, but simply to make the sheep look as attractive as possible. Sheepmen and judges pass over the coloring and trimming, paying no attention to these points which give no actual value to the sheep outside the attractiveness in the show. To the novice who inquires of us, we have always made it a practice to show them that the sheep is no better for being trimmed and colored for the show, and that this "fixing" only aids in calling attention to the exhibit and, therefore, is perfectly legitimate. The more artistic the shepherd's eye and temperament, the greater will be the attractiveness of his exhibit.

The back is flattened and the sides squared up to it. This gives the appearance of being cut from a block. The shears can give this appearance to the eye but the hand can undeceive the eye as it touches and feels the shape of the body. The loose locks that are taken off help to make the sheep neat. This trimming must be done a number of times in order to keep the fleece nice.
and neat, in fact every animal should be gone over a day or two before showing, and the final touches put on. The color that some apply is put on simply for attractiveness.

Now that the sheep are fitted, colored and trimmed, we must see if we are ready to load our car for the fair. We must have cabbage, roots, hay and grain to last till we return or reach a place where a new supply can be obtained. The car is penned off, the sheep placed in them in exactly the same lots as at home. Now we are ready. We arrive at the grounds somewhat tired. The stock is not fed much till rested, then they have their usual allowance, and when possible they are taken out of the pens and driven about for exercise. At last the day and time for which we have been planning arrives. We are told to bring out our aged rams. The old ram walks out majestically and we lead him to the place in the ring we have decided on that will show him to best advantage. Stock should never be shown front feet on lower ground than hind ones, rather have them on level or higher ground. His head should be held naturally. This is generally accomplished by holding the hand under the jaw. He should have been taught to stand correctly.

There are numerous little details that should be looked after which helps out in showing. They cannot all be gone into in detail. Handling and training during the summer before the shows, even from lamb-hood, are great aids. A sheep that is used to being handled and exhibited acquires the habit of showing itself to the best advantage. We have seen excellent sheep that when brought into the ring would not stand to be examined. A judge, therefore, cannot tell how good it may be, and so has to pass it by without giving it as much credit as it might have won, had it been properly trained. After more or less moving back and forth and comparisons of the stock, the judge gives his decision, we get our ribbons and lead our stock back to the pens.

Now comes one of the critical periods in the life time of the show flock. If it is desired to show again the same season and within a week or so, keep up the identical routine that has previously been followed, the idea being to carry along the very "forward" ones and to bring the ones that are not as "forward" up to the point where they are "ripe" or finished. On the other hand if it has been the last show for the season we want to gradually reduce the flesh and get the sheep back to good field condition. To do this make no sudden change, rather let the flock run out in all fair weather, feed less and less of grain, get them under their usual farm conditions in two or three weeks, and generally all will be well. Sometimes a dose of epsom salts is necessary to cool the blood of some animal that has been a little heated.

Now in conclusion, use your own best judgment in selecting from your flock the animals that you think after careful study of previous exhibits will equal or exceed these animals exhibited. Use care and discretion. Decide upon the fair that you wish to make your best showing at, and plan to have your flock "fit" to the minute for this exhibition.

Accept your rewards with a kindly, pleasing grace, and do not forget to take defeat in the same manner. Let defeat fire you to higher ambitions and go home and prepare to come back the next season stronger and better prepared.
IT WAS welcome news to all those interested in Cornell when it was announced that the New York State College of Agriculture was to take up again the work in forestry which had been allowed to lapse for eight years. Forestry instruction in this country had its beginnings at Cornell, where the first College of Forestry was established by the Legislature of the State of New York in 1898. With the increasing interest in forestry which has developed in late years, it seemed only fitting and proper that instruction in forestry should be resumed at the Agricultural College. Professor Walter Mulford began the organization of the work in June, 1911, and while at first only two courses of instruction were given, it was quickly seen that there was room for a much larger work and it was decided to offer advanced and professional courses, beginning with the college year 1912-13.

The full professional course will cover a period of five years leading to the degree of Bachelor of Science at the end of the fourth year, and that of Master in Forestry at the end of the fifth year. Students who enter as graduates without having had the undergraduate instruction in forestry, but who have had substantially the equivalent of most of the courses other than forestry, should be able to complete the work for the Master's degree in two years. Work for the degree of Doctor of Philosophy may also be done in the Department of Forestry, candidates being allowed to elect their major or minor subjects in the Department.

Naturally it will be necessary to provide equipment and quarters for the work above outlined. Provision has already been made by the New York State Legislature for a building which is to be erected during the next year and which will be ready for occupancy by the fall of 1913. This building, for which $100,000 was appropriated, will be located east of the Filtration Plant, on the high ground overlooking the valley of Forest Home on Fall Creek, and will be planned and equipped to meet the exacting requirements of advanced scientific work in Forestry. A timber-testing room and several laboratories
will be provided for special technical work. The lecture-rooms will be equipped with the most modern apparatus for the display of maps, charts, diagrams, and stereopticon views. Altogether the building and its appurtenances will be calculated to satisfy the demands of modern scientific work.

In thus enlarging the scope of its work the Department of Forestry has three objects in view: First, to give instruction at the College; second, to conduct field studies and investigations which will help in solving the forest problems of New York State, especially as they apply to the farm woodlot which has been much neglected in the past; and third, to assist owners of forest lands or woodlots in the State by giving direct help wherever possible. The instruction at the college is intended to meet the needs of four classes of students: (1) Students of general agriculture who wish elementary instruction in care of woodlands, in forest planting, and in forest nursery work; (2) Prospective teachers, business men, lawyers, or other professional men for whom a knowledge of the underlying principles of forestry will be a distinct help in carrying on their own particular line of business; (3) Technical students in other lines of work who wish one or more technical forestry courses, as for example, wood technology, which will be a help to them in their own professional work; (4) Students who intend to make forestry a profession.

The courses of study have been adapted to meet the requirements of the above classes of students. In the first place, the elements of forestry and a course in farm forestry give the underlying principles of the science as applied to woodlots or small tracts of timber. The woodlot is coming to be recognized as a part of the farm which should receive its share of attention, and which will repay such attention by yielding a larger and better crop. Practice in tree planting and nursery methods is included, which makes the course of extreme practical value to all those who have any timber on their farms. The one-year course in The Elements of Forestry is offered to fill the need of students who want something more than the general courses, and yet do not wish to take a professional course. The measurement of standing timber and its value; the rate of growth of timber in diameter, height, volume, and value; the measurement of logs and other forest products, and the use to which such products can best be put; methods of logging, milling, and selling timber; methods of regulating the amount of timber cut so as to insure a permanent and regular yield; these are all studies in the first half year's course. During the second
half year the study will include the life history of the forest, taking up such subjects as the influence of climate and soil on tree growth, and the influence of forests on the flow of streams, the climate and the soil. Practice will be given in methods of tree planting, seed sowing, and nursery work. Problems of forest protection and methods of management to secure the greatest returns, will receive particular attention.

On the University farms there are several woodlots which have been planted at the rate of 1200 to the acre, or 6 feet apart each way. For experimental purposes a few trees not indigenous to this part of the country were also planted. These included Scotch pine, Norway pine, and western yellow pine.

The objects of this plantation are three in number: to protect the watershed around the proposed reservoir which the University expects to build at this point on Fall Creek; to furnish practical experience to the students taking the forestry courses in methods of tree planting; and ultimately to realize a profit on the investment. While some of the land which is to be planted with trees, (amounting in all to about 200 acres), is suitable for agricultural purposes, it is considered wise to start a growth of trees which will prevent the soil from washing into the reservoir, and will at the same time furnish a future supply of timber. In fact, tree-planting upon this tract at Varna will be an example of what can be done in the way of conserving the water and producing timber. It is to be in every sense a “demonstration plantation.”

Immediately upon the arrival of the trees, about April 23, they were taken, in the baskets in which they were turned over to the Department of Forestry for the practical work of the students. A tract of 38 acres has been set aside for experimental methods in planting and sowing. Extensive plantations have already been made, and during the next two or three years these plantations will be continued on a large scale so that unusual opportunities are offered for practical work in the field.

During the first two weeks of May, 1912, the students in the two courses in forestry which were given last year, planted about 20,000 trees on 18 acres of land near Varna. Most of these trees were 4-year-old white pines obtained from the New York State Conservation Commission, and were
transported, to the planting ground and heeled in. As soon as the ground was in favorable condition planting was begun, the students working together in crews of two each, one man carrying a bucket in which were placed about 200 trees, while the other man carried a mattock, or grub-hoe, with which he dug the holes in which the trees were planted. Stakes were set up at opposite ends of the field, so that the students could the more easily keep the rows straight. The field was covered by working back and forth in parallel rows.

White Pine grows naturally in this part of the country and there is every reason to believe that the plantation will be successful. During the course of the operations, several small white pine seedlings which had sprung up from seed distributed by neighboring trees, were found on those portions of the tract where no ploughing had been done recently, and this is taken as an additional sign of encouragement. The trees will grow very slowly at first; but after having obtained a good start, they are expected to make a rapid upward growth, which will tend to the production of straight, clear stems. Later on, if natural thinning has not reduced the number of stems per acre, a light improvement cutting may be undertaken, the object of which is to remove the poorer, unpromising trees, and to favor the rapid growth of the best trees. On the other hand, if the plantation should encounter unfavorable conditions of growth so that unexpected losses occurred, then the "fail-spots" can be filled by later plantings. All people interested in forestry and especially those students who participated in the actual work of planting, will doubtless follow the history of this plantation at Varna with considerable interest.

FOREST RANGER'S MOTTOES

"The forest ranger's mottoes stand, 'Create, Protect, Restore'
To help home-builders with the land,
And bring content on every hand,
Now and forevermore.
Seedtime and harvest he computes
And from her plenteous store

Summons Dame Nature's attributes,
To make two saplings shoot their shoots,
Where one shot heretofore.
He stops the fires that send the floods
Which tear the valley floor
And ruin the farmer's corn and spuds;
So that two cows may chew their cuds,
Where one cud heretofore.

Where only sage and cacti grow,
With ditch and reservoir,
Fed from the mount's protected snow,
He sees two drops of water flow
Where none flew heretofore.
And as the fruit of his master-hand
And knowledge of forest lore;
Bearing the stockman's glaring brand,

We see a team of horses stand,
Where one stud heretofore.
So! here's to the ranger's fireside,
May his tribe increase galore,
And may ten forest rangers ride
On road, or trail, or steep divide,
Where one rode heretofore.
College just now passing through a period of remarkably rapid development. During the four years that you spend here, the College of Agriculture will expand greatly and you will be to no small extent responsible for the perpetuation of what is desirable in our student life.

You will find here a number of activities, of which this paper is one, and in order to get the most out of your college life we urge you to participate in some University or college activity, be it athletic, literary, or along the line of clubs, associations and the like. Furthermore, you will find here an Honor System the working of which will be described to you in detail at your “Get Wise” meeting. Under the terms of this system, the student body makes itself responsible to the faculty for the absence of cribbing during examinations. In order to be successful this system requires the cooperation of all students and every Freshman is expected to uphold this system and its principles.

During vacation, Professor John Craig, head of the Department of Horticulture, died at his summer home at Siasconset, Massachusetts. In his death, the University and especially the College of Agriculture, suffered a severe loss; a loss which will be felt keenly by both faculty and student body. His students always found him a broad-minded and inspiring teacher ready at all times to render any assistance within his power. His lectures were not only instructive but also elevating. He possessed rare ability in portraying the beauty of what Nature has to teach.

Greeting

At the opening of the year 1912–13, the Countryman extends the heartiest of greetings to the students of the College, old and new. Those who are already familiar with the life of the college we greet as old friends. We shall try during the coming year, as we have in the past, to represent your sentiments and to publish your ideas. We want you more than ever to realize the truth of what has so often been stated in these columns: that the Cornell Countryman is the publication of all the students of the College of Agriculture. Each of you should feel that this is your paper, relying on you for support, dependent on you for backing. Resolve now to visit our office and to bring us your suggestions and your criticisms.

To you, men of 1916, who are entering for the first time, we extend a most hearty welcome. You are entering a young University and a still younger
The following statement of the faculty of the college expresses the esteem of his colleagues: "The death of Professor John Craig on Saturday afternoon, August 10, 1912, comes as a great shock to every member of the faculty of the College of Agriculture. Although it was known that Professor Craig had been in ill health for more than a year, it was not fully realized that his condition was so serious.

"The members of the faculty of the College of Agriculture wish to put on record and to express to Mrs. Craig and to the other members of the bereaved family their high regard for him as an associate and friend, their esteem of his qualities as a teacher and investigator, their admiration of his unusual personal charm and their sympathy in this hour of sorrow.

HENRY W. WING,
CHARLES S. WILSON,
JONH L. STONE,
Committee."

Earlier in the summer occurred the death of Mrs. Lucy B. Whetzel, wife of Professor H. H. Whetzel, head of the Department of Plant Pathology. The Countryman extends heartfelt sympathy to the bereaved ones in their sorrow.

President Jacob Gould Schurman has been appointed United States Minister to Greece and the trustees have granted him a year's leave of absence in order that he may accept the appointment. President Schurman and family sailed for Greece early in September. Professor Emeritus T. F. Crane has been appointed Acting President for the year. The fact that our President has been recognized as capable of filling so important and responsible a position carries a feeling of pride to the heart of every Cornellian. We congratulate President Schurman on the honor that has been bestowed upon him.

A Competition competition starts open to members of the class of 1915. Positions of Associate Editor and of Assistant Business Manager are now open and will be filled from members of the Sophomore class. All who enter this competition will gain pleasant and profitable experience in work which will be found helpful to themselves, the Countryman and the college. This is an excellent opportunity for Sophomores as there are at present no 1915 men on the Board. All who desire to enter the competition will call at the office and register at once when full details of the competition will be explained.

Are You One of Them?

At the commencement of our tenth volume, we find on our files the names of a number of subscribers who have not as yet renewed their subscription. If your name is in this list, we hope you will renew as soon as possible in order that there may be no delay in sending your copy.
CAMPUS NOTES

The summer school in agriculture was by far the most successful session of its kind ever held in this college. For the first time regular work was given in agricultural subjects. Quite a number of students took work to complete the requirements for graduation as indicated by the fact that there were no less than six candidates for the degree in this college in September. The total registration was 223.

Work on the new agricultural buildings has been progressing slowly this summer. It is expected that a large part of the new Home Economics Building will be ready for occupancy by October first. The new Auditorium was delayed early in the summer because of a question as to the site, but now the work is being pushed. At present the building appears to be of the aerial bridge style of architecture. The new Poultry Building will soon be ready for occupancy and the Forestry Building will soon be under way.

On September first the College cow barns were struck by lightning several times and set on fire. Only the prompt use of fire extinguishers by those present saved the building from destruction.

Professor and Mrs. John Henry Comstock have spent the summer in Europe and will be back with the beginning of the school year. Professor Comstock’s latest work on the spiders has just come from the publisher.

Professor H. W. Riley of the Department of Farm Mechanics has purchased a farm on west hill about a mile out on the Trumansburg road.

The Cornell exhibit at the State Fair this year was both extensive and well planned. It occupied one of the large rooms of the State Institutions Building and was composed of exhibits from nearly all the departments of the Agricultural College as well as an exhibit from the Veterinary College. A great deal of interest was shown in this department of the fair.

Mr. L. R. Waldron, Superintendent of the Dickinson Sub-Experiment Station, Dickinson, North Dakota, a candidate for the Doctor’s degree, has returned to Cornell to continue his graduate study for a few months.

Dr. A. W. Gilbert spent the summer at Chautauqua, New York, as Director of the Chautauqua Practical School of Agriculture.

Dr. H. J. Webber and Dr. H. H. Love, of the Department of Plant-Breeding, attended the Graduate School of Agriculture, at Lansing, Michigan. Dr. Webber gave a course of lectures on plant-breeding and Dr. Love lectured on biometry.

Dr. B. M. Duggar, who has accepted a position with the Missouri Botanical Gardens, left with his family for Missouri on September 14. His host of friends here regret exceedingly his departure from Cornell and wish him every success in his new field of work.
FORMER STUDENTS

HARRY HAYWARD, B.S.A., '94

'94, B.S.A., '01, M.S.—Harry Hayward was born in Lewiston, Niagara Co., New York, in 1869. His early life was spent on his father’s farm, where he had an active part in all farm operations. Until he was fourteen he attended the rural district school and the graded schools of the village. He took a man’s place on the farm from the time he was 14 until 17 years of age, when he was sent to the Mount Hermon School in Massachusetts.

Having always been unusually interested in agriculture, especially in pure bred live stock, within three months after entering this school he was placed in charge of the 60 head of cattle on the school farm. In this capacity, he directed the work of 18 other boys in their care and feeding.

Upon the completion of his course at Mount Hermon, he entered the College of Agriculture at Cornell University with the class of ’94. During his college course he specialized in Animal Husbandry. He took an active part in all student activities of the College, and in mission, church, and Sunday School work. Being upon his own resources to a very large extent, he ushered in Chapel, and during his Junior and Senior years played the University chimes. He was a member of the Kappa Sigma Fraternity, and, upon graduation, was elected to Sigma Xi.

Mr. Hayward and Mr. R. A. Pearson were classmates, and both finished their required work in the University at the end of the then winter term, Mr. Hayward going to Indiana to take charge of a stock farm near Fort Wayne, and Mr. Pearson entering the dairy business at Philadelphia, Pa., and Delaware City, Del. After a short experience in Indiana, and afterwards in Delaware, Mr. Hayward was in October of '94 chosen Assistant in Dairying at the Pennsylvania State College. Later he organized the Dairy Department of that institution and was its directing head until 1902, when he went to the New Hampshire State College as Professor of Dairying and Animal Husbandry.

Later, he succeeded R. A. Pearson as Assistant Chief of the Dairy Division, after which he went to the Mount Hermon School to organize and direct the Department of Agriculture. This position he held for three years, and was one of the first Directors of a Department of Agriculture in a secondary school in the East. At Mount Hermon, Prof. Hayward had charge of 1000 acres of land, where about 80 per cent. of the work was done by students working two hours per day. Under Prof. Hayward’s direction, a policy was outlined which is still being carried out in this well-known institution. The foundation was laid for a herd of registered Holstein cattle, which is now worth around $20,000. A number of modern methods of forestry were adopted on the school forests, which not only included the removal of ripe timber, but also the planting of seedlings on barren hillsides. The business of the farm, when Prof. Hayward severed his connection with it, amounted to about $30,000 per year.
In 1906 Prof. Hayward accepted the position of Director of the Delaware College Experiment Station, and the Chair of Animal Husbandry in the College. Later he was made Dean and Director of the Agricultural Department. Since coming to Delaware, his work has been largely administrative, although he is giving considerable time to rural sociology problems.

Prof. Hayward has had the privilege of continuing his studies in some of the largest Universities of the East and Middle West, as well as travel and study in Europe.

'00, B.S.A.—G. M. Bentley, State Entomologist of Tennessee was married to Miss Mary E. Elmore of Rutherford, Tenn., early last summer.

'04, Ph.D.—Dr. A. O. Johanssen has left the University of Maine, where he was Professor of Entomology, to come to Cornell as Assistant Professor of Biology.

'05, W. D.—E. L. Klemer is manager of the Fern Ridge Nursery Co. His address is R. R. No. 3, Junction City, Oregon.

'07, Sp.—Robert Stanton, son of Theodore Stanton, '72, who before coming to Cornell took his degree at the State Agricultural College of Paris, has been made a Knight of the French Order of Agricultural Merit. His address is 7 bis rue Raynouard, Passy, Paris.

'08, B.S.A., '10, M.S.A., '11, Ph.D.—Hing Kwai Fung has a position in the Division of Crop Physiology and Breeding Investigations, Bureau of Plant Industry, Washington, D. C.

'09, B.S.A.—L. B. Cook has recently accepted a position in the United States Department of Agriculture, Washington, D. C.

'10, B.S.A.—M. C. Burritt was one of the speakers in the Grange Hall at the State Fair this year.

'10, B.S.A.—J. V. Frost is in the Agronomy Department of the American Steel & Wire Co.

'10, B.S.A.—Miss Cornelia Kephart, formerly instructor at the New Hampshire State Agricultural College, Durham, N. H., will come to Cornell to work for her master's degree in entomology.

'10, B.S.A.—Nelson R. Peet has been married to Miss Gertrude Martha Barry of Rochester, N. Y. While in Cornell Mr. Peet was editor of the COUNTRYMAN.

'11, B.S.A.—D. E. Fink has obtained a position in the Bureau of Entomology at Washington, D. C. He is to do special work on vegetable pests.

'11, B.S.A.—W. H. Rothenberger is now superintendent of the Iron Age Experimental Farm, at Glenloch, New Jersey.

'11, W.A.—J. J. Hoffman was recently married to Miss Alice Drake of Townsend, N. Y. He is located with his father on a large and successful dairy farm near Odessa, N. Y.

'12, Ph.D.—Dr. C. E. Leighty, who has been taking graduate work in the Plant Breeding Department for the last three years, has accepted a position with the Bureau of Plant Industry, U. S. Department of Agriculture, at Washington, D. C., in connection with the grain investigations. He will have charge of the cooperative cereal breeding plats in the north-eastern states.

'12, Ph.D.—Dr. C. H. Myers has been promoted to the position of assistant professor in the Department of Plant Breeding, to take charge of the extension work and winter course instruction of the department.

'12, Ph.D.—Dr. R. Y. Winters is now instructor in the Department of Plant Breeding. He will assist Dr. Gilbert in the teaching work of the department.

'12, B.S.—O. W. Smith will be in the Registrar's office the coming year.

'12, B.S.—W. R. Wilson has been appointed instructor in the New Hampshire State Agricultural College at Durham, N. H.

'12, B.S.—Albert H. White, last year's editor of the COUNTRYMAN, is connected with the North American Fruit Growers' Exchange. His address is 101 Summit Ave., Mount Vernon, N. Y.
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Announcement of the New York State College of Agriculture,
Announcement of the Winter-Courses in the College of Agriculture,
Announcement of the New York State Veterinary College,
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COMMUNITY AGRICULTURAL EXPERTS

By E. O. Fippin

Professor of Soil Technology, Cornell University

The establishment of local or district agricultural advisers and of community experts in various phases of agricultural improvement, we count to be one of the most fundamental and promising movements of recent times, for sound agricultural advancement.

The application to industry of every sort of the advice of the experienced expert in solving problems of production, of accounting, of business organizations, of transportation, of salesmanship, and of social and educational well-being of employees has long been recognized in many lines of business. It is a sound principle based upon the idea that any well balanced business, whether mining, manufacture, transportation, mercantiling, banking or what not, is so broad in its demands for technical training, points of view or range of special experience, that these can not be found within a single individual. The commercial organization is so engrossed with the operations of its business and its vision is at so short a range, that the man or the organization is not able to grasp recent technical or practical advances or see important broad relationships. Therefore, it has need of the expert who has made a special study of particular features of the business, so that he is able to point out defects and to explain means for improvement.

It is this function which should be supplied to the farm. Agriculture is now recognized to be exceedingly diverse, in the kinds of technical knowledge of soils, crops, rotations, insect or fungous diseases and remedies, types of live-stock and agricultural manufactures that it embraces. Long training is essential to get measurably familiar with these. Further, they must be adjusted to business problems of farm organizations, marketing, etc., and the average farmer or manager who gives a large amount of time to the details of labor and management, can not adequately comprehend them. Therefore, he should be at liberty to call in an expert to help him solve his farm business ills as the city brother solves his problems.

The farmer is beginning to apply to the experiment stations and colleges for such aid. It is being given, but if this demand grows to the extent it should reach, it would, as it already has a tendency to do in some places, swamp the facilities of such institutions. And further, it may be seriously questioned if the state should go to the length of solving all the individual and personal problems of the farmer. Would not the state better confine itself to determining conditions and principles, leaving to the individuals the local applications of these?

The only alternative is to place in each community the agricultural expert who for many purposes would best be permanently stationed at one post to consult with farmers, study local conditions and advise on particu-
lar problems of that territory. The more serious problems of agriculture are controlled by local conditions and, therefore, the man who advises concerning these should have a full appreciation of those peculiar local conditions to supplement his general knowledge.

Most assuredly, therefore, we believe the introduction of the farm expert or adviser or bureau should be encouraged as fundamental means of agricultural betterment.

Such men are demonstrating their value in several parts of the country. New York has already three county or local advisers and several more are likely soon to be established. In a Pennsylvania district such a man is reported to have so thoroughly gained the confidence and support of the farmers of his territory that 1700 stand firmly behind and for him. In several southern states where local advisers have been placed by public funds they have been taken over to the support of local funds because of their demonstrated value to the community. In Missouri, in Nebraska, in Iowa, Illinois, Ohio, and Ontario, Canada, as well as in New York, the value of the local expert function is largely recognized.

In Chautauqua county, New York, a farm expert bureau has been organized by local initiative and supported largely by local funds. The movement bids fair to have a rapid growth.

Inevitably with the demonstration of the value of the single community adviser will come the demand for more specialized men as a part of such bureaus. This is well illustrated by the community "Plant Doctors," of whom our Department of Plant Pathology has a number placed in the state and more in demand.

It is for public agencies to perceive the value of this function and to demonstrate, and perhaps aid it to a greater or less extent, for a time, in order that its value may be generally appreciated.

This means it is unwise for the government to fully or permanently subsidize the agricultural expert movement; first, because it is more an individual and community matter, and second, because too much state support is likely to weaken the system by too rapid growth and the employment of too many inefficient men in the expert capacity.

The qualities demanded of the local adviser are of the most exacting sort and include thorough technical training, farm experience, knowledge of business, and a sympathetic, diplomatic and original personality. Inefficient men will be very injurious to the system and, therefore, it is wise that such experts receive good pay in order that good men may be attracted and held.

One other function of the community adviser should be recognized, namely, that having assisted his patrons in the details of production he will gradually draw them together into a cooperative buying and selling unit, ultimately welding communities into the kinds of effective economic and social units which have been so much pointed to as desirable, but which there has seemed too little means to reach. We count the local agricultural adviser of the right sort truly a revolutionary agent for the general good.
THE STATE UNIVERSITY OF CALIFORNIA, which was founded under much the same conditions as regards the agricultural department and opened about the same time as Cornell, is located in Berkeley, at the foot of the semi-mountainous hills which encircle the bay and city of San Francisco. Although there is a border of nearly level land from one to several miles in width between the coast towns and the seashore, there are no good agricultural lands within thirty miles of the University available for an experimental farm. The farm activities of the College of Agriculture and its growth were retarded for many years by this lack of suitable land.

About four years ago the University purchased an ideal farm seventy-seven miles from Berkeley on a trunk line of the Southern Pacific railway. The ease with which it can be reached enables the professors resident in Berkeley to deliver courses at the Farm School, varying in length from one to six weeks. The Farm School, as will be seen below is young—in the formative period—and it has, therefore,
from a start of 12 students in 1908, now boasts of 100 at the beginning of the school year of 1912. The only requirement for entrance is, that the boy shall be not less than fifteen years old and shall have satisfactorily completed the eighth grade in grammar school. In addition to the regular students, those who have similar educational qualifications and are eighteen or more years of age are admitted for one year or more and allowed to elect any of the subjects in the regular courses for which they are qualified. About one-half of our students are now of this class, which gives a mature character to the school.

During the fall of each year there is held at the farm a series of short courses, covering all branches of agriculture and extending in length of time from two weeks in Horticulture and Viticulture to seven weeks in Poultry and Dairy Manufactures. The juniors and seniors of the regular agricultural course at the University of California are permitted to spend one-half year of their time at the Farm, taking only practical work such as field work in Horticulture and Viticulture, Dairy Manufacturing and General Stock Management. Twenty-six students have this year availed themselves of this opportunity.

Of the 780 acres in the Farm, about 300 are given over to general farming. The remainder is assigned to school and experimental grounds, and to pasture. About 200 acres have been planted to barley, some 50 to oats and 10 to wheat for the use of the Poultry Division; 30 acres of new land has been “checked” and seeded to alfalfa, while an older tract of about 50 acres is continued in alfalfa. Cereal Investigations account for 40 acres, Plant Pathology 10, Viticulture 30, and Horticulture 40; Animal Husbandry uses 37 acres of alfalfa pasture, about 10 acres of corrals and feeding ground, and 90 acres of general volunteer pasture. The Poultry Division occupies nine acres and has some twelve buildings; and school grounds proper including an athletic field occupy approximately 10 acres.

The Federal Department of Agriculture occupies 23 acres of choice creek land which they use in irrigation experiments, along the line of determining the duty of water for alfalfa, trees and garden crops.

The buildings consist of a dining hall, two dormitories, stock judging pavilion, creamery and administrative office, horticultural building and class rooms, forge and wood working shops, Veterinary Science, and Animal Industry buildings. Besides these, there are smaller houses for the use of the Viticultural Department, together with two lath houses, and a mushroom house. There are nine poultry buildings, and three barns given over to the horses,
cattle and sheep. The farm stock is housed in barns of the older type. The Cereal Division has a separate building for its own use.

Up to this time not so much attention has been paid to horses as to cattle, swine and sheep. No thoroughbreds have been purchased, though there are nine well bred Percheron and Clydesdale grades. About equal attention is paid to the beef and dairy types of cattle. Of the swine, the Poland Chinas and Berkshires are the most numerous. The sheep are an exceptionally fine lot, the flock having been founded two years ago by the purchase of a car load of choice and champion animals from McKerrow of Wisconsin. There are 75 head of sheep, three breeds being about equally represented; i.e. Hampshire, Shropshire and Southdown. The animals above enumerated are in direct charge of the Animal Industry Division. The farm division, which is charged with the growing of all crops and the handling of all farm labor, has in its charge 23 mules and two grade Percheron mares.

The Poultry Department is at present conducted more along commercial than experimental lines. It supplies the farm dining hall with poultry products, as well as the University of California at Berkeley and the University Hospital in San Francisco. There are at present about 600 individuals, principally of the White Leghorn breed.

The Creamery Department is also run commercially, as well as for the purposes of instruction and experimentation. The average daily output is in excess of 500 pounds of butter. Cheese is not made in large quantities; in fact, only for purposes of instruction. The farm is producing annually about 60 tons of hay other than alfalfa. About 400 tons of alfalfa is produced, but this yield depends upon the amount of pasturing which becomes necessary each year. The average yield of barley the last few years is 32 bushels per acre. Very small amounts of wheat are grown. Oats are largely grown for hay.

There are at the Farm, at present, eighty-two secondary school students, and twenty-six University students for the spring term only. There are sixteen instructors of all grades, besides some four helpers such as Orchardist, Farm Foreman, etc. All of these men, with the exception of one, are in residence. The students are housed in two dormitories, the first of which, erected two years ago, cost $28,000; the second, just finished, cost $33,000. The two will accommodate 140 students.

The working funds of the institution are derived from state appropriations and come in different forms, each being appropriated for a specific purpose. As the California legislature meets only
once in two years, each appropriation runs that long. The following figures are on this basis, i.e. two years: Support, $60,000; equipment, $11,000; implements, $2,500; grounds, $3,000; light, power, water, sewer, $10,000; salaries, $60,000; and buildings, $100,000. Besides these funds, such moneys as are taken in from the sale of farm products or for the board and room of students are turned back into the farm treasury for the maintenance of the institution. At the present time the dormitory and dining hall are self-sustaining, while the farm crops alone have proven profitable.

The Farm School is an integral part of the University of California and responsible to the College of Agriculture. The Superintendent of the Farm is Dr. Leroy Anderson, Cornell, 1896, who is also Superintendent of Farm Schools—although there is, as yet, only one such school in the State. Roger Marr Roberts, Cornell 1892, is manager of the University Farm and general business manager as well, having charge of all supplies and the disbursal of all moneys. As manager, he is the farm representative on the Board of Regents of the University of California.

THE FUNCTION OF THE STATE AGRICULTURAL COLLEGES

[Abstract of a report of President Kenyon L. Butterfield of the Massachusetts Agricultural College]

THE United States Government under the provisions of the Acts of Congress of July 2, 1862, August 30, 1890, and March 4, 1907, is contributing $2,500,000 annually toward the support of the state colleges of agriculture and mechanic arts, established under the provisions of the first of these acts. Each state has at least one such institution, and in seventeen southern states there are separate institutions for negroes. The Federal Government contributes annually to each state for the benefit of these institutions $50,000, and in addition $30,000 in partial support of agricultural experiment stations maintained in connection with the agricultural colleges. These appropriations involve recognition by Congress of the two-fold task of these institutions, namely, instruction and investigation; and a bill now under consideration to appropriate annually an additional $15,000 to each State for extension work in agriculture contemplates recognition of the three-fold nature of their proper task.

The United States Bureau of Education in whose hands the administration of the funds for these institutions rests is often asked to define the purposes and functions of the distinctive agricultural colleges or departments of agriculture. The Bureau maintains that the main purpose of these agricultural colleges or departments is expressed in the thought that they are the organ or servant of the state, designed primarily to benefit the agricultural and rural life, both of the state and of the nation.

There are three main types of service which the college may render:

Investigation, Instruction, and Extension service. Investigation may be called the search for truth about agriculture and rural affairs; instruction, the incarnation of this truth in trained leadership; extension service, the dissemination or democratization of this truth—its distribution among all the people interested.

Thus the college has a three-fold task; not three tasks, but one task, to be fulfilled in these three fairly distinct methods or types of work. Let us discuss each one of these with as much brevity as possible.
Of course the characteristic work of this college, as of any college, is to teach the students who resort to it. But it is peculiarly true of an agricultural college that it can not teach until it has something to teach. Hence, logically, the first business of the college is to investigate. It seems best, therefore, to place research first in the order of present discussion.

There are certain laws governing the operations of soil and the growth of plants and animals. Experience and observation enable men to follow these laws to a degree—but only to a degree. Few farmers have time for prolonged or systematic study or the training or facilities for it. Men must be set apart for this work, men specially trained, with time and apparatus. Thus, the agricultural experiment station came into being. This work of investigation divides itself into several types, the first of which is research. This is a study of the fundamental laws that underlie the operations of the soil and the growth of plants and animals. The aim of research in agriculture is to gain exact knowledge of general principles that may be applied to the business of growing food and other supplies coming from the soil.

Once the general principles or laws are discovered, the method of their application to actual operations must be worked out. Expert farmers will accomplish a good deal of this experimentation, but not all of it. Hence, the college, through its experiment station, must continuously carry on these experiments.

Then, too, there is need of the Agricultural Survey. We recognize the need of knowing not only the general laws of nature and their applications to methods of culture, but that each farmer needs to know how to make the application under his peculiar conditions of soil, climate, topography, market and transportation facilities, etc. So long as there are unsolved problems lying before our farmers which can be solved only in the light of the knowledge which the average farmer can not gain for himself, then the college must help.

There is the problem of distributing the products once grown, the nearness to market, transportation, the character of the market, competition for the market, the function and rewards of the middlemen, the development of agricultural credit, business cooperation among farmers, etc. These economic considerations, just because they are vital to the success of agriculture, are a subject for thorough investigation by the agricultural college.

But, after all, there is an even larger issue, the social phase. Our greatest concern is with the quality of people developed by the rural mode of living. Hence, the conditions of rural life, moral, religious, recreational and social, are of significance. Because these things are vital to the welfare of the Commonwealth, they must be studied.

We may now consider the methods by which the instruction of the college shall minister to its chief purpose. There are three main outcomes to be cherished in the course of study, and I state them in inverse order with respect to human destinies, but in direct order with respect to immediate purposes and policies. They are, first, preparation for the agricultural vocations; second, preparation for citizenship, particularly rural citizenship; third, the all-round development of the man.

Preparation for the agricultural vocations is the immediate business of the college on the teaching side. The courses of study, the methods of teaching, the atmosphere of the institution, should all make for this end. The term "agricultural vocations" is perhaps somewhat misleading, but must answer until we find a better one. It is not the same as farming. The term does not imply that all of these vocations are pursued in the open country, but it includes those vocations the adequate preparation for which must embrace a thorough study of the soil, or of plants, or of animals, for the purpose of using that knowledge for
economic ends; and also the vocations of a professional character which have to do directly with the life of the rural people.

The most efficient service to society which can be rendered by most men is the honorable pursuit of a useful vocation, and it becomes the fundamental task of the agricultural college to inspire its graduates with the thought that they are to follow their chosen vocation, not primarily as a means of making money, but primarily as a means of service to society. This may sound theoretical and academic, but it is sound sociology, sound pedagogy, sound ethics, sound religion.

Nevertheless, each individual has obligations to the community that lie outside his vocation. No matter how isolated his life may be, nor how busily he may be engaged in the exacting duties of his vocation, he is obliged by many considerations, not the least of which is his education at state expense, to give an intelligent and honest account of himself as a member of society, as a political citizen. It is especially incumbent upon the man who follows his vocation in a rural environment that he shall understand the peculiar needs of the rural community as well as those larger general needs which incorporate themselves in state and national policies. The agricultural college, therefore, must try to make sure that every graduate has secured some grip both upon the problems of the rural community and upon the general problems of the day, problems social, economic, governmental, ethical.

Without question, the man himself must be greater than his work and perhaps even greater than his citizenship. But I think we have not yet sufficiently realized the possibilities of vocation in the making of a man, and hence we have not realized the culture-value of the training for vocation. As a matter of fact, those qualities of mind and character that we like to think of as belonging to the superior man, such as sound physical health, intellectual vigor, ripe culture, high ideals and noble thinking, are cultivated, in no small degree, by the right sort of pursuit of the day’s work and by the right sort of service to one’s family, neighborhood, town, state, and nation. I believe, therefore, that whenever we have organized our agricultural vocational courses in the proper way, whenever the materials of study in those courses have been adequately elaborated, and assuming that all the subjects are properly taught, we will find that the man thus trained, granted that he has within him the seeds of culture, will become a cultivated, well-rounded man.

More than knowledge of problems, greater than an interest in politics, is the spirit of community service, the willingness to sacrifice something of one’s financial gains, of one’s time, energy, leisure and comfort for the sake of leading one’s community on to higher levels, for the sake of solving its problems.

An agricultural college can not give its chief attention to the training of men for the utilization of their leisure. Yet there is no reason why the men who follow the agricultural vocations may not have leisure. They must have it. Leisure feeds the highest impulses of the soul. Leisure is essential to the enlargement of the spirit. An agricultural college should have teachers and offer courses, and require men to take those courses, that will tend to give the individual student, no matter what his vocation, some grasp of the eternal verities, some hold on the essential things of life, some knowledge of the sources of personal power, great inspiration, a grip of the problems of human duty and human destiny. This may be secured through literature, or through philosophy, or through history; but we cannot afford to give the baccalaureate degree to any man who has not at least opened the door and peered into that high-vaulted chamber which contains the choicest treasure of human thought and aspiration.

We come now to the third phase of the task of the college—the dissemina-
tion of truth to all the people of the state. I hold that the function of extension service on the part of the agricultural college is coordinate with its function of investigation and of teaching resident students, and the reason lies less in any logical formula than it does in a practical need and a practical means of meeting that need. What I mean is this: the ultimate purpose of the agricultural college is the benefit of the agriculture of the state. One means of benefit is investigation, another is by training leaders; but another, and, in some respects, the most important, is by reaching with information and inspiration every worker in the land. It is the logical outcome of the social or state function of the institution.

There are other reasons why the extension service should become organic in the agricultural college. It reacts on the research and teaching, bringing them into more intimate touch with the realities and the fundamental needs of agriculture and country life. It gives the institution that state-wide and social leadership which makes it the center of light and leading in agricultural affairs. The people expect that the college shall distribute what it knows, for the benefit of the people who can not come to the college. It is because they cherish the belief that the college exists to serve them directly and immediately as well as through the training of a comparatively few individual leaders, that they are willing to pour out money in its behalf.

Obviously this extension service should be so organized that it shall not interfere with the work of research or of teaching. Temporarily, because of lack of men, it may have this bad effect, but this, only a passing phase, can be remedied as soon as we have adequate appropriations and can develop what shall practically be an extension service faculty.

CROPP ADAPATION AS DETERMINED BY AGRICULTURAL SURVEY

By L. H. Goddard

Chief of the Department of Cooperation, Ohio Experimental Station

ONE of the extremely important problems which every farmer is forced to solve in working out his plans for each succeeding year, is the determination of the crops and the varieties of crops, which he shall grow in his fields. Unfortunately, however, not all farmers even recognize the problem as such. It is probable that a very large percentage of them accept unthinkingly, decisions which have been made by others, such decisions not infrequently having been made for conditions which were entirely different from the ones under which they are working. In the days of pioneer agriculture, when our wants were few and easily gratified, this plan may have sufficed, but with the great changes in American agriculture and American people which have already come to pass, and the still greater ones which must certainly occur in the near future, another method of procedure must be adopted. A farmer's labor income of a dollar a day or less, which once may have seemed princely, looks now too much like the wages of an office boy. In selecting our farm crops, then, we certainly should try to consider carefully every factor, whether fundamental or not, which has any bearing upon the question, before we make our final decision. In the following paper, so far as its limits will permit, attention will be called to a few of these factors
which have been observed or studied in connection with the Agricultural Survey which we are now prosecuting in Ohio.

One of the most important of these factors, the climate, has long been recognized in a general way by all intelligent farmers. We doubt, however, if even the best informed of them, or perhaps even our agricultural institutional workers, have given sufficient attention to this very important subject. Of course, all farmers in New York or Ohio, for example, know better than to try to grow cotton or oranges, but do very many of them know of the wide climatic variations which exist within the boundaries of their own state? Possibly some of them would not be surprised that at one place in Long Island there is an even hundred days longer crop growing season than is accorded by nature to northeastern New York State. Would they expect, however, that one side of St. Lawrence County has 60 days longer season than has the other side (see Cornell Bulletin 316)? Even the little State of Ohio, about 200 miles square, with no mountain ranges, and indeed with a very large percentage of its land coming between two datum plains not over three to four hundred feet apart, has a variation of 50 days in crop growing season, which in one place in the State can be covered by driving half way across one county (see Ohio Station Bulletin 235). In

![Map of New York showing average number of days between last frost of spring and the first in fall.](image)

...
In determining the comparative value of different crops for a given section we must know when we visit it or study its statistics, whether or not the weather that year has been normal. An abnormally heavy rainfall in the spring, a severe drought in the summer, or vice versa, does not have the same effect on all crops. Farmers can give our field workers something of an idea regarding the weather which they have experienced that particular season, but they are a little too prone to blame their faults on the weather to make this information as accurate as it should be. The day is certainly coming when Experiment Stations will tie up all their field crop publications with definite information, regarding the climate of the area in which their plots are located and the weather of that area for each year under consideration.

While climate and weather have long been recognized as important in connection with crop adaptation, another and even more important factor has until recently been quite largely disregarded. Farmers have long recognized that the different soils on their farms were not equally suited to all crops. But they have almost invariably failed to see the application of this principle beyond the boundaries of their own farms or of their immediate community, if we are to judge by the freedom with which they secure seed not only from other soil types in their own state but from distant States as well. The varying results which they secure when they purchase seed from other sections, they attribute almost wholly to climatic differences; whereas, soil differences are equally if not more largely responsible for them.

Within the past few years the Ohio Experiment Station has conducted a large number of quite accurate cooperative corn variety tests at points widely distributed over the State. In all of these tests, the variety which the farmer was growing at that time, and which in most cases had been grown by him for several years at least, was used on the various check plots of the test, ranging from two to a half a dozen or more in number. In forty-one of these cooperative tests Reid's Yellow Dent, a very widely known and widely lauded variety was used, and thus put in comparison with these home-grown varieties, but in only nine cases did its yield exceed that of the home-grown seed. Another well known variety, the Leaming, beat the home-grown seed in 15 out of 29 tests. Ohio Pedigree No. 75, which we know to be a very fine variety on soils to which it is adapted, was better than the home variety in but 8 out of 21 cases. The Experiment Station Clarage exceeded the home variety in yield in but 2 out of 14 trials. In other words when we sent out selected seed of these four celebrated varieties to be tested side by side with the seed which the farmer had been growing upon his own farm, the result the first year was that in less than one-third of these trials did they excel the farmer’s variety. The variety which did the poorest of any, the Station Clarage, was probably the best bred of all. It had been improved, however, on a type of soil which is not largely represented in the State. Mr. C. P. Hartley of the U. S. Department of Agriculture, moved seed corn in Ohio eighty miles from Clinton to Delaware county, and after growing it there for five years found it so poorly adapted to Clinton County when he took it home, that the original seed which had been growing there continuously out-yielded it 48 per cent. While of course climate and weather will explain some of the results we have secured in this cooperative corn variety work, we feel positive they are not sufficient to explain them all, and that to soil differences an appreciable part of them may be attributed.

Many instances of this kind might be given, that in deciding what crops or what varieties of them shall be grown upon any given farm, the farmer will not dare to disregard the type of soil which he is using, or will not dare to give much weight to the opinion of those who do disregard it.

Some problems of crop production we do not seem to be able to solve by
means of information regarding either soil or climate. For example, we would call attention to the centers of tobacco production in Ohio as shown in circular 100 of the Ohio Station. We already have sufficient information to make us sure that something besides soil and climate helps to determine where these particular centers shall be. Indeed, we are reasonably sure that the previous experience of the settlers of the various sections of Ohio has had much to do in determining what enterprises have been taken up therein, especially in such cases as the one just mentioned or in the case of the Swiss cheese center in Tuscarawas County. And again, these centers of crop production may be due entirely to some external influence, such for instance as a special market. In this case it will be well for us to consider what is the future of that market, as well as the climate, the training of the people and the present condition of the soil, before making our decision to fall in line with the others.

In order to develop systematically such information as this, the Ohio Station has arranged, in connection with its Agricultural Survey, to send to the field a specially trained man who shall visit each county in the State, to study the different classes of people, crops, livestock and types of farming, the date of introduction of each, the rate of increase of each, the date of climax of each if reached, the rate and cause of decline of each if such exists, and the relation of each to the others. In the thirty counties which have already been covered, the information secured has proven of even greater value than was anticipated. We, therefore, look forward with much expectancy to the completion of the survey of all eighty-eight counties early next year.

But, having all this information, we shall not be led blindly to our goal. The plan we have adopted in Ohio in cooperation with the U. S. Bureau of Plant Industry, Office of Farm Management, is to send trained men to the field who shall concentrate their attention on a single soil type and determine for that type, among other things, the best crops and varieties of crops and the best methods of growing them. On many soil areas in Ohio at the present time, and likewise in other states, the farmers' experience is all we have available except certain general information which we dare not undertake to apply until we have determined its local adaption by such field studies as these. It will of course be understood that these field investigators or District Supervisors, as we call them in Ohio, take up many problems other than crop adaptation.

We must not close, however, without referring to one other important feature of the work of the District Supervisor in Ohio, which in our judgment should be one of the fundamental factors of every agricultural survey. Thus far in this paper we have considered almost exclusively the development of information which would enable us to determine what crops may be grown on any given farm and how to grow them to produce the maximum yield. This is not sufficient. We must also consider when to grow them, and how much of them should be grown to enable the production on that farm of the maximum net income. At first thought it may seem that this problem refers so exclusively to the individual farm that it can not well be considered in a general survey. Our experience in Ohio indicates to us, on the contrary, not only that such surveys are possible but also that if our District Supervisors do not have them in mind in all their investigations, in other words, if they do not have the farm management vision in all their work, they will never reach the maximum of success. Maximum crop yields and maximum net income per farm are not necessarily synonymous. We must have the latter. If we are to bring about a halt in the rapid depletion of the rural population we must assist farmers in securing a labor income more in accordance with the energy which they expend on their work, and one which will enable them to improve their roads, their schools, their churches and their homes and give them more of the pleasures of life.
THE VALUE OF FARM MANURE

By Harry Snyder

Formerly Professor of Agricultural Chemistry and Soils in the University of Minnesota

FOR immediate returns in the way of larger crop yields and for permanently building up the fertility of the soil, farm manure when properly cared for and utilized is worth upwards of $2.50 per ton. Too frequently, however, manure is handled and utilized in such poor ways as to greatly lessen its value. Extensive tests, particularly at the Canadian Experiment Station, have shown that as a general practice best results, considering both economy in handling and crop returns, are secured by direct hauling of the manure from the stable and spreading it on the field. There have been such extensive and careful tests, extending over periods of twenty-five years, that there can now be no question as to what in general is the best way of handling manure, as the tests are so decidedly in favor of direct spreading instead of first composting. Hauling the manure to the field and making small piles, and then spreading these piles is not an economical method of procedure. For general farm practice the manure spreader should be used as it enables the fertilizer to be spread more evenly and in the end at less expense.

Particular care should be taken to use sufficient absorbents to collect all the liquid manure. A mixture of straw and solid and liquid manure make a more balanced fertilizer than any of the constituents. The liquids are particularly rich in nitrogen, the most expensive element of fertility. As a general rule about half of the nitrogen of the food is returned in the urine, and about a quarter in the solid excrements, the remaining quarter being retained by the body for milk production or growth. A mixture of straw, solid and liquid manure ferments more readily and becomes available as plant food in a comparatively short time, while the litter or dung alone may be much slower of decay.

The value of farm manure is derived largely from its action upon the soil, changing the inert and inactive mineral matter through processes of decay into a more active and available form of plant food. That is, farm manure is valuable not only for the fertility which it contains, but also for the favorable action which it exerts upon the soil. In experiments by the writer at the Minnesota Experiment Station, several years ago, this action of manure and decaying vegetable matter and animal matter upon the soil was found to result in the production of humate compounds—i. e., new chemical prod-

THE MANURE SPREADER MAKES POSSIBLE THE BEST UTILIZATION OF MANURE

(Courtesy of College of Agriculture)
ucts, formed by the union of the decay products of the manure with the soil. These humates were also found to be most valuable forms of plant food. Rich prairie soils owe much of their fertility to humate forms of plant food, i.e., plant food made available by the action of decaying animal and vegetable matter.

The products of decay from grass and clover crops are particularly valuable for the formation of humates. Production, singular as it may seem to the layman, invariably produce the best quality of manure. This is because so little of the elements of fertility in the feed is permanently retained in the body. The body simply burns the food and returns in the waste products nearly all of the elements of fertility originally present in the food and in a more available form as plant food. In dairy farming, where skim milk is fed on the farm, and only butter

Most western soils contain sufficient active alkaline matter so that the vegetable matter decays without the formation of destructive intermediate acid products. This is one reason why most western soils are so responsive to farm manures and crop rotations.

The improved physical condition of the soil from the application of farm manures is also marked. Sandy soils are made more retentive of moisture, while clay soils are made more mellow and more responsive to cultivation. The improved physical condition alone, arising from the application of farm manure, is often sufficient to pay for its use.

Feeds vary widely in their manure-producing value. The feeds that are the most valuable for milk and meat is sold, practically all of the fertility is recovered.

The fertilizer producing value of a feed should always be considered along with its feeding value. For example a ton of oats will contain about 33 pounds of nitrogen, 16 pounds of phosphoric acid, and 11 pounds of potash. A ton of high grade wheat feed, composed of bran, shorts or middlings, and feeding flour as obtained in milling wheat, will contain 55 pounds of nitrogen, 38 pounds of phosphoric acid, and 25 pounds of potash. The additional fertilizer ingredients in the wheat feed, the extra 22 pounds of nitrogen, 22 pounds of phosphoric acid, and 14 pounds of potash, would be worth upwards of $5.25 per ton. While the mixed wheat feed is in every way

AN UNPROFITABLE WAY OF HANDLING MANURE
(Courtesy of College of Agriculture)
equal, and the best quality much superior; in feeding value to oats, the manurial value is $5.25 per ton in favor of the wheat feed. In fact, the wheat feed contains more fertility than corn, oats, barley, or rye; it contains approximately $12.00 worth of fertility, often making it in reality a cheap food and cheaper in the end than many apparently more expensive foods.

In this connection, Professor Henry, of the Wisconsin Station, in his work, "Feeds and Feeding" says: "Bran and shorts carry all the elements of fertility in large quantity, and for this reason are highly appreciated by those feeders whose interest reaches beyond their cattle to the lands they till. When very low in price, bran may be used as a fertilizer by direct application to land, but such provision should not be tolerated. It should first be fed to animals and through their droppings, it will reach the land almost undiminished in fertility."

As a general rule farm manure is not valued as highly as it merits. By its use new stores of fertility are added to the soil, the soil is improved in physical condition so as to store and transport water more readily; while through its decay the manure binds soil particles and prevents drifting by wind storms, and by its chemical action upon the soil renders inert material available as plant food. The bacterial flora of the soil is also changed and augmented by the application of farm manures. It acts beneficially upon the soil in so many ways it is not surprising to find that the old alchemist believed that the "spirits" from the manure in some mysterious way took up their "abode" in the growing plants that had been fertilized. The farmer's manure pile is one of his most valuable assets, and is liable to depreciate in value if not properly cared for and utilized.

COMMUNITY BREEDING

By John Gould

Aurora, Ohio

WITHOUT entering upon any discussion of the theoretical breeding and development of dairy cattle, nor attempting to criticize in any way the methods pursued by dairymen in general, we here simply wish to call attention to certain of the methods that seem to the writer to have been eminently practical in building up of the success of the Western Reserve Holstein Breeder's Association. This is possibly the best known association in this country, because of the success of one of its members in putting two cows at the head of all world's records, and a third cow that promises to dispute places with the second. We accept from the start that the success of any cow, no matter which breed, is based upon one principle alone, developed motherhood, and the desired end sought, whether milk, fat, or both, must be gained by development of maternal functions. These apply as well to one breed as to another, and can never be successfully merged with a function that has a selfish element in its makeup that saves for itself, as must be the case, where gain in flesh, instead of in milk, is wanted as profit.

We here append some things that seem to stand out as specialties in the evolution of this association and which have given it so advanced a position, and we cannot see why these things, here emphasized, should not be of an application so wide and general, as to fit the case of any dairymen in the United States, who wishes to progress. First, the association which here will be termed "Community Breeding," is an association of a large number of
dairymen who adopt one breed of cows, stay with that breed, numerically cover a district with one class of cattle, and do two things. First, they have an average quality and a large amount of dairy produce to attract the market, and a large number of one breed of high quality to attract the dairy stock market. Second, they breed it so well and so pure in one direction, that its dairy prepotency will sell it at very advance prices.

The association from the start recognized that cross-breeding was always a plan of adding uncertainties to the end sought, and the closer the breeding is to eliminate uncertainties, the more uniform is the result. Consequently a breed was selected, and a certain family of that breed has won a success that has brought astonishing prices and buyers from all over the world.

The 150 dairymen who compose this association are not all in one township, but are scattered all over the country. They have agreed upon a general plan of breeding and care and while they are progressive to an eminent degree, they are far away from fads and fantasies. The important factor is finding the best way to breed a strong, healthy cow, that is a little better than her dam. Here is where a strong point was gained, retaining the sires that have proved the best getters of promising heifers. The belief is now well established that improvement either in milk yield or in butter fat content, must be looked for as the gift of the sire as he inherits from the combined influence of grand dams on both sides.

To this end the DeKol family is the foundation blood of the herds of this association, and sires a dozen or more years old, can be found for breeding. Strong prepotency is "clinched" now and then by breeding a cow of remarkable qualities back to her sire, thus doubling the transmitting power of this dairy "temperament," if it may be so called. Also close breeding now and then is not feared, if a "toning" up is considered necessary.

It looks as if dairy quality can be actually developed to a higher degree in a cow, i.e., an advance made notably in butter fat percentages, if a certain line of feeding is commenced with the heifer from the day she is dropped to the arrival of her first calf. We do not intimate anything like "baby beef" making, but a systematic feeding, care and sanitation, that develops the milk organs, while not promoting the forming of flesh beyond a certain point. This is best illustrated in the case of Banostine Belle DeKol and her half-sister, Daisy Grace DeKol, that are in the 4.5% fat class; for a year's test, a full 1½% advance in three generations.

The experience of the association is wholly against the grade cow, even at her best. Only when the sire is a registered animal should his daughter be bred back to him. While in the third generation, the milking qualities may be satisfactory, but the moment breeding from a grade is attempted, there is a reverting back that "queers" the business, because the price of grades bears no comparison with that of pure bred, for a heifer calf born of known registered stock, will sell for more at three days old, than can be realized from a high grade cow. Outside the association much breeding is going on from grade sires, and color is about the only noticeable advance. A grade sire can only halve his best blood with his offspring, and the balance of the other half must be a sort of "job lot" collection thrown in to make full measure. So many diverse influences, good and bad, are brought together, the bad in the majority, that the result is more often retrograde. Only one kind of breeding is more foolish, that of crossing breeds to obtain dual excellence which, after all, is never more than a compromise, and the crossing of two cross-breeds is the end of all excellence. Wisely this society has given all such ideas a wide berth and has won success accordingly.

This society has from its beginning, had bi-monthly meetings, all day gatherings, with ample dinners and
good speakers from all parts of the United States. Often at such occasions witty, level-headed veterinarians have saved the society from "scare-headline" stampedes. As the members realize that care, sanitation, and healthy sires are the best preventatives of disease, not a healthier class of cattle can be found in the United States.

JOHN WALTON SPENCER

By Anna Botsford Comstock

"AS FOR myself I am glad that I have learned to know the heart of a child, and that I have lived to see three score and five years." These were the words of "Uncle John" when he retired from his active work in the Nature-Study Bureau five years ago; and perhaps the greatest tribute that we who love him and mourn his loss may be able to pay him is to say that he learned to know the heart of a child.

John Walton Spencer was born at Cherry Valley, N. Y., June 12, 1843. Soon afterward his parents moved to Westfield, Chautauqua County. The district school was where "Uncle John" gained his education, and also gained much of that knowledge of human nature which was such a help to him in his final chosen field. It was granted him to have one term at a select school in the town, and we know that he made the best of this opportunity. On his coming of age came the young man's desire to see the world and he went West to the Pacific Coast. He saw San Francisco in the fever of the war time, when gold was at a premium and gold mining the chief industry of that state. But still he was not satisfied; he shipped with sailing vessels and visited the Sandwich Islands, then an independent native kingdom, and remained there for a year and a half. But the home claimed him and he returned to the farm.

As he struggled with the problems of the farm, the conviction grew upon him that the state was doing too little to educate the farmer in intelligent methods of agriculture. In 1894 Mr. Spencer was Chairman of the Chautauqua Horticultural Society, and at that time Mr. Fred Nixon was an influential member in the New York Legislature. With the support given him by Mr. Spencer and the Society which he represented, Mr. Nixon secured an appropriation for Cornell University for promoting the horticultural interests of the western counties of the state. Thus began the Cornell Extension teaching. Horticultural schools of several days' duration were held in Jamestown and in other places, professors from the College conducting the teaching. Mr. Spencer was among the most eager and intelligent of those who came to learn and was soon well known to our Extension Faculty. His mind eagerly grasped the scientific facts and comprehended their value. He saw clearly that to help the farmer the teaching must be of a popular sort, and he must undertake to translate the results of scientific investigation in agriculture into terms which the plainest of farmers might understand. He did this in Farmers' Institutes and wherever opportunity occurred.

In 1896 an appropriation was given to Cornell especially for extension work and "Uncle John" came on to help in the work. At first his help was entirely voluntary and without remuneration, but he was found to be of so great use that he was asked to give up his farming for a time and come to help with this new work. His first work here was Supervisor of the Farmers' Reading-courses. Through correspondence "Uncle John" tried to
give the farmers in simple terms the information of scientific facts in agriculture. The Reading-courses reached thousands of practical men and was the basis and the beginning of Cornell practical work to the farmers of New York State.

Another phase of the work interested “Uncle John” still more. When Cornell was given an appropriation to carry nature-study into the rural schools of the state, Professor Roberts asked Mr. Spencer among many others to visit the schools and note their needs and whether this teaching was being done. Then “Uncle John” found himself in his true element. He instructed not only the teachers but the children during these visits, and came back enthusiastic over the possibilities. He it was who first saw clearly that the first step in this great work was to help the teachers through simple written leaflets. I remember very well there being present at a conference Mr. George T. Powell, Mr. Spencer and myself, when this matter was first talked over. “Uncle John” said that
the Cornell professors should write these leaflets, and I knowing well that these men were overworked told him that I thought it would be impossible. But nothing was impossible to "Uncle John," and he did well in choosing the first man, for he went directly to Professor Bailey. As a result was that masterly leaflet, "How a Squash Gets Out of the Seed," and the next to follow in line was Professor Cavanaugh who wrote a delightful leaflet on "How a Candle Burns." Other leaflets followed and soon "Uncle John" had something to work with in interesting and instructing the teachers, who were so ignorant of everything pertaining to agriculture or nature.

Not long after this work was undertaken with teachers "Uncle John" conceived the idea of helping the teachers by getting the pupils interested. He said, "We cannot do the work from the top down, we must commence from the bottom and work upward." In confronting this problem his genius first showed its true greatness. He organized all of the children under one teacher into a club, known as the Junior Naturalist Club. The pupils were all to pay dues, which consisted in writing letters to Uncle John describing their out-of-doors observations and activities. After they had done their work well for a time a charter was given and a button. Upon the charter was a picture of the library tower at Cornell. This charter was framed and was prized by the children. Since the pupils under one teacher was the unit for the club, there might be as many Junior Naturalist Clubs in one school as there were rooms and teachers. Thus the work grew rapidly. Thousands of children came into these clubs, and were thus brought into direct communication with Cornell University. Without any doubt our great number of students at present is due in no small part to the fact that so many thousands of children throughout the state had been early thus personally interested in Cornell University.

"Uncle John's" circular letters to teachers and to his many nieces and nephews were intrinsically delightful. As a writer, he was original and his writings had a literary quality quite their own. Certain professors in our University, in no wise interested in this work in itself, have told me that they read everything "Uncle John" wrote because of its literary merit as well as its originality. Certainly his letters went straight to the hearts of children. In going about the state attending teachers' institutes, I often attended meetings of these Junior Naturalists Clubs, and my welcome was assured because I knew "Uncle John." His was the great power of a great heart that reached out and drew toward him the hearts of the young. "You are the best loved man in the state," said one of his colleagues to "Uncle John" one day, who saw the children gather round him at a Cornell picnic, and this was true. Judge Pound, who formerly was connected with our College of Law, was once making a political speech in a town of our state. It was a long meeting and Judge Pound was much interested to see two small boys sit patiently through it all, and he, having a heart for boys, after the meeting asked them, "Well, why did you fellows come here tonight?" And they asked eagerly with glistening eyes "Do you know 'Uncle John'?"

"My slogan has been to give one thing to each of a thousand children rather than a thousand things to one," declared "Uncle John" in a Junior Naturalist Club, and his tenderness and care for the mediocre child was always one of his strongest characteristics. At the flower or vegetable exhibits made by children at the Fairs, "Uncle John" would pick out some poor little bouquet and find the owner, and with his word of commendation make him feel that next year he would do better. The children responded to his efforts in a marvelous manner. For several years the number of letters from his nieces and nephews ran up into the thousands, finally attaining

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The Cornell Countryman

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November, 1912

Regarding the New Buildings

The present crowded condition of the College of Agriculture and the near approach of the time for the arrival of the Short Course men, leads to inquiries as to the probability of an early increase of laboratory and lecture room. The Poultry Building and the Home Economics Building will probably be ready for occupancy by November 15. Temporary heating plants are being installed in these buildings as the central heating plant will not be finished before winter. Progress is being made on the new Auditorium and we are promised that it will be ready for use during Farmers' Week.

Plans of the Forestry Building and of the Animal Husbandry Administration Building are approved and are open to bids. The architects are at present at work on plans of the stock Judging Pavilion to be located east of Alumni Field and on plans of the extension to the Agronomy building.

John Walton Spencer

We wish to give expression to our feeling of deep grief over the recent death of John Walton Spencer. Those of us who knew “Uncle John” and who have felt his influence and encouragement will mourn his loss as a teacher and as a friend. To those who may not have had the pleasure of knowing “Uncle John,” we need only to point out the one great power in his life, that of reaching out and drawing toward him young people. As we look back on the work of the early years of the Extension Department, we can see hundreds of boys in the country schools and on the farms, who through some suggestion from “Uncle John” may have decided on a new course in life. To many of us, his Junior Naturalist leaflets were the first introduction to the work of the College of Agriculture. Knowing the farm and the farm boy as he did, he was able to stand between the plain farmer at the plow and the scientist in the laboratory.

His own words on the occasion of his retirement from active service five years ago seem particularly appropriate at this time. “As the time approaches,” he said, “when I am to lay down this work because of having reached the age limit and return to my beloved Bell-wether, and there ‘mark time’ to the end, I can look back in a perspective way over the events of the past twelve years as I have never done before. I can see how the pioneer promoters thought only of the work and never of themselves or how they would be considered by the public. As for myself I am glad that I have learned to know the heart of a child and that I have lived to see three score and five years.”
We are pleased to announce the birth of The Cornell Forestry Club. At the first meeting, held Oct. 29, the club was actively organized and officers were elected. With fifty enthusiastic members at the first meeting the club promises to become one of the most active of our Departmental Clubs. The object of this club, as stated in the constitution, is to create interest in scientific forestry and to promote good fellowship among forestry students. The Countryman wishes the new club the success which it deserves.

A New Departmental Club

The Sixth Annual Fruit Exhibit will be held November 7th, 8th and 9th. The exhibit has grown in size and completeness each year since it was originated until now it is one of the most comprehensive held in this State. Last year there were exhibited over one hundred varieties of apples, sixty varieties of pears, and a smaller number of all other fruits, which could be held in cold storage until the time of the exhibit.

The exhibit affords the students a splendid opportunity for the study of fruits and fruit varieties. They learn far better than in the lecture or class room, the characteristics of different varieties, their variations when grown under different conditions of soil and climate, and their adaptations to different sections. They may compare the finest products of the West and South with the best that this State can produce, for the fruit of Oregon and Washington, of Virginia and Maryland is placed side by side with that of New York State.

The Fruit Exhibit

A course in rural problems has been organized as a branch of the work of the Cornell University Christian Association for the study of some of the social, religious and economic problems confronting rural communities at the present time. The purpose of this course is to direct the attention of agricultural students from the technical work in agriculture to the broader country life problems, and to this end such subjects as the country church, the country school, rural recreation, farm labor, and rural social and fraternal organizations are being studied.

That the country districts have their problems cannot be disputed. For, religiously, socially and educationally the development of the rural communities has not kept pace with the economic, agricultural development of the United States. Leaders are necessary to bring about a change. And these leaders must be clear-minded resourceful, energetic men and women with country life ideals. Students in agriculture, trained to sense rural needs must be the leaders in the country life movement; and it is the purpose of this course to help prepare interested men and women of this University for rural leadership.

Rural Problems

The index to Volume IX of The Cornell Countryman has been prepared and will be mailed as a supplement to the December issue. The index is in two parts; a complete index of authors arranged alphabetically with titles of articles and references, and a subject index of articles with authors and references.

Index to Volume IX
CAMPUS NOTES

There can no longer be any doubt as to the necessity and desirability of continuing the monthly assemblies. This was amply proven by the very large attendance at the first assembly of this year, held on October 4. The auditorium was filled to overflowing.

As usual, the main feature of the evening was Dean Bailey's speech. In speaking of the opening of a university, he described it as an institution of perpetual opening and closing, of separating and uniting, in fact almost of "perpetual motion." Contrasting the farm boy of yesterday and today at college, he stated that formerly the farm boy lived a life at college entirely separate from the farm, but now he brings the farm with him, as it were, and fits himself to live as a countryman.

In an appeal to the freshmen to take part in the college activities, he declared that to get full benefit out of a college course, a student must get the accent of the course. He must be loyal, must work hard and do his best for the college, for it is his duty, part of his obligation, to help the college.

Telling of the rapid increasing registration, he compared last year with this. Last year there were 393 new and 501 old students, whereas this year there are 484 new and 686 old students.

Changing his subject, the Dean discussed at some length the energy of the American people. This restless energy has come directly or indirectly from the soil in the form of coal, ores, stone for building, timber, that is, all products of the soil. Americans have a continent as a background and they have conquered the earth; the English have an island as a background and they have conquered the seas. Our energy has been at work developing the natural wealth of our own country instead of carrying on great commercial enterprises over the seas and conquering new lands. In this country, perhaps, there has been too much personal aggrandizement. The Americans, however, do not love wealth merely as wealth but as a form of activity, as a means for an end, for they are lavish spenders. This condition of affairs has produced many social problems. The people are now trying to correct their extravagant and reckless habits. This country is just at the beginning of a new epoch of reform.

The country life movement of the present day, which is rapidly growing, expresses the ideas which our people have concerning the necessity of education in agriculture. Our political campaigns and political machinery are indeed educational enterprises. If agriculture is to form an important part of education, many people must find new satisfaction and pleasure in the tilling of the soil; great wealth cannot be obtained in farming. A renaissance in agriculture is fast developing new ideas.

* * *

Dean L. H. Bailey returned October 2d from an extended trip through England and the Caribbe Island. Leaving here early last spring, Dean
Bailey went to England where for nearly two months he was occupied by the study of cultivated plants in the Herbarium of the Royal Botanical Gardens at Kew. He visited Ireland, Wales, Scotland, the Orkney Islands and the Shetland Islands.

The last few months Dean Bailey has spent in touring the Caribbee Islands, including St. Thomas to Trinidad. "Except for a small portion near the seacoast," said the Dean in speaking of the Island of Dominica, "the island is practically the same as when Columbus discovered it."

Much of Dean Bailey's time has been spent in gathering data to use in the revision of his Encyclopedia of Horticulture. The encyclopedia when finished will contain much that is entirely new and will be in six volumes instead of four as in the edition published ten years ago.

* * *

Dr. Robert Matheson has resigned his position as Assistant Professor of Biology to accept the position of Provincial Entomologist of Nova Scotia. His duties began October first and for this year will be mainly in connection with the suppression of the San José Scale and the Brown Tail Moth. In addition he will do some teaching in the Truro Agricultural College.

Dr. Matheson was a popular and very efficient teacher here, and he and his wife will be missed by a host of friends.

* * *

On October 8 there was a meeting of the Society for Promotion of Agricultural Science in Director L. H. Bailey's office. The men present at this meeting were T. B. Wilson, University Trustee from Hall; F. D. Ward of Batavia; Frank Hall of Rochester; W. H. Vary, Master of the State Grange, Watertown; and Professor Bonser of Teachers' College, Columbia. The purpose of this meeting was to discuss the subject of Agricultural Instruction.

During the summer the laboratory of the Department of Farm Mechanics has been very greatly improved. There are two new binder attachments, an Adrient binder, arranged with a gasoline engine so that actual bundles may be tied, and a McCormick in which the bundles may be tied by hand. There is also a new hydraulic ram, an Aqua, which has a glass air chamber, and improved waste valve. In the gasoline engine line there are two new engines, both two cycle, a Detroit and a Gray. The number and variety of tools in the laboratory has been greatly increased. The apparatus for the ignition experiment has been greatly improved, and there is a new directly connected pumping outfit for the Leader Water System. Also the heating plant of the Department has been changed, by removing the pressure reducing valves from the office and placing them out of doors in a little cellar dug in the bank to the south of the building.

The Department of Farm Mechanics, at the request of the Department of Farm Practice on November 1st and 2d gave a demonstration of plowing by Gasoline Tractors on the University Farm. The tractors used were Case, Holt, Caterpillar, International Harvester, and Shir. The latter was regularly equipped with a mowing machine cutter bar so it could be used either to cut grass or plow.

* * *

Dr. Bizzell of the Department of Soils gave a series of lectures before the Graduate School at Lansing, Mich.

The Department of Soils during the summer made about 15 farm drainage surveys in different parts of the state, and in cooperation with the Office of Drainage Investigation, Wash., made a survey, with maps and reports of an area of about seven square miles of swamp land in Ulster County, which is likely to be drained and developed by the cooperation of the farm owners.

The first of the unit series of long period field plots has been located near Cortland, on the Volusia silt loam of
the hills. The object of these plots will be to determine accurately the best method of improving that soil.

Mr. C. C. Engle, graduate of the Ohio State University, class of 1912, was made industrial assistant in the Department of Soils, and was detailed during the summer to work in cooperation with the Wyoming Truck Valley Farms, at Gainesville, in the development of a large area of muck land.

The Department of Soils has installed on a section of the University Farm a very complete system of tile drainage, coupled with very accurate instruments for recording the flow of drainage water in order to determine the coefficient of drainage for such clay soil.

Professor E. O. Fippin, on October 1-4, attended the National Conservation Congress at Indianapolis, Ind., and discussed Agricultural Surveys as a means for rural betterment.

The department of Soil Technology of the College of Agriculture entered an educational exhibit at the Morris Fair, Otsego County. Professor E. O. Fippin was in charge, with a department instructor, C. C. Engle, acting as his assistant. The exhibit answers in detail questions as to soil management, drainage and fertilization.

* * *

The Agricultural College "Get-Wise" meeting for freshmen was held in the Auditorium on the evening of October first. A program was arranged to acquaint the first year men with the activities of the College. Captains and managers of all the Agricultural teams were on hand and met men interested in the various sports: The following program was arranged: Opening remarks, C. W. Whitney, '13; Talk, Professor A. R. Mann; College Musical Clubs, Albert Horner, Jr., '13; Athletics, N. D.

After the program the following class officers were elected: president, G. W. Bonney; vice-president, R. R. Wheeler; secretary, Miss H. D. Snow; treasurer, F. C. Johnson.

* * *

The new Department of Forestry has begun its first year with a registration as large as can be handled with present facilities. Thirty-seven students above freshman grade have registered in the five-year course in professional forestry and 20 freshmen have signified their intention of taking up this work.

The department under the leadership of Professor Walter Mulford is offering eighteen courses in forestry, a number of which are open to students of other colleges. Including outside students, there are at present 150 men taking forestry work.

Plans for the new Forestry Building, for which the state has appropriated $100,000, are now complete. When this building is ready for use the department will be able to accommodate almost any number of students. The classes in forestry are meeting for the present, in Rockefeller 300 B.

* * *

The staff of the Department of Forestry has been increased this year by the appointment of Samuel N. Spring as Professor of Forestry. Prof. Spring was born at Sioux City, Iowa, in 1875. In 1894 he entered the academic department of Yale, receiving his B.A. degree in 1898. After this he spent three years with J. V. Farwell Co., in the wholesale dry goods business.

In 1900 he married Miss Adah E. Bowman of Hartford, Conn. In 1901 he entered the Yale Forest School, receiving his degree of Master of Forestry in 1903. During the summer of 1902 he worked in New England as an assistant in the U. S. Forest Service and received a permanent appointment in this Service in July, 1903. He then was awarded a two years furlough, during which time he was Professor of Forestry in charge of the department in the University of Maine.

In 1903 he returned to the U. S. Forest Service, holding successively the positions of Forest Assistant, Assistant Forest Inspector, and Chief of the Office of Forest Extention. While in the Forest Service, he worked in various parts of the United States, his principal work, however, being the management of the reforestation operations of the U. S. Forest Service in the National Forests.

In January, 1909, he resigned from the Forest Service and engaged in private practice as a consulting forester until in October, 1909, he accepted the position of State Forester of Connecticut and Forester of the Connecticut Agricultural Experiment Station, at New Haven, Conn.

One principal line of work conducted by Mr. Spring, in Connecticut, was the reorganization and improvement of the system of fire protection of woodland. As State Forester he was a collaborator of the U. S. Forest Service in carrying out the Weeks Law for the protection of the forests on the watersheds of navigable streams in Connecticut. The maintenance and care of Connecticut State Forests were under his direction and also the purchase of new forests. Special experiments in nursery work and in forest planting, formed another field of work located at New Haven and at the 100 acre experimental forest plantation at Windsor, Conn. Assistance was given to farmers and other owners by examinations of land and the preparation of plans for forest planting, or for the improvement of woodland. Prof. Spring's principal courses of instruction here at Cornell are in Silviculture, Forest Policy, and in Forest Law.

* * *

On Thursday evening, October 10, the Sophomore class held their first
meeting of the year. The purpose of the meeting was to elect the officers for the ensuing year. H. W. Morrison was chosen president; Miss B. H. Wood vice-president; E. C. Heinsohn, secretary; F. J. Ecker, treasurer; and A. B. Dann, sophomore member of the student honor committee. Numerous committees were appointed and plans for an active and enjoyable year were laid. The class intends to be well organized this year and hopes that as many members as possible will attend all the meetings.

* * *

The library of the late Professor Craig has been given by Mrs. Craig to the Horticultural Department of the College of Agriculture and is one of the most valuable gifts the college has ever received. The collection includes over 3,000 volumes relating to agriculture, being especially rich in works on horticulture. Professor Craig was a painstaking collector of scientific works of horticulture and he liked to pick antiquities and oddities on the subject of gardening. He had several interesting and valuable books of this sort; some of them written in Latin.

The books have been brought to the College of Agriculture from Mrs. Craig's home on East Avenue. As there is no room for them in the college library, they will be stored in the office of the Department of Horticulture pending the removal of the library to larger quarters. When the new agricultural heating plant is finished it is proposed to put all the books in what is now the boiler room in the basement of the main building. Until then the collection will not be available to students but such volumes as are not in the main library may be consulted by graduate students. It is hoped that when the alterations are made that a separate alcove or room may be constructed so that the collection may be kept intact as a monument to the memory of Professor Craig.

* * *

The Senior class in Agriculture met October first and elected B. P. Jones, president; F. S. Parker, vice-president; Miss Ruth Graham, secretary; L. W. Kephart, treasurer, and N. D. Steve, A. C. Fraser and Miss B. Crosby members of the Honor System Committee. Dudley Alleman and L. E. Card were elected members of the Honor System Committee from the Junior class.

* * *

An addition to the staff of the Horticultural department was made this fall in the appointment of Mr. A. E. Wilkinson to be instructor in Elementary Horticulture and director of Extension Work in Vegetable Growing for the Department.

Mr. Wilkinson was born at Boston, Mass., in 1879. After graduating from the Roxbury High School, he entered Rhode Island Agricultural College where he received the degree of B.S. His training also includes some ten years practical experience in vegetable growing and allied horticultural lines.

Mr. Wilkinson's first teaching experience was at the Baron de Hirsch Agricultural School where he was for one year in charge of Horticulture. He then taught at the Linden Agricultural School of Virginia for two years, leaving that institution to take up his duties at Cornell.

Mr. Wilkinson plans to build up at Cornell a strong course in practical vegetable growing. During his short residence here his agreeable personality and evident ability have already made a most agreeable impression upon his colleagues and pupils.

* * *

C. P. Smith, formerly instructor in the plant pathology department, has accepted the position of associate professor of Botany in the Maryland Agricultural College.

* * *

R. A. Jehle, fellow in the Plant Pathology Department, has accepted a position in the Kansas Agricultural College at Manhattan, Kansas, as instructor in Botany.
FORMER STUDENTS

'01, W.A.—W. H. Langworthy has been the junior partner for the past five years in the firm of Lamb & Langworthy at East Hamilton, N. Y. They are breeders of pure bred Holstein Cattle. At present their herd comprises about 100 head of choice individuals. Many of their cows have records between 25 and 34 lbs. of butter in seven days. Last year, one of their herd, Lilith Altoana De Kol, 1123911, broke the two-year old record for a heifer with the first calf and this year with a record of 33.66 pounds of butter in seven days, she broke the senior three-year old record. This is the only heifer of the breed that has made the world's record as a two-year old and again as a three-year old.

'02, '05 Sp.—Chester A. Hartley. Announcement has been received of Mr. Hartley's forthcoming marriage to Miss Blanche Edgar at Watertown, N. Y.

'05—Harold G. Powell, general manager of the Citrus Growers' Association of California has been in the East, for some time past, making arrangements for the sale of fruit.

'06, B.S.A.—Charles W. Mann was married on July 24, 1912, to Miss Caroline W. Judd, '06, A.B., of Port Henry, N. Y. Their future home is to be in Pasadena, California. Mr. Mann is conducting fruit storage investigations for the United States Department of Agriculture.

'07, Sp.—Mr. S. W. Foster has resigned his position with the Bureau of Entomology of the United States Department of Agriculture to engage in the insecticide business with the General Chemical Company of California at San Francisco. His address is now Entomologist and Manager of the Insecticide Department, General Chemical Company of California, Room 708, Royal Insurance Building, San Francisco, Cal.

'07, Sp.—Miss Clara Nixon, until recently assistant in Poultry Husbandry, has gone to the Oregon Agricultural College for study.

'08, B.S.A. — Professor Vaughan MacCaughey, of the College of Hawaii, who had charge of some of the courses in Rural Education in the Summer School in Agriculture, returned to Hawaii in September. During his visit in the East he made a special study of rural education and extension work. The College of Hawaii has been developing an Extension Department, of which Professor MacCaughey has charge. He also delivered a number of lectures upon Hawaii and the educational and scientific enterprises under way there.

'09, B.S.—L. B. Cook who was instructor at Cornell Dairy Department last year, has secured a position in the Department at Washington. Mr. Cook's work now has to do with market milk investigations instead of Bacteriology as at Cornell.

'09, Sp.—R. L. Lewis, the captain of the first Cornell stock judging team, which was also a winning team, and the winner of individual honors in that team, and also a member of the varsity wrestling team, is now engaged in general farming at Panama, N. Y. This fall he has been doing considerable stock judging, having been a judge at the Waterloo, the Erie County and Orleans County Fairs. An active member in the Grange, he is now the Master of Grange of Chautauqua County.

'10, B.S.A.—B. D. Gilbert is in charge of a government soil survey of Genesee Co., Mich. This work will be finished late in November, when Mr. Gilbert will remove to Arkansas when he will assist in a similar survey of the county Ashley.

'10, B.S.A.—G. P. Scoville, formerly of California, is now manager of the Farm Bureau of Chemung County, N. Y., with headquarters at Elmira.
He is doing good work among, and for the interests of the farmers in that country, especially in soil analysis, and adaptability of the various soils to different crops.

'T11, B.S.A.—Thomas Bradlee is instructor in several Agricultural subjects at Smith's Agricultural School at Northampton, Mass. Mr. Bradlee was business manager of the COUNTRYMAN while at Cornell.

'T11, M.S.A.—W. R. Thompson is in Sicily investigating the Mediterranean Fruit Fly, trying to find out if it would be necessary to institute quarantine measures against the fruit in the Mediterranean countries.

'T11, B.S.A.—Miss Elizabeth Genung has resigned her position as teacher of agriculture in Tully High School, to take her present place as Assistant in Bacteriology in the Dairy Department of this College.

'12, B.S.A.—J. D. Brews has been appointed assistant bacteriologist in Geneva Experimental Station.

'12, B.S.A.—H. B. Switzer has been appointed Bacteriologist in Dairy Department of Indiana State University.

'12, Ph.D.—Leon D. Batchelor was married to Florence May Brown, daughter of Mr. and Mrs. L. A. Brown of Denver, Colorado, on September 6. Their home will be at Logan, Utah, where Mr. Batchelor is Professor of Horticulture in the College of Agriculture. Dr. Batchelor was instructor in Horticulture in Cornell University prior to going to Utah.

'12, B.S.—R. T. Burdick is instructor in Agronomy in Vermont State College of Agriculture, Burlington, Vermont.

'12, Sp. Ag.—Deforest W. Seedwig is general manager of the E. C. Seedwig Floral Company of Pittsburgh, Pa., his address is 710 East Diamond St.

JOHN WALTON SPENCER

(Continued from page 43)

one year the number of 30,000. Never was a request from a child willingly neglected, although acknowledgments were made whenever possible through circular letters, which were remarkable because of their personal quality. He not only wrote to the children but he visited their schools and talked with them and always gained their rapt attention. His last work was to organize the children of the state into Junior Gardeners' Clubs, very much on the plan of the Junior Naturalists. In this he was as truly successful.

When it came time for him to retire because of the age limit those of us at Cornell knew that no other one among us would ever bring to us the hearts of the children as had "Uncle John." It was a great loss to our work, but he had earned a rest from the overwhelming work which this undertaking brought upon him. When he retired to Bellwether in 1908, he still kept up his relations with the University and did the work of field agent for five years, and to the last his soul was in the work with children. Only a few days before his last illness he gave a lesson to a training class in Chautauqua County, with all of his old enthusiasm, interest, and success. He was always ready to lend a helping hand, and his ideal was to teach so as to help the children to a knowledge of the beauty and use of the common things in their country environment. He once said, "The man who can find comradeship in associating with himself has a fountain of culture; living in a 'hurrah's nest' is enervating. The man or woman to whom folks are necessary is to be pitied." Thus he tried to build up within the child powers for self-development and self-help.
As a friend, "Uncle John" was always most helpful. He was always ready to give a word of cheer in discouragement, and his optimism was a source of inspiration. When he had once made up his mind to accomplish an object, it was amazing to see how obstacles fell before his determination. For my own part, I think that no one else has ever taught me so much of the value of a fixed and unwavering purpose and of generous ideals.

"Uncle John" came to Ithaca to confer with Dean Batley and Professor Tuck on October 26th. On the morning of the 27th he was taken very ill at the Clinton House and later was taken to the Hospital, where he underwent an operation. The result of this was very successful and every hope was entertained for his recovery for a week when uremia developed and he died on Thursday morning, October 24th. Funeral services were held at Sage Chapel on Friday at 11 o'clock, to which the Faculty of the College of Agriculture attended in a body. Interment took place at Westfield on Saturday, October 26th. It seemed fitting that his passing should occur in the place of his greatest achievements. It seemed like the writing by the hand of fate that a farmer in a rural district with no special education to fit him for the work, should have found the opportunity for the full development of his genius, and thus brought his influence to bear upon the lives of so many thousand people, not only of our own state, but an influence that is truly world-wide. And although we grieve at the loss of his cheerful presence, we must rejoice that he had the opportunity to realize, to the fullest extent, his life possibilities.

**GENERAL AGRICULTURAL NEWS**

Prof. N. E. Hansen of Brookings, South Dakota, who has brought in so many hardy plants from Siberia for the United States Department of Agriculture, sent to Secretary Wilson an interesting letter with regard to his new idea of transplanting alfalfa by machinery instead of sowing the seed. He plants them at the rate of 6,000 plants per hour. Prof. Hansen says: "I took a three weeks' tour this spring with two assistants and transplanted a number of acres by this new method. I believe this will be a way of doing away with dodder and injury from discing. I see no need of injuring plants that should last several centuries by mutilating them with a disc and harrow, and 20 lbs. per acre means 100 plants per square foot. Some of these Russian alfalfa plants had 500 shoots from one crown when given room in the garden."

"Over twelve hundred farmers are now cooperating with me in testing these new plants and I am getting many fine reports showing remarkable resistance to the extreme drought of last year, when no crops were raised, and the plants were coming in fine shape in the spring.

"This machine transplanting I have had in mind for over a year, so I though I would get at it this spring before anybody else would happen to think of it. I claim no originality for it except that I have combined Oriental methods with an American machine, one of the machines commonly used for tobacco, cabbage, cauliflower and tomatoes. At present I am only speaking of it from the seed raising standpoint but believe it will work out also from the forage standpoint.

"On a large area of this western country farmers have had no crop for two years so they are looking anxiously for something of a perennial nature that will be independent of surface conditions. Farmers feel that it is uncertain to place their main dependence on annual plants like wheat."

This collection of verse expresses in a way that is sometimes homely but always sympathetic, the humor, pathos, and charm of American country life. Most of the old time favorites are included, together with numerous selections from the more obscure of our rural bards. Although some of the poems have more vigor than grace, they are all true songs of the soil, and the total effect is to shed a radiance of beauty and kindly feeling over the life and work of the farmer.


This is an up-to-date and practical handbook on horses, thoroughly illustrated with fifty-five clear and instructive photographic plates. It is completely indexed for reference, and contains tables for feeding, and lists of medicines and their uses. Breeds and their uses, breeding of different types, breaking and training, buying and judging, are very comprehensively discussed. The treatment is altogether accurate and readable.


This work is written in a very clear, orderly and interesting manner. It describes the different classes of roads, paths, and bridges the advantages and disadvantages of each and how each should be made and kept in order. Along with the very interesting reading matter are appropriate illustrations which bring out in a very striking manner what the author has in mind. The small price of this book makes it a work which every person can well afford to own.

The Horse and Its Relatives. A natural history of the more important members of the horse family by R. Lydecker. Published by the Macmillan Company, 66 Fifth Avenue, New York. 286 pages. $2.60 net.

This is a book which should be of interest to a large class of readers. While it is scientifically accurate it lacks the usual dryness of scientific works. The natural history of the more important representatives of the horse family, inclusive of the older domesticated breeds and its extinct forerunners, has been treated in a very able manner. Altogether the book would be a valuable addition to any man's library.

The International Association of Instructors and Investigators in Poultry Husbandry, Volume I. Committee on publication, James E. Rice, Howard C. Pierce, and Raymond Pearl. Editor, C. A. Rogers. Copies can be secured from Homer Jackson, Secretary of the Association, Buffalo, N. Y., care of Cyphers Incubator Co. Price $2.00.

This volume, contains a report of the proceedings of the first three conferences, 1908-09-10. It gives in full the addresses of the various members at these three meetings, and presents in a very clear manner much excellent material on breeding, and other scientific and practical phases of poultry raising. But perhaps the most valuable and important part of the report is the very complete bibliography, on every subject connected with poultry. Specific directions as how to secure publications of the Department of Agriculture are given.
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Editor, Orrin M. Smith, Ithaca, N. Y.; Business Manager, Bruce P. Jones, Ithaca, N. Y.; Publisher, The Cornell Countryman Association, an unincorporated body of resident students in agriculture, which elects a board yearly.

Proceeds of the paper are used in its betterment and advancement. No salaries are paid to either board or association members.

Orrin M. Smith, Editor.

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the farmer. It is to the farmer that we
must look more than to any other in-
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life. If there should be a universal
destruction or failure in crops it would
put the entire world on starvation
rations.

No implement on the farm compares
with the plow in usefulness and to do
good work the plow should be the right kind—an Oliver.

The Oliver No. 26 Sulky Plow is at the head of its class. The entire
construction of the plow is worthy of consideration. Of all the plows
ever offered, the No. 26 affords the greatest comfort and really encourages
the tired man to work.

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You may need a Fountain Pen.

THE CO-OP
Morrill Hall
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ANDREW D. WHITE
Who celebrated his eightieth birthday on Nov. 7, 1912.

Courtesy of the Cornell Era
ANDREW D. WHITE

H. A. Sill
Professor of Ancient History, Cornell University

"Your young men shall dream dreams and your old men shall see visions."

Cornell University was once nothing but the dream of a young man. He was a boy of seventeen, a disappointed freshman, whose divine discontent with the restricted opportunities of a little college was quickened by what he read in its library about the universities of the old world and by what his own thinking taught him about the true scope of a modern university in the new world.

Other young men have dreamed dreams, which have faded at their first contact with real life and to which they have bidden farewell as the follies of inexperienced youth. Andrew White did not lose faith. Wherever he went, the splendid vision of a great university in the central part of New York State attended him on his way. After fifteen years, his opportunity came, and, as a Senator at Albany, he was not disobedient to the dreams of his boyhood, meanwhile confirmed and defined by his observation of real universities at Oxford, Paris, and Berlin, and informed by his experience as a professor of history at the University of Michigan.

It is easier to dream dreams than to realize them. The opportunity afforded by the munificence of the Federal government and the noble purpose of Ezra Cornell to serve the State at whatever cost to himself, was a supreme test of Mr. White's courage, wisdom, and persistence. He stood firm for the principle that the Federal grant should not be divided but kept together. He opposed Mr. Cornell's effort to secure half of it for a State Agricultural College. He persuaded Mr. Cornell that the State needed a great university which could meet the demand for both technical and liberal education. Looking back, we can clearly perceive that the existence of such a university depended upon the happy chance which brought Mr. White and Mr. Cornell together at the right time and place and upon the qualities of mind and character which enabled them to find each other and to work together.

The story of their relations, of the meeting of their minds, of their close alliance in the service of a great ideal, forms one of the most fascinating of all biographical documents and is a Cornell tradition of imperishable value.

Each of these men saw visions. Each of them was a man of rare simplicity, unusual common sense and extraordinary capacity for self-sacrifice. One was, as far as anybody can be, a self-made man. The other had made noble use of inherited means to become, by travel, a citizen of the world, and by study, a scholar. One was a man of few books, the other spent a hundred thousand dollars in collecting a private library, which he ultimately gave to the University. In a sense, one stood for the practical needs of the present; the other for the high traditions of the past. Yet no such distinction is valid. Mr.
Cornell loved to listen to lectures on history and literature. Mr. White's mind was always quick to the instant needs of things. Both were truly American and could not have been born anywhere else in the world. They were congenial spirits and found it easy to contribute, each from his own experience, to their joint plan of a university, in which any person might find instruction in any study.

Ten years before Cornell University opened its doors, Mr. White told George William Curtis that the university of which he was still dreaming "should take hold of the chief interest of this country, which is agriculture." He resisted the attempt to create a college for agriculture alone; he believed that a school of agriculture should be an integral part of a great university, both for its own sake and for the sake of all the other departments, technical or academic, of which such a university should consist. Time has vindicated his judgment. For the instruction and inspiration which the State College of Agriculture draws from the rest of the University for the instruction and inspiration which the rest of the University draws from the College of Agriculture, that college and the University and the people of the State should be grateful, above all others, to the chairman of the Senate committee on education in the sessions of 1864 and 1865.

What Mr. White did at Albany, what he has done here for agriculture and engineering, for history and literature, for architecture and music, is characteristic of his whole life. He has always been bringing people, ideas, interests, nations, together, never keeping them apart. He believes in the power of right reason to overcome differences and to remove prejudices. He often quotes the saying of a wise man: "The man I don't like is the man I don't know." He has taught many generations of Cornell students and teachers to know one another; he has kept us in touch with the great world of affairs, of which he is a part; he has also kept us in touch with that greater world, which is to be found in history, and in literature, in art and in music, the inner life of humanity in all ages and under all climes.

**SUFFOLK PUNCH HORSES**

*By F. S. Peer*

*Ithaca, N. Y.*

The famous Suffolk Punch Horses, which are decidedly Flemish in type and resemble the Belgian draft horse more than they do any English breed, are bred extensively throughout the counties of Suffolk and Norfolk. The foreign demand of recent years has, however, tended much to reduce their number. Each year they are becoming scarcer and harder to buy, a fact which speaks for the popularity they are attaining abroad. During the Victoria Era the breed was much improved and is to-day the most uniform of any breed of horses either in Great Britain or the Continent.

They are particularly well adapted to modern farm work and American conditions. They lack the abundant adornment of hair on the legs, characteristic of the Shire and Clydesdale; their endurance carries them through our rush season in good condition; while they stand our extreme summer heat remarkably well.

A striking characteristic of the breed is its uniformity in color. They are always chestnut, ranging from dark mahogany to light golden chestnut. This is the result of untold generations of careful breeding and the fact that no outcross has ever been permitted. This also accounts for the wonderful prepotency of the breed as shown in the color and confirmation of the grades even to the quarter bloods which are
invariably chesnut and decidedly Suffolk in type. The weight of the mares ranges from 1600 lbs. to 1800 lbs., the stallions from 1800 lbs. to 2200 lbs. and stand from 15-3 to 16-2 hands.

The mares are great milkers, therefore good brood mares. The foals get such a good start that by the time that they are two years old, with ordinary care, they are practically matured. It is the custom in Suffolk to breed all of the mares at two years old and to put them to work the same summer. No breed of horses that I have ever seen are asked to work so much or so hard while carrying and while rearing a foal as are the Suffolk Punch Mares in their native land. The stallions, too, have to take their share on the plough, reaper and wagon.

They are most tractable, most genial tempered and most willing. Nothing appears to worry them; all kinds of work are alike and a load that they cannot handle need not be handed over to any other horse.

Formerly they were much used in mere trials of strength. In the old days they were made to pull with the hames on their naked shoulders and when they could do no more standing they went down on their knees and drew in that attitude. Whatever may be thought of these harsh trials they prove that from the very beginning the Suffolk Punch has been bred for courage and grit.

Suffolk Punch breeders are not a little proud that they have repeatedly won over all other breeds of draft horses. At the Royal Agricultural Show of England from the years 1839 to 1815, when the various draft breeds competed against each other, the Suffolks finished ahead on twelve occasions out of the twenty-one, as given in reports of the Royal Show.

The following account of this grand breed is taken from a work on the horse by S. Sidney: "The Suffolk Punch combines activity with an iron constitution. Their high courage, combined with docility, and their great pulling power install them in high favor wherever owned. The Suffolk Punch is preeminently an agricultural horse, quick at the walk and easily handled. He will draw a ton or over his own weight with the greatest ease. His short, stout body varying in girth from eight to nine feet; short, clean legs, and feet as good as are found anywhere distinguish him as an ideal farm horse. In addition the mares make the best of mothers, equaled by no others, in raising big, strong, well grown colts while doing the ordinary field work on the farm."

"If purity of blood is indicated by uniformity of color the Suffolk Punch undoubtedly stands the only unmixed breed of horse in the British Islands."
THE DRY-FARMING CONGRESS

By L. H. Bailey

The International Dry-farming Congress held its seventh convention at Lethbridge in the Province of Alberta, Canada, in the week of October 21-26. In connection with this congress there was also an International Congress of Farm Women.

Dry-farming is the method of securing crops in regions of rainfall insufficient for normal crop production. The importance of dry-farming may be appreciated when it is said that six-tenths of the land surface of the earth has a rainfall of twenty inches or less, which means that considerably more than half of the earth is arid or semiarid. It is estimated that we shall probably be able to reclaim about one-tenth of this amount by means of irrigation, leaving approximately one-half of the land surface of the earth to be used agriculturally, if used at all, by more scientific and rational methods of water-saving, land management, and crop organization. The Congress met these facts agriculturally and educationally. It was an agricultural convention embracing a wide variety of technical problems, but all treated with special reference to the useful handling of land under small rainfall. It was also a country-life convention, as is the necessary result in all agricultural assemblies in the present day, for there is no merit in dry-farming unless there is economic opportunity and social attractiveness.

Thus far in the history of mankind, agriculture has been developed chiefly in the humid regions. There has been some agricultural development by means of irrigation, but it is very small as compared with the habitable surface of the globe. Dry-farming, therefore, becomes one of the most important means by which the human race may further conquer the earth. The real conquest of the planet must be very closely related to water. There are three forms of this conquest: by the addition of water, or irrigation; by the removal of water by drainage, and there are millions of acres in the United States alone that must be reclaimed by this means; the rational utilization of the natural rainfall in deficient regions, and it is probable that by this means we shall be able to utilize a larger additional part of the earth for the production of food for the human race than by any other means.

The International Dry-farming Congress, therefore, is an organization of the greatest importance to the entire people. It discusses questions of national and general significance. Heretofore the Congress has met in the United States, but it is now assuming a more international character. Delegates were present from a number of countries outside the United States and Canada. The people of Lethbridge, which is a thriving and well built city of some 12,000 people on the great level plateau of the Northwest, erected a building for the accommodation of the Congress. There are also large permanent exposition buildings at Lethbridge, and these were put at the disposal of the Congress for the showing of agricultural products and machinery. Some thousands of people were attracted by the Congress and the exposition. The display of products raised by dry-farming methods was extensive and remarkable, and was a good expression of confidence in countries that until recently were thought to be practically valueless.

The Congress had general sessions, and divided into sectional meetings. The sections or conferences were on soils, tillage, methods, and machinery; crops and crop-breeding; agricultural industry; live-stock and dairying; agricultural education; farm management; scientific research; agricultural colleges and experiment stations; the rural home, comprising the International Congress of Farm Women. The Congress proved to be one of the greatest gatherings of farmers, and it
attracted numbers of experts and eminent persons. It set forth in a very comprehensive and graphic way the methods that must be employed for the utilization not only of immense areas of the United States and Canada but also of other parts of the globe. It happened that the Dry-farming Congress of British South Africa was in session at the same time in Pretoria, and a message of congratulation and brotherhood was sent from Alberta to the Transvaal.

It is not to be expected that all regions of deficient rainfall can be profitably farmed, and purchasers should discriminate carefully between particular dry-farming projects; but that dry-farming offers one of the means of earth-conquest there can be no doubt. The enthusiasm and vigor displayed by the attendance of the Congress was essentially an expression of a new and confident outlook on one great phase of rural affairs. Nor is this dry-farming outlook by any means to be confined to semi-arid regions. The same principles of soil-management apply to farming everywhere, only the practices and degree of application being shifted in regions of greater or less rainfall. A good knowledge of water-conservation would save the crop in many years of drought and "dry spells." We accept the winter and the summer and the heat and the cold as parts of the year and we adapt ourselves and our plans to them; but we still regard dry weather as accidental. Not until we calculate on the drought as on the cold, shall we master our farming.

THE CHAUTAUQUA SCHOOL OF PRACTICAL AGRICULTURE

By Arthur W. Gilbert
Professor of Plant-Breeding, Cornell University

The Chautauqua Farm School is a unique institution, located on the shore of Chautauqua Lake in the western part of New York State. Its object is to teach practical farming by giving young men an opportunity to do farm work under definite direction. A farm of 110 acres is operated in conjunction with the school to furnish farm experience. The school is, in reality, a farm-practice laboratory where young men may apply the scientific principles learned in the classroom. The term of the school occupies the interval in the summer which is the regular vacation time for schools and colleges, a period of ten weeks.

The students sleep in tents on a campground commanding a beautiful view of Chautauqua Lake. Each tent is provided with floor and fly; lighted with electricity and comfortably furnished. Ideal conditions for camp life are provided. On the campground and near the tents there was erected a building one-half of which was used as a kitchen, sanitary in every way and well equipped, and the other half as a bathroom and supplied with shower baths having hot and cold water.

Can you imagine the pleasures of tenting under these conditions; with ample protection from the weather at all times; dry and comfortable; lighted with electricity and completely furnished with cots, tables, chiffoniers, chairs and closets? Shower baths with hot and cold water; a clean, up-to-date kitchen; large dining tent with the side always open facing beautiful Chautauqua Lake and plenty of good things to eat added much to the health and comfort of all.

On one side of the camp, only a few hundred feet away, is the Chautauqua Farm, and on the other side the baseball field and tennis courts of Chautauqua Institution, and beyond, Chautau-
quaque Lake, offering unusual facilities for swimming and boating. The Agricultural School is a part of the famous Chautauqua Institution, which has one of the largest and finest summer schools in the country. At the Chautauqua Assembly can be heard the best speakers and many of the most prominent men in America today.

Such surroundings as these for a summer school cannot be surpassed anywhere in the world. But the students are not here primarily to play baseball, go swimming, nor camp in the

ordinary sense of the word, nor even to attend the assembly lectures, but to learn how to farm by farming. The Chautauqua Farm is well equipped with up-to-date machinery and has a good herd of high grade farm animals. These are cared for by the boys who also do practically all of the farm work. Many of the cows are pure-bred Holsteins. The others are good animals but without pedigree. The live stock consists also of a drove of seventy-five hogs, three horses and some poultry.

The students' days are divided into several distinct periods. At five-thirty in the morning one could hear noises of various kinds emanating from the

various tents indicating that it is time for squad one (or "squat one," as the Chinese student in the School called it) to arise and milk the cows. At the same time squad two begins work in the gardens, preparing vegetables for market.

At seven all gather around the breakfast table as "hungry as bears." After breakfast the tents are swept and put in order before work is begun in the fields at eight o'clock. Many kinds of farming are practiced; six or eight acres of vegetables, two acres of flow-

ers, and large fields of hay, potatoes and corn. This gives opportunity for many kinds of work; hoeing; cultivating with push hoes and horse hoes; haying; spraying potatoes; harvesting and marketing vegetables; plowing and fitting the land for a second crop after one crop has been removed; care of a young orchard and the rejuvenation of an old one; making fences; laying tile drains; marketing and separating milk; and many other kinds of field practise to be found on such a farm.

At ten in the morning the boys gather in the large dining tent, which has now been turned into a class room, to receive instruction which could not
readily be given while they are in the field. Such subjects as figuring fertilizer, feeding and spraying formulas; germinating seed; discussing soil fertility; drainage; growing and breeding crops; marketing and so forth, receive attention. These daily meetings last until noon when dinner is served. From one until four in the afternoon, the students again return to the farm for various kinds of work. They now divide up into smaller groups for the afternoon. Two or three men may spend the afternoon in testing milk with the Babcock test or building a chicken coop to hold the young chicks which have been recently hatched from the incubators, and another small group may spend the afternoon in making cement drain tile or, perhaps, making a wire fence. Another group, a little more fortunate than the others, may be picking peas or digging thistles from the corn field. Or perhaps, the whole class may assemble and receive instruction in judging cattle, using for the purpose some of the fine animals on the farm.

The evenings are very often spent in attendance at the very high class entertainments, lectures and concerts given at the big amphitheater of the Chautauqua Assembly.

The attendance the first season was not large, but this was expected. Among the students were two Yale graduates, six Cornell students, and one each from Pennsylvania State College and the University of Illinois. This school was designed primarily to furnish practical farm training to young men who desire to pursue agriculture as a life work but were not brought up on a farm.

Our agricultural colleges are now facing a very serious problem because so many students come to them for training who have not lived on farms.

Nearly half of our freshmen lack sufficient farm experience. It is necessary and very desirable for them to get farm experience before obtaining an agricultural degree. Some get work on farms in various places during the summer, but this is very unsatisfactory, both to the farmer who is getting inexperienced help, and to the student who is working under some one who is not by nature nor training a teacher, hence the student must learn from what he can pick up.
THE AGRICULTURAL LIBRARY AND
HOW TO USE IT

By A. J. Lamoureux
Librarian of the College of Agriculture

BY WAY of introduction it should be
said that the Agricultural Library
is essentially a branch of the Cornell
University Library, using the same
card indexes and governed by the same
rules and regulations. It has about
3,500 bound volumes on its shelves,
approximately one-half of which be-
longs to that great library.

As one of the departments of the
University, the Agricultural College
receives $400 per year from the Sage
Fund for the purchase of books, all of
which remain the property and under
the custody of the University Library.

In addition to this the College, as a
state institution, receives a large sum
of money annually for the support of
its various departments out of which
$1000 is set apart for the maintenance
of its library. This independent sup-
port gives it some measure of apparent
separation from the University Library
—a relationship, however, that is prac-
tically inoperative. The University
Library has some 7,000 to 8,000 vol-
umes of agricultural works on its
shelves, a large part of which belong
to the College of Agriculture and all of
which are wholly for its use and enjoy-
ment. The University Library is the
medium through which nearly all the
College book and periodical purchases
are made; its great card catalogue
includes the titles of all these agricul-
tural books whether on the shelves of
the Agricultural Library, in the offices
or laboratories of the agricultural
departments, or stored in its own
stacks. Under these circumstances it
is not incorrect to describe the Agri-
cultural Library as a branch of the
University Library and to say that it is
governed by the rules and regulations
of that institution.

This does not mean, however, that
the Agricultural Library can do with
its collections just what the University
Library is competent to do. In the
first place the Agricultural Library is a
working, or reference library, carrying
on its shelves only the books needed by
the instructing staff and students.
Its restricted quarters, now much
too small for its daily needs, compel
this. The books belonging to the
University Library are likewise con-
sidered to be on deposit, the same as
those loaned out for office or laboratory
use, or placed on seminary shelves, and
the librarian is not permitted to loan
them out except for overnight or over-
Sunday use. These restrictions pre-
vent the drawing of books for home use
for longer periods, although exceptions
are made sometimes in favor of the
instructing staff and graduate students.
The restriction, if rigidly enforced,
would be as embarrassing to the libra-
rian as it is now to the undergraduate
who wants a book on a long term loan.
Naturally in so small a library it would
be impracticable to discriminate be-
tween the books belonging to the
University Library, which the librarian
is not permitted to loan for long terms,
and those belonging to the College.
Such a discrimination would be im-
possible with so small a staff and with
its limited resources. In addition to
this, it is essential that the University
Library records should show at any
moment where every one of the vol-
umes in its card catalogue is to be
found. Manifestly this would not be
the case were the Agricultural Library
to act independently.

At present the library is necessarily
restricted to the works most frequently
used by students and instructors. Its
shelves are crowded and its present
quarters will not permit of further
expansion.

Its principal and most frequently
used collections are those of the U. S.
Department of Agriculture and of the
fifty-nine experiment stations scattered throughout the United States and its dependencies. These publications embody the results of all the investigations and experiments carried on by expert investigators and form the basis of what is known as modern scientific agriculture. The agricultural textbooks of today draw largely upon these publications and in all agricultural colleges they provide the greater part of the supplementary reading assigned to students. It is evident that these two collections of publications form an invaluable and indispensable part of an agricultural library. It was estimated at a librarians' conference in 1910 that fully 12,000 of these publications had been issued. In the fiscal year, 1910–11 the Department of Agriculture issued 1,953 separate publications and the experiment stations about 500. From this it may be assumed that the total number of publications up to the end of June, 1912, was not less than 17,000, each publication being a complete discussion of some feature or subject relating to agriculture and its contributory sciences. For library convenience these publications are bound in volumes of medium size and grouped, not by subjects, but according to the bureaus and stations publishing them. The bulletins and circulars are arranged in numerical order which permits each publication to be described in the card catalogue by number and the bureau or station from which it originated. With Department of Agriculture publications this arrangement brings together those relating to the same general subject (Chemistry, Entomology, Plant Industry, Soils, etc.), but with those published by the experiment stations the association is purely mechanical, a Geneva station volume, for instance, containing all the bulletins issued during the year on a wide variety of subjects.

To catalogue these 17,000 publications, each one being considered a separate work or book, would involve much detail and labor and to avoid this the Department of Agriculture prepares and prints a subject card index of the experiment station publications and the Library of Congress prints another for the government publications, the latter being an author index as well. Every library having these publications on its shelves is provided with these two indexes, and with them is possible to locate the publications on any specified subject according to bureau or station and number. With these two particulars the librarian can easily locate the volume containing any desired report, bulletin or circular.

Another means of locating publications according to subject is that of using the Experiment Station Record and its admirable indexes. This publication, which now issues from 14 to 16 numbers a year in two volumes, gives an abstract or brief notice of all important agricultural books, pamphlets, and articles. It covers the whole field and includes all the prominent publications of foreign nations as well as our own. And its references are so full and exact that the student need use no other index except to find the call numbers when using the University Library. The student should use this periodical not only in looking up subjects but to keep in touch with the march of events in modern agriculture. Every teacher in agriculture must be familiar with it and the student and scientific farmer should be sufficiently cognizant of its contents to feel that they have not been left behind. By and by every live grange having a library and reading room of its own will be compelled to keep the Experiment Station Record on file and its pages will be as eagerly scanned by the wide awake farmer as the market reports of the daily newspapers.

There is an occasional inquiry for the lists of the publications of the Department of Agriculture and the State experiment stations, but this cannot be met by the card indexes in use. The Division of Publications and Office of Experiment Stations issue monthly lists of them as published but it involves some labor to trace up in one of these the issues of any one bureau or station. The division of
publications, however, publishes occasional lists of available free and priced publications and also a descriptive title list by bureaus. A bulletin (No. 180) of the Office of Experiment Stations gives all the publications of the State experiment stations down to June 30, 1906, with title, author, and number. A continuation of this list would be of the greatest convenience to librarian and reader and it is to be hoped that the director of that bureau will soon find an opportunity for compiling it.

The library has a card catalogue of the 1100–1200 volumes of miscellaneous works on its shelves including manuals, texts, reports, and other reference works, but it has no index of the contents of the volumes made up of contributed articles. Some of these series, like the annual reports of the horticultural societies and boards of agriculture, contain material of great value and a subject index of their contents could not fail to be useful. There is also some irregularity in the publication of reports of various societies and this too needs the work of a bibliographer to make them accessible. There has been an encouraging growth in the collection of horticultural reports during the past year and it is hoped that means will be found to make this complete. The librarian has not had time to do as much in securing the reports of other societies but a beginning has been made and without doubt all of these will soon be represented on its shelves. The library also possesses an incomplete card catalogue of the agricultural books and periodicals catalogued by the University Library and card indexes of the more important contributions to three leading foreign periodicals, besides separate indexes for the Year Books and Farmer's Bulletins published by the U. S. Department of Agriculture.

The periodical files of the library also merit consideration. They contain many of the leading agricultural periodicals of the United States and not a few from foreign countries. These are nearly all received in exchange for the publications of this station.

In conclusion, the librarian wishes to lay particular stress upon the following points and to invite sympathetic cooperation on the part of those using the library. The library is now much too small for the College and until new quarters are provided considerable discomfort and inconvenience must be expected and endured. The only remedy for this will be to check out books for use in other rooms open for study, and for the students to purchase their own copies of the frequently used manuals and do as much work as possible in their own rooms. It should be understood that the library does not undertake to provide text-books and that the one or two copies of a manual which it may possess cannot possibly meet the needs of a large class. Still further it may be expected that the winter course will crowd the reading room to the extreme and some cooperation in the ways suggested must be afforded or the library will be unable to meet efficiently the demands upon its resources. It should be understood that the resources of the library are extremely limited. If the books required in any course are not on the shelves, the students must look for them at the University Library or at the department laboratory.

Another important consideration is that relating to the careful usage of the invaluable collections in the library. The older issues of the Department of Agriculture and experiment stations have long been out of print and copies are now extremely scarce. It is almost impossible to duplicate them. It is essential, therefore, that the use of such volumes should be limited and that great care should be exercised in handling them. The librarian would recommend that references to the older publications be made only in case of necessity and that the indexes be used more generally by investigators. In all cases, readers should care for the collections even more zealously than they would were they personal property, for they are the printed record of a national movement and achievement of which every American should be proud.
AGRICULTURE IN PORTO RICO

By H. B. Cowgill, '10
Assistant Pathologist, Estacion Experimentale, Rio Piedras, Porto Rico

The principal crops of Porto Rico are sugar cane, tobacco, coconuts, coffee, citrus fruit, and pineapples. Dairying is carried on extensively enough to supply the demand for market milk, but practically all the butter and cheese that is used is imported. Tropical fruits grow in abundance and are eaten quite extensively by the inhabitants of the Island.

Sugar cane is the principal agricultural product of the Island. Practically all the coastal plain area, which includes most of the level cultivated land, is devoted to the raising of sugar cane. In some cases this land is owned by the men who cultivate and produce the cane and sell it to the "Centrals" where it is manufactured into raw sugar. In other cases, and this is more often the case with that land immediately surrounding the factory, the "Central" owns the land.

A "colono" is one who raises cane and sells it to the Central. A colono may own his own land but more often the land is furnished by the Central and then, at the grinding season, the Central buys the cane of the colono at a price agreed upon. The land cultivated under the administration of the Central is under the supervision of one or more managers who have overseers or "mayordomos" to look after the work of the laborers. This work, consisting of planting, cultivating, and harvesting, is largely done by negro peons. Oxen are used for plowing and hauling. The cultivating is done with ox plows and with hoes. There is some land that is never cultivated with animal after the cane is planted. It is gone over with hoes by the laborers.

To an American coming to Porto Rico the use of oxen for agricultural work seems a very slow and antiquated practice. Four oxen will do no more than one good team of horses in the United States; some make the estimate much more in favor of the horses. But with the present system of agriculture in Porto Rico oxen seem to fill a useful place, especially for certain kinds of work. The oxen live on grass that comes up without seeding when the land is left to fallow after producing cane for a series of years. Horses or mules require some grain and this has
to be imported as no grain is raised in Porto Rico except a small amount of mountain rice. An animal can be worked while he is most valuable for that purpose and then can be sold to the butcher with a depreciation of only about 10%–12%. The laborers also get along much better with oxen than they do with horses or mules. Changes in agricultural methods in the raising of sugar cane that would make oxen labor unprofitable would effect the meat and milk supply of the Island, for it is on this land following cane that much of the beef and dairy cattle are grazed.

The cattle are for the most part of African origin. They are characteristically of a fawn color and have characters that easily distinguish them from the European breeds. They have some very desirable characters but are not as a rule heavy milk-producers. There is good opportunity to improve these cattle by selection and by crossing with imported cattle. There is a demand for milk at good prices in the cities.

The varieties of cane mainly cultivated are the Otaheite and the Crystalina. The former has been recognized, in the principal cane growing countries, as the best cane known, and the Crystalina has been considered only second to the Otaheite. Both varieties have “run out” or are “running out,” the one after the other, in all cane countries; so that new seedling varieties are coming to be cultivated quite extensively. This makes a very interesting question for the agriculturist and plant breeder. The planter wants a variety with a sugar content and yield equal to or superior to the Otaheite cane and one much more hardy under the present soil conditions of the Island.

The cause of this “running out” of the cane is attributed to different causes among which are a lack of plant food in the soil, accumulation of disease in the soil, old age of the variety, and poor cultivation. In Java, cane has been improved by hybridization with more hardy wild varieties, which were resistant to disease. Of late years, seedling varieties are being propagated in nearly all cane growing countries and it is hoped to replace the old varieties with others equal or better.

The citrus fruit and pineapples of Porto Rico are of very good quality. These fruits are raised, for the most part, by Americans. Steamers which carry freight leave the ports of the
Island twice each week for New York. The fruit-growers maintain a shipping association whose representatives look after the handling of the fruit in New York. Such tropical fruits as the mango, papaya, aguacate, and mamey can not be shipped successfully but are eaten quite extensively by the people of the Island. Pineapples are shipped fresh and also after being put up in cans.

Cocoanuts are grown best on sandy soil on or near the seashore. They commence bearing about eight years after planting and are said to yield until thirty or more years of age. They require very little attention after being planted except to protect them from animals. The nuts are worth one or two cents each on the tree. A palm produces about twelve panicles of nuts each year and each panicle matures five to ten nuts. About forty palms can be raised to the acre. Considering the fact that the land on which the cocoanuts are grown is the cheaper land and that little or no cultivation is required, cocoanuts are considered a very profitable crop.

Vegetables are raised in small patches by the country people. These country people are called "jibaros" meaning farmers. They live in the more mountainous parts of the Island and bring their products to the city and towns on horseback or on foot, usually traveling at night in order to have them in the market in the early morning. Such vegetables as sweet potatoes, yams, tayotes, melons, taro, tomatoes, peppers, and bananas are planted in holes and receive very little cultivation. The vegetables usually grown in the North are not cultivated here much, but some have had success with them. Varieties and methods may be found which will make them profitable to raise, but at present, the general belief is that they do not succeed well in Porto Rico.

American vegetables are shipped in to some extent to supply Americans who want them, not having acquired a taste for the vegetables grown on the Island.

Porto Rico is a very pleasant place in which to live, with its mild climate and refreshing breezes. It is cooler in summer and warmer in winter than any part of New York State. It has quite abundant rainfall but with very little cloudy weather. Its scenery and tropical flora are beautiful and interesting.
KING Progress rules the age in which we live. Under the sway of his sceptre such changes are wrought as would have seemed miraculous to our forefathers. The tallow dip has given way to electricity; the ox-cart is hardly more than a memory; skilled workers guide machines in doing swiftly and easily what human hands once did with infinite patience and pains. System and sanitation, two chosen servants of King Progress, are revolutionizing methods and conditions in industry. All the sciences are as a matter of course enlisted on the side of Progress, all but one: the science of housekeeping alone, like the Sleeping Beauty in the fairy tale, has until recently dreamed in her castle, walled in by a hedge of conservatism; and although King Progress has now placed his magic kiss upon her lips, she is not fully awake. She is still rubbing her eyes, and wondering what all the other sciences are making such a to-do about; and what fault they had to find with the good old times that they must needs have made the world over while she slept. It is not a happy awakening; she almost wishes King Progress had passed her by! The responsibility of arousing the science of housekeeping to her opportunities, and placing her where she belongs, on a par with other sciences, rests with the housekeeper of today.

Discontent with present-day housekeeping conditions is so general, that instead of the favorite occupation it ought to be, housekeeping is thought of as drudgery of the worst kind. With the passing of cheap labor, more and more work has fallen on the shoulders of the housewife. She is struggling vainly to do two or three women's work without increased facilities. Houses are arranged much as they were when help was plentiful and the number of necessary steps were not all taken by one woman. Methods of work have changed little in the household from what they were thirty or forty years ago, while in the machine shop methods of work are abreast of the times. Household tools are often wrongly constructed; and among the "labor-saving" devices that flood the market, many are so complicated as to defeat the purpose of saving work for which they were supposedly designed. How, in the face of these difficulties, are we to meet our responsibility of making household methods as scientific and progressive as the methods in other lines of work?

The average housekeeper is too work-driven to get outside her problem and study it calmly. Like an uncertain swimmer who has fallen overboard she does not dare to stop her strokes long enough to take bearings and see whether or not she is beyond her depth. With the thought: "Everything will stop if I stop," she continues to work desperately until the waters close over her head. The help she needs does not consist in someone's standing on the shore and calling out to her not to work so hard. It requires more active cooperation to help her regain her footing.

A business man who suspects that he is not getting full returns for time and money, calls in a "business physician," an expert whose specialty it is to study business plants, with a view to discovering where strength and money may be saved and where tools and methods may be improved. It does not follow that the expert is any better able to run the business, with its multitude of details, than is the man who has asked his advice; but because the expert does not have the carrying of details to worry him, he can give his whole mind to studying the problem; because he comes to it with a fresh point of view, he readily sees the weak points in habits of work which may have grown up so gradually as to be
unnoticed by one who is constantly in the midst of them. Therefore, his suggestions are worth the very substantial fee which the “business physician” charges. The time will come when the perplexed housewife will call in a “housekeeping specialist” in the same way to readjust her household, not because such a specialist is necessarily a better all-around housekeeper than she, but because, being a specialist, the expert has had time to study and experiment, and is able to offer the results “ready-made” to overburdened housewives. Failing personal help of this kind, there is much to be gained from correspondence with teachers of household efficiency, or from books on the subject. There is much to be gained from the mere willingness to be helped. The advice and cooperation of the husband ought to be as valuable in matters usually classed as “a woman’s business” as the wife should be in matters considered the specialty of the other member of the firm.

“But,” some woman may say, “I don’t want to be classed with the women who are always complaining about household matters to their husbands. Men hate it.” Everyone is inclined to lose patience with a woman who is always asking for pity because of her difficulties, without doing anything to overcome them; but the scientific housekeeper does not do that. She discusses things in order to improve them, knowing that the success of her business is as important to her husband as it is to her. If men fully understood how poorly equipped the average kitchen is, they would not rest until it was changed. A man does not submit to uncomfortable conditions of work. If he is to drive a nail, he wants a hammer, and nothing can persuade him that a flat-iron or a boot-heel will do. Every man wants his wife’s companionship in both work and play; every family of children needs the mother to crown its joys and soothe its sorrows; every community needs its women to lift it to a proper plane. A woman’s ability to give herself freely where she is so much needed depends on her either having almost superhuman strength, or on her having proper conveniences for work and the ability to make the most of them.

It is not labor-saving devices alone that will start a new era in housekeeping. Are we ready for the day of mechanical power in the home when it comes? We may dream of what we should do if someone presented us tomorrow with one of those electrical wonders in which an alarm clock starts the electric current which heats the oven, and checks it again when the proper degree of heat has been reached, but should we know how to use it or keep it in order if it became ours? Have we cultivated the mechanical turn of mind necessary for the use of machinery? Too often the lack of this faculty makes us condemn as useless an article which could save us much time and strength.

The first step towards the machine-equipped kitchen is to acquire the mechanical turn of mind. Once started in developing this faculty, we shall be astonished to see how it helps us to make more useful every tool and piece of equipment that we already own. The woman who discovered that a cherry-stoner could be made out of a wire hairpin, was getting her mind in training for the larger kitchen helps that she looks forward to possessing some day. A woman’s class is conducted in Delaware, not to learn embroidery or china painting, but carpentering! Instead of centerpieces, the women take home chicken coops, shelves and tables, and apparently get much pleasure and profit from the class. If instruction could be given in the making of kitchen equipment, we should get labor-saving devices that really save labor. It is from women who have suffered from poor equipment all their lives, that the really valuable inventions for our households will come. There is no fear that a knowledge of the use of tools will throw upon women pieces of work that rightfully belong to men. It will simply hasten cooperation and
“reciprocity” between women and men.

No labor-saving device is effective without the labor-saving mind. It is time gained, not wasted, to plan out a piece of work beforehand instead of plunging blindly into it. It is time gained, not wasted, to pause for ten minutes’ rest at intervals of a busy day; to take the few minutes necessary to run out and give the finishing touch to the children’s snow-man; to drink in a little of the beauty of summer while hanging out the clothes; to risk a little extra mud on our shoes in order not to lose one sign of spring as we go to feed the chickens. Long periods of rest and recreation are rare occurrences for the housewife, much as she needs them. Therefore, it is the more important that she treasure every bit of rest and joy and fun that may come as a part of her daily work. There are two kinds of work: the kind we do because we want to, and the kind we do because we have to. When the one becomes the other, the result is happiness. If it can be said of us that we learned to make housework a joyous task, we shall have helped in awakening domestic science to her opportunities, and shall have given the world what has been called “a real boost towards the better day.”

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**EUGENICS AND THE COUNTRY LIFE PROBLEM**

*By E. Eugene Barker, ’10*

The great territorial expansion and industrial development that our country has undergone since the Civil War, has brought about vast changes in the distribution of population in our social institutions, and in our standards of living. The business opportunities afforded in the city to the ambitious young man, attracted many of the most virile country youths away from the drudgery, the long hours and low wages of the farm. The city’s glamour and social life, as contrasted with the quiet, uneventful life of the country, attracted both young men and women alike. The word “city” brought with it ideas of fortune, pleasure, social distinction, and culture. Its attraction was irresistible. The young people went to the city to make their fortune or to become wives of city men.

The effect of this emigration was very marked. The towns grew enormously, and new cities sprang up where was forest and prairie a few years before. The virile human stock with several generations of country breeding behind it, reacted splendidly to the new life, and truly marvelous has been the development it has brought about in every line of human activity. At the present time, a large proportion of our captains of industry, commercial princes and eminent professional men, as well as the large bulk of the great army of workers, are country bred.

At the same time, the effect became apparent in the rural districts. Such a drain of the best minds and bodies away from the open country and village, could have but one effect, poorer farming, less thrift, and stagnation of social activities. Go where you would, it became a common thing to see rundown farms, and dilapidated homesteads that had been formerly fine old family-seats, now occupied by some second-class tenant, while in the villages, it seemed like war times, with only old men and boys about the streets. The vitality of the country church was notoriously weak. These conditions only increased the city’s attractiveness by heightening the contrast.

At last the nation awoke to the fact that in the cities had become centered the wealth and the culture of the whole
country. The open country had become impoverished, the villages sleepy and decadent. Dilapidated homesteads, struggling churches, even abandoned farms, were symptoms of an unhealthy social adjustment.

City life is not ideal, however. It is exceedingly wasteful of nervous energy, and lacks many of the healthful advantages of country life. It is not an ideal place to live in, nor in which to raise healthy, alert children. It is said that three generations of city life wears out a family, and the stock must be invigorated again by fresh blood from the country. The country has furnished the bulk of the city populations and the majority of leaders in all walks of life. But now, if the source that produced our best men and women has been drained, we can look there no longer for our leaders. And what is equally alarming, since the country feeds the town, the production of staples has not kept equal to the consumption, and prices have soared and continue to rise. The country must keep some of its best human stock on the land. It must continue in the future, as in the past, not only to furnish alert, vigorous men and women to the cities, but to produce the nation’s whole food supply.

No longer can we speak of a rural civilization as distinct from that of the city. They should be one, continuous from the civic center and suburb to the remotest farmstead. This must be brought about if the country is to be made as attractive to homemakers as the city. Better means of communication are already doing this. Trains, trolleys and automobiles, mails, rural delivery, and telephones are bringing the culture of the city out into the country, and raising the standards of living for those who live on the land. Sanitary appliances about the farm homestead not only make for healthfulness, but lighten the drudgery of housework, and add comfort to living. The use of machinery, both out-of-doors and in the house, lessens labor and gives time for intellectual work and social activity.

All these higher standards of living for the country-dweller would do little good if they could not be attained. But thanks to the advance of agricultural science, and an ever-increasing market, farming now offers as good commercial opportunities as most city vocations, and an intelligent farmer is able to provide the comforts of living that our times demand.

But this is not sufficient. A taste for country life must be developed to counteract the city’s glamour. Our rural education must be redirected for it now leads away from the country. The country-dweller must be part of his background to be contented. The more points of contact he has with his surroundings, the more at home is he. He should know its natural history, the physics of its mountains and valleys, the chemistry of its soils. He must be made to see beauty in things around him, so that his soul shall find satisfaction in the woods and fields and skies. Such tastes and interests in his surroundings must replace for him the theaters, museums and art of the city.

The problem is, first to make country life as attractive and full of opportunity as the city, so that the best young men and women will not all leave the farm and village. Then to make rural life more healthful. There should be better understanding of hygiene and sanitation, and at least as much intelligence used in preparing the family diet, as in the rations for cattle and hens. Above all, lightening the women’s work, so that they shall have time to give to their families, to teach and train their children, and inculcate such ideals, tastes, and morals as have produced the finest type of American citizen in the past.

A community is the persons who comprise it, a nation is the people that constitute it. Institutions are only the organized expression of the people’s life. Without the right sort of men and women, they can not hold their own, they perish. After all, the problem of our national life is one of eugenics, not merely physical, but moral and intellectual as well.
THE STOCK JUDGING TEAM

By R. H. Hewitt, '13

FOR several years Cornell has sent a judging team to Chicago to compete with other leading agricultural colleges throughout the country for honors in judging cattle. This being one of the largest dairy shows in America, it gives exceptionally good opportunity for such a contest.

Competition for the judging team began last spring when about 15 men met weekly to judge rings of cattle in the vicinity of Ithaca. This, however, was the preliminary work. The final work began this fall at the opening of college. Sixteen men met each night at 4.30 and judged rings of cattle from the University herd or a herd near by. Each Saturday, longer excursions were made, and several of the leading herds in New York State were examined. Among these were the Glenwood herd of Jerseys at Ensenore; the herd at the Geneva Experiment Station; O. W. Post's herd of Guernseys at Ensenore; the Benham herd at Canandaigua, and F. S. Peer's herd at Ithaca. E. A. Powell's herd of Holsteins at Syracuse, Stevens Bros.' herd at Liverpool, and Mr. Baker's herd of Ayrshires at East Aurora were visited.

The rings shown at these farms were usually composed of excellent animals and gave the men good opportunity to study each type. Much benefit was also received by talks given freely by the herdsmen and breeders. This cooperation with the breeders makes it possible for Cornell to send a team.

On October 21st, the team finally selected to go to Chicago was chosen by Professor Wing. The men picked were: H. L. Page, J. R. Teall, and R. H. Hewitt. On the 23d the team left, and arrived in Chicago the morning of the 24th. That afternoon, Professor Wing took the men out to see the stock yards. As it was the last of the week, the pens were nearly empty, but the acres of land covered by these pens gave an idea of the size of the beef industry in the West.

The contest occurred on Friday. The team arrived at the stock yard amphitheater at 8 A.M., where were assembled 42 men from 14 universities: Nebraska, Iowa, Kansas, Missouri, Michigan, Massachusetts, New Hampshire, Delaware, Maryland, Kentucky, Pennsylvania, Ohio, New York and South Dakota.

This was the largest contest of its kind ever held. The teams were briefly told the rules of the contest by Mr. Rawl, the director of the contest. They were then divided up into four squads of from 11 to 12 men, each in charge of a guide.

The first cattle to be judged were the Ayrshires. One squad was led into the arena where a ring consisting of four cows stood. For two minutes the cows were led around. The remainder of 15 minutes was given for the placing of the animals. The squad was then taken to a separate room and given 15 minutes to write the reasons for their placing. In a similar manner the Guernseys, Jerseys and Holsteins were placed.

On Saturday night the results were given out. Nebraska won 1st, Iowa 2d, while Cornell succeeded in winning 6th place. The comparative scores out of a possible 4200, were Nebraska, 3544½; Iowa, 3476½; Kansas, 3381; Massachusetts, 3330; Missouri, 3296½; New York, 3214; Kentucky, 3169½; South Dakota, 2965; Pennsylvania, 2963½; Michigan, 2934½; Delaware, 2806½; Ohio, 2865½; Maryland, 2834; New Hampshire, 2804½. The New York team won second place in judging the Ayrshires.

The highest individual score in the Ayrshire breed was won by R. H. Hewitt, '13, with a score of 188 out of a possible 200.

This contest is growing rapidly in size, there being a gain this year of four schools over last year. The interest taken in it is also increasing. At Iowa over 100 men started in the competi-
tion. Some of the western colleges give their insignia to the men making the teams. For this reason I would urge that every man who can possibly do it should try for the team and not only get personal benefit but help make a winning team for Cornell.

The time I have spent in the competition, I look upon as the most profitable I have had in college. And I think the men who did not succeed in making the team will heartily agree with me that it was time well spent.

Then there is the training, given by a man second to none in his profession, and to whom the team is largely indebted for their success. Upon these trips we were given a chance that cannot be had in class rooms for closer association with Professor Wing, a feature which is one of the most pleasant of the trip.

THE FORESTRY BUILDING

By Walter Mulford
[Professor of Forestry, Cornell University]

The contract for the erection of the forestry building has been let. The building is to be located just east of the Filtration Plant on the high knoll overlooking the Forest Home Valley, and close to the woodland along the Fall Creek ravine. It is to be northwest of the Poultry Building.

The building is to be of brick, in conformity with the other College buildings. The outside dimensions are 143 feet by 58 feet. There will be three floors, and a finished attic containing much available space lighted by dormer windows and skylights.

The ground floor contains a general wood technology laboratory, an advanced wood technology laboratory and a timber testing room. All three of these laboratories will be given over to the work in structure and identification of woods, timber testing, paper pulp and other matters affecting the technical qualities of timber. Connected with the general wood technology laboratory will be a laboratory materials room. The ground floor also contains a freight room and a locker room. This floor is not a basement, but receives full light on three sides, and has half length windows on the fourth side.

On the second floor there is a large laboratory for mensuration and utilization, a reading room, a class room, a lecture room, an instrument room and a group of offices. The lecture room will be provided with an automatic window.
darkening apparatus, so as to facilitate the use of lantern slides. Connecting with the lecture room is a lecture materials room in which charts, maps, photographs, specimens, lantern slides, and all other materials used in illustrating the lectures will be kept. The office group includes a general office and six private offices, all connected by a system of push buttons.

The third floor includes a laboratory for silviculture and dendrology, a museum, a class room, a drafting room, an herbarium room and a seminary room.

In the attic there is an advanced general laboratory, a series of small private laboratories, camera and dark rooms, a room for the forestry club and an office. It is expected that the club room will serve as an informal reading room and gathering place for the professional forestry students. This room is attractively located and should prove of great value in developing the proper fraternal spirit among the men.

THE SIXTH ANNUAL FRUIT EXHIBIT

By H. M. Stanley, '15

Each department of the College of Agriculture has its own mode of expression of the work it is accomplishing. For several years the Department of Pomology has expressed the efficiency of its work by a Fruit Exhibit. Every year this Fruit Exhibit has shown such progress in size, attractiveness, and educational features that now it is without doubt the most instructive of its kind in this part of the country.

The Sixth Annual Fruit Exhibit held November 7th, 8th and 9th, surpassed all the previous annual exhibits in quality and quantity of the fruit as well as in the educational features advanced. The entire work of the exhibit was performed by the students in the Department of Pomology. They were responsible for the setting up, the labelling, and the arrangement of the fruit, while the judging was performed by advanced students, who have had training along this line.

The formal opening of the Exhibit was announced at the Regular Monthly Assembly held November 7th and during the evening the Exhibit rooms were well filled with interested spectators. There was a large attendance of residents, fruit growers and students at all times.

Cornell colors, used for extensive decoration of the stairways, corridors and Pomology rooms, gave a striking
appearance to the entire exhibit. The great regularity of placement and arrangement, so as to present the best effect was one of the features of the show which received a large amount of comment from all of the spectators.

The Exhibition was made quite representative of the entire country by having collections from Massachusetts, Idaho, Utah, California, Nevada, Maryland, West Virginia, Michigan, Oregon, Ohio, Connecticut, Pennsylvania, Maine, and New York. From about 50 exhibitors, 133 varieties of apples were received together with several varieties of pears from Rochester and a few peaches and pears from Maryland. There were also several plates of Persimmons and Quinces. A rack of Tokay and Malaga grapes from California gave a marked contrast with a few of the typical varieties from New York State.

One of the most educational features of the Exhibit was a bank of box packed apples. This bank represented a large red frame surrounding a large red "C U" figured with Tompkins Kings in a background of Greenings. The fruit used in the bank was grown in an old orchard on the University Farm.

This had, from long neglect, been bearing a small amount of poor fruit. The Pomology Department assumed control two years ago and the great improvement accomplished by careful cultivation was shown by the excellent exhibit and by the fact that the orchard is now producing 300 barrels of apples an acre!

The Exhibit is held chiefly for its educational value. It affords the students a splendid opportunity for the study of fruits and fruit varieties, which seldom comes to them in after life. Then too, such a comprehensive exhibit is by far more instructive than the lecture or class room study and gives exceptional opportunity for the study of the characteristics, the variations and the adaptations of the many varieties.

Besides demonstrating one of the ways in which the college is attempting to educate its students along practical lines in preparation for later life, the Exhibit reminds us that "There were never better opportunities ahead for the capable Fruit Grower," especially in our own New York State, "and that skill in orcharding is demanding a premium and is assured of receiving it!"
The Cornell Countryman

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DECEMBER, 1912

The Countryman takes great pleasure in welcoming you men and women who are members of the entering class of Winter Course Students. The enthusiasm and thirst for knowledge that has brought you here fits in well with the spirit of this institution, the spirit of service. You are here to acquire information of a practical nature. With but few weeks ahead of you, you must work intensively if you are to receive fullest benefit of your course. You cannot expect to learn all the principles and practices of agriculture in these twelve weeks but you should learn to think along agricultural lines.

You are expected to enter into the social life of the college and to share the responsibilities of a student. Take a live active interest in your clubs, your teams and your debates. Remember that you are urged to attend the meetings of the various departmental clubs and the monthly Assemblies of the College where student body and faculty mingle on common informal ground.

It was indeed a memorable occasion when, on November 7, the students gathered before the steps of Goldwin Smith Hall to do honor to Dr. Andrew D. White on the occasion of his eightieth birthday. We who are now students in Cornell University owe a great deal to Dr. White whose tireless efforts at the time of the establishment of the institution and since that time have been in no small way responsible for the prestige which Cornell now enjoys. Several years before the founding of Cornell University, he had mapped out plans for an institution of higher learning which should be worthy of the State of New York. With admirable foresight, Dr. White was among the first to provide for the parity of practical and cultural studies. He said, at the time of the founding of this University, "It should begin at the beginning. It should take hold of the chief interest of this country, which is agriculture; then it should rise—step by step, grade by grade—until it has fulfilled the highest ideal of what a university should be."

A problem which is becoming more and more serious in the College of Agriculture is brought about by the large number of students coming from cities and towns without any practical experience in farm life. These men must before graduation pass the farm practice
examination. Many are at a loss to know how they shall acquire the personal first hand knowledge of the farm which this examination requires. A number can find vacation employment on farms, but opportunities in this direction are insufficient to meet the necessity or the demand. Prof. Gilbert's article in this issue describes one way by which the difficulty is being met. In regard to the training-school idea in agriculture, Dean Bailey in his address before the rural education section of the New York State Teachers' Association said in part: "The State of New York has now undertaken to maintain advanced education in agriculture by the establishment of a state college and several schools. It should now go back to the beginning and provide the preparatory agencies. The first essential is to make it possible and practicable for the public schools to introduce agricultural subjects on similar terms as other subjects; and this is now being actively and I think effectively undertaken. If the state is to provide the best complete enterprise, the next most important need is some kind of direct training-schools in agriculture. By eliminating the purposeless long vacation and maintaining a twelve months' enterprise, such training schools or classes might be combined with the existing public schools without loss of time to the pupil. These training-schools or training-classes should be many, to meet the needs of the different localities. They should be small units and strictly limited in the number of pupils so that each pupil may receive the maximum of actual hand-training. If these training-schools or training-classes were to utilize actual farmers' farms for a part of their work the results, of course, would be much better. A vacation in the country is not farm work. Living in a country home is not farm work. One must actually do the work seriously and as good farmers do it. There should be some way of linking-up many of the best farms with the training-school idea, the educational features to be under the direction of the recognized educational authorities of the State.

"Society should take such action as will prepare the children to go to school."

**Professor Webber Resigns**

Dr. Herbert J. Webber, head of the department of plant-breeding, has resigned from the staff of the College to accept a position as organizer and executive head of a Graduate School of Tropical Agriculture and a Citrus Experiment Station to be located at Riverside, California. While we very much regret the departure of a man who has so thoroughly gained the respect and the good will of the University community, we sincerely congratulate Dr. Webber on his advancement. California is indeed fortunate in selecting the head of her new institution.

Dr. Webber came to Cornell to occupy his present position in 1907. Previous to that time, he was in plant breeding work with the Department of Agriculture at Washington. During the year, 1909-1910, he served in the absence of Dean Bailey as acting Director of the College of Agriculture.
CAMPUS NOTES

The College of Agriculture must provide instruction for more than 2000 students this year. At the beginning of the fall term there were enrolled 360 Freshmen, 308 Sophomores, 230 Juniors, 163 Seniors, 117 Graduates, and 138 Special Students. In addition to the 1500 students thus accounted for, 225 students attended summer school and more than 550 are anticipated in the Winter Course, bringing the total for the entire year close to 2100.

In 1903, less than 10 years ago, when the State made its initial appropriation for this college the total attendance was but 296. Thus our increase in less than 10 years has been over 700 percent.

In view of this astonishing growth, a survey was made by the Director to determine if the cause laid in the system of free tuition. The results of his inquiry were most interesting; it was found that large as was the total increase, the proportional increase of students attending from other states and paying tuition was even larger. It can only be deducted from these facts, that our growth is due not to free tuition, but to the enormously accelerated demand for agricultural education.

At the beginning of the school year, every Agricultural building was taxed to the limit of its seating capacity and with the arrival of the Winter Course students, recitations must be conducted in many buildings off the Agricultural College grounds. Until the new buildings are completed, the disposal of our 2000 students is the most serious problem confronting the administration.

The regular monthly assembly was held on November 7. Despite the rainy weather, the meeting was well attended. Dean Bailey spoke on “Organization and the Disadvantages of Too Much Organization.” Human thought, he declared, runs very nearly in the same channel, and generally when a man goes astray he soon returns. There are a few, however, who live a life separate from the others; such men accomplish the most for the world. Edison is a very notable example of this. Speaking of organization in the country life movement, he stated that it is his belief if individuals worked harder, better results would be accomplished.

After the meeting all adjourned to the fruit show in the pomology rooms.

* * *

During the latter part of October poultry demonstration coaches were operated by the New York Central & Hudson River R. R. Co., in cooperation with the Ag. College, between Syracuse and Batavia. Messrs. Krum and Hurd accompanied the train. There were two coaches, one for lecturing and the other for demonstration on many of the important phases of poultry, including feeding for egg production, grading of eggs, construction of poultry houses and other items that bear upon the raising of poultry for profit. The demonstration car was fitted with poultry appliances, such as egg and poultry carriers, picking boxes, feed hoppers, trap nests, and chickens for actual demonstration. Charts showing methods of rearing chicks,
caring for fowls, etc., were exhibited. Rations and methods of feeding in printed form were distributed. Results of many important experiments were discussed. At all their stopping places, the demonstrators were greeted by large crowds, thus showing the interest that the farmers are taking in the extension work of the college.

On November 12-14, another demonstration train was sent over the Harlem Division of the N. Y. Central from Albany southward, in the interest of dairying, soil improvement and orchard development. Professors Savage and Fippin accompanied it. One coach carried exhibits of feeds, dairy appliances, spraying materials, insect pests, fertilizers, lime, etc. Demonstrations of combinations of feeds in a balanced ration, choice of feeds, desirability and economical purchase, particularly of concentrated feeds were given. Also the common adulterations of feeds were discussed. The soils work dealt primarily with lime and commercial fertilizers. In regard to fertilizers, the fundamentals and composition were talked on, and suggestions were made as to the standard fertilizers for the average farm condition. Charts showing the effects of lime, the availability of commercial fertilizers, etc., were displayed. The importance of crop rotation in relation to soil management was mentioned and other important subjects such as the fundamental points in good soil management, lime in relation to the soil, etc., were discussed.

* * *

The New York State College of Agriculture has been asked to prepare an exhibit for the national corn exposition to be held in Columbia, S. C., Jan. 27-Feb. 10, which will demonstrate in miniature a good type of a country fair. It is hoped to put in graphic form as many practical suggestions for an ideal country fair as possible. The whole question of fairs, exhibits, and shows is at present much discussed and the preparation of an exhibit of this kind may help to crystallize some of the ideas on this important subject.

A conference of several men prominent in fair work in this state has been called by the committee to discuss the questions given below. These questions have also been sent to prominent agriculturists throughout the country and valuable suggestions have been received.

How may the fair grounds and equipment be made a civic center and used the year round? Is it possible to place a rural school on or near the fair grounds so that both may be better used for educational purpose? Should experimental and demonstration plats be conducted on the fair grounds for the benefit of the whole community?

Could the fair grounds be made into some sort of a park and kept clean and attractive so as to be a fit place for rural gatherings at any time of the year? Could not the buildings be used for grange gatherings or other assembly purposes or for winter shows or exhibits? Could not the rural church be in some way associated with such an enterprise? How should such an enterprise be supported financially.

What should be the nature of the exhibits and other contests, and what should constitute the premiums? What attitude should a fair take towards vaudeville shows, balloon ascensions and such "attractions?" Should the hardware and general merchandise exhibits be encouraged? How much prominence should lectures have as educational features? What is the effect of traveling professional exhibitors? How may the fair be made more of an expression of the rural mind?

* * *

On the night of October 29, at the close of an enthusiastic meeting, the students of the Forestry Department organized the Cornell Forestry Club. At the close of the business meeting in which a constitution was adopted and officers elected, the club adjourned for a social hour. Professor Mulford gave a very interesting talk on forestry experiences. The following officers
were elected: President, K. E. Pfeiffer, '12; vice-president, B. H. Paul, '13; Sec. C. S. Hahn, '13; and Treas. H. B. Steer, '13.

On Wednesday night, October 23, the Agr. Sophomore class held the first social gathering of what promises to be a very active and enjoyable year. The entertainment committee worked out the suggestion that the class have a corn husking “bee”, one of the good old-fashioned kind. For the occasion they had the use of the loft of the new horse barn. Decorated with corn shocks, it was an excellent place for the affair. After a short business meeting, Professor Rice gave a very fitting talk for the event. Then amid much merriment, began the husking. All those who were so unfortunate as to find a red ear, had the pleasure of entertaining the class with “stunts.” After the corn was all husked and cleared away, dancing was started with a grand march. Later in the evening, cider, doughnuts and apples were served.

The “bee” certainly was a great success for fully 125 came out and enjoyed themselves.

* * *

Prof. Stocking and Messrs. Ayres and Fisk recently attended the International Dairy Show at Milwaukee and the National Dairy Show at Chicago. At Milwaukee, Prof. Stocking was one of the judges of milk and cream exhibited and also read a paper before the International Milk Inspector’s Association.

* * *

Prof. Lauman was appointed to represent the Experiment Station and Prof. Stocking to represent the College at the annual meeting of the Agricultural Colleges and Stations to be held at Atlanta, Georgia, Nov. 12th-15th.

* * *

From Oct. 15th to 17th the State Cheese Instructors held a conference at the Dairy Department for the purpose of promoting uniformity of methods of instruction among the state colleges and to give opportunity to become more familiar with the recent work of cheese making. On Nov. 12th to 14th the State Butter-makers held a similar conference for the same purpose.

* * *

On the evening of Oct. 28th, a memorial meeting of the Lazy Club was held in honor of the late John Craig, Professor of Horticulture, and “Uncle John” Spencer, founder of the extension courses. Mrs. Anna Botsford Comstock told of her remembrances of “Uncle John” and the Dean paid his tribute to Professor Craig.

Nov. 4th, was Chrysanthemum night for the Lazy Club. All members sauntered lazily over to the greenhouses, which were brilliantly lighted, where they inspected the wonderful display of chrysanthemums at their leisure. This meeting, possibly due to the environment, proved to be the largest in the history of the Club.

Prof. A. C. Beal spoke on “The Older Types of Chrysanthemums,” and Mr. A. C. Hottes on “Chrysanthemum News of the Year.”

* * *

Dr. H. H. Love of the Department of Plant Breeding has returned from a field trip to the farm of Seth Lowe at Bedford Hills, and to the Lincoln Agricultural School where he was engaged in conducting experiments with corn and potato plats.

Dr. C. H. Myers of the Department of Plant Breeding has completed his work of supervision of corn and potato breeding experiments at Alden, Newburgh, and Lincoln Agricultural School.

The Department of Plant Breeding has begun a cooperative timothy growing test with the farmers of Jefferson County. Improved timothy seed will be furnished by the College. The Department of Plant Breeding is now prepared to distribute to interested farmers, some new improved strains of timothy seed, and is planning to furnish some new varieties of wheat for next year’s seeding.
The Home Economics Department rented the house on Reservoir Avenue, previously occupied by Mr. Tailby, and now to be known as the Home Economics Lodge. This house has been repainted and papered and slightly remodeled, and is to serve as a laboratory for the department to demonstrate the principles of simple house decoration and also to enable groups of students to solve problems in household management, in the preparation and purchase of food, and various other living problems.

The Department of Animal Husbandry has recently purchased eighteen colts which will be used for instructing the students in stable management and fitting horses for sale. The colts will be put into condition and sold at the annual live stock sale of the department during Farmer's Week.

With the increasing use of gas tractors for plowing in the great wheat growing areas of the west and northwest the eastern farmer is beginning to ask if good plowing by power is possible on his farm, and if so will it pay him to purchase any one of the gas tractors now on the market? In order to provide an opportunity for farmers to form their own judgments on the first question the department of Farm Mechanics arranged for a demonstration of power plowing on the college farm. A field about 100 rods long and 30 acres in extent was selected. Part was in sod and part in corn stubble; part of the sod was wet, sticky black gumbo soil, part fine sandy loam and part slippery, wet clay. The corn stubble was a stony loam and as will be seen from the photograph quite hilly, altho the picture does not adequately indicate the slope as the steepest, shown at the left, was estimated at about 25%.

The demonstration served to convince even the most conservative that it is possible to do really good plow-
The problem of what a gas tractor must do in order to be a paying investment on the average New York farm was very carefully studied in a thesis prepared last June by H. H. Garner under Prof. Riley's direction. This thesis may be consulted at the library.

The college did not purchase any one of the tractors demonstrated but the department of Farm Practice has retained one for further trial and is now using it with very good success in doing the fall plowing on the college farm.

* * *

R. J. Gillmore, formerly assistant in Biology, has received an appointment as Professor in Zoology in the Western Reserve at Cleveland, Ohio.

* * *

Professor Montgomery has recently compiled some interesting statistics showing the previous location and experience of students taking the course in Farm Crops. Of the 150 students in the course, 50 per cent. are from the city, 15 per cent. are from the city but have had some farm experience, while but 40 per cent. come from farm homes.

In a large map of New York State are inserted pins which show the location of each student. A veritable forest of these pins appear around New York, Rochester, and other large cities, while thru the rural districts, the pins are thickest thru the Mohawk valley and around the Finger Lakes. In the great section of the state lying north of the New York Central Lines, the pins are few and far apart.

Ten years ago, 90% of the students in "Farm Crops" came from farms; today but 40% are from the country. These figures show that great as is the increase in registration of students from the rural districts, the increase in city students is growing even more rapidly.

Professor Montgomery feels that that while the boy from the up-to-date farm has a great advantage over the city boy, the latter on the other hand, is often a better student than the boy from the poorly run farm because he has less to unlearn.

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**FORMER STUDENTS**

'92, B.S.A., '93, M.S.—Fred W. Card was born at Sylvania, Bradford Co., Pa., in 1863. The early part of his life was spent on his father's farm. He attended the common schools until he was 14. At that age he entered the Mansfield State Normal School from which he graduated in 1880. He taught three years in the public schools and secured a permanent teacher's certificate. He then took a course at Allen's Business College in Elmira, after which he spent five years in gardening and small fruit growing.

In the fall of 1885 he entered Cornell University. He completed the regular course in Agriculture in three years, receiving the degree of B.S.A. in 1892. He was then granted a fellowship and remained for graduate work the following year, receiving his Master's degree in 1893. He was appointed assistant
in horticulture at the Cornell University Experiment Station before his fellowship expired, but resigned in a short time to take a position in the University of Nebraska in September, 1893. He held the title of Associate Professor of Horticulture at that institution but was in full charge of the Department. After five years in Nebraska he became Professor of Horticulture at the Rhode Island College of Agriculture and Mechanic Arts, and in 1901 Professor of Agriculture as well. He remained at Rhode Island nine years, resigning in 1907 to engage in actual farming on the farm where he was born. Upon being asked his reasons for leaving Rhode Island, he said: "I had always wanted to get where I could make myself a home. That, one cannot do who works on a salary and is liable to be changing from place to place at any time. I also grew tired of the personal jealousies and bickerings that are constantly creeping into that kind of work. I did not enjoy working under the direction of other men as a rule, although there were two or three exceptions. The time came when it was necessary to make a change from Rhode Island and it seemed to be the right time to make the jump to the farm, toward which I had been looking so long. It has been up-hill work here but I have no desire to go back. If the Rhode Island position were open to me today, I would not take it, though there might be positions which would be a temptation, of course. Some college and station work is good but a lot of it is not and I do not care to be constantly subjected to the public criticism which every station worker in agricultural lines must meet."

'98, B.S.A.—Prof. Gillmore, for some time President of the College of Agriculture of Hawaii, has accepted a position as head of the Agronomy Department at Berkeley, Cal.

'99, A.M., '00 Ph.D.—Wilhelm Miller, formerly Associate Editor of the Encyclopedia of American Horticulture and for several years on the editorial staff of Country Life in America and the Garden Magazine has recently gone to the Illinois Agricultural College as Professor of Landscape Gardening. His work is largely along the lines of bettering horticultural and landscape conditions throughout the state.

'99, B.S.A.—D. B. Clark of Leroy, N. Y., was a recent visitor at the college. Mr. Clark has recently returned from the Philippines where for six years he has been engaged in teaching work in the Island Schools.

'01, B.S.A., '04, A.M.—Arthur G. Ruggles, assistant professor of entomology in the University of Minnesota and a former student of Professor Comstock has been appointed entomologist of the Commission for the Investigation and Control of the Chestnut Tree Blight in Pennsylvania. Professor Ruggles has obtained a year's leave of absence from Minnesota and is going to Philadelphia at once to take up his duties.

Mr. Ruggles spent a few days in Ithaca while on his way.

'05, B.S.A.—Geo. Wendell Bush for a number of years manager of the Arden Dairy Farms at Harriman, N. Y., has left that position to take charge of the recently organized Farm Bureau of Oneida County. His headquarters will be at Utica.

'05, Sp.—F. H. Cardozo is located at the Agricultural and Mechanical College of Florida at Tallahassee. Mr. Cardozo has charge of Agriculture and Botany.

'06, W. D.—Earl W. Brown, formerly in charge of the bottling of the famous "Brookside Milk" at Newburgh has charge of the Bottling and Pasteurizing Departments of the Sheffield Farms, Slawson Decker Co., at New York City.

'07, Sp.—James H. Peterson gives his present address as Wakiawa, Oahu, Hawaii.

'07, Agr.—E. W. Thurston is instructor in Agriculture at the Lowville Academy.

'09, B.S.A.—M. A. Travis is at present doing bacteriological and chemical work in conjunction with milk and cream testing. He has
recently taken this position with the Detroit Chemical Co., Detroit, Mich. '09, B.S.A.—R. L. Rossman is harvesting a big corn and oat crop on his ranch at Bancroft, Iowa.

'09, Sp.—Mr. Ernest Potts has recently purchased a fine fruit ranch at Modisto, California.

'10, B.S.A.—Dr. Harding of the Geneva Experiment Station has accepted a position as head of the Dairy Industry Department of the University of Illinois.

'10, B.S.A.—James Rutherford was in town over the 12-13th.

'10, B.S.A.—K. B. Lewis is in the Bureau of Pomology of the United States Department of Agriculture.

'10, B.S.A.—The wedding of Herbert L. Sanford and Miss Nellie Dougherty of Lansing, N. Y., took place on June 26. Mr. and Mrs. Sanford are now residing in Washington, D. C., Mr. Sanford being in the employ of the Bureau of Entomology.

'10, Sp.—G. U. Tiffany. Announcement has just been received of the marriage of Mr. Tiffany to Miss Ada Meyers of Lisbon, Iowa, on May 18, 1912. Mr. Tiffany is in charge of agricultural teaching in the Pine Island Public Schools, Pine Island, Minn.


W. P.—Gustave Walters is in charge of the Poultry department of the Johnston Stock and Farming Co., a land developing company situated at St. Paul, Minnesota.

'11, M.S.—Mr. E. L. Hsieh is now connected with the Department of Agriculture and Forestry of the Republic of China, with headquarters in Peking. He is particularly identified with the Bureau of Editing and Translation and has to do largely with the agricultural library. After leaving Cornell, Mr. Hsieh went to Germany, with the expectation of spending a year and a half or two years studying agricultural conditions, taking work in some of the universities, but at the time of the revolution in his native land he was recalled.

'11, B.S.A.—Miss Grace Bennett is successfully conducting a Tea Room in Washington, D. C. Miss Bennett also has charge of the woman’s page of the Tribune Farmer.

'11, B.S.A.—T. E. Elder was in town the week of Nov. 6th on his way to Virginia. Mr. Elder is in charge of the farm of the Mt. Hermon Seminary.

'11, B.S.A.—Miss Lydia Humphrey, has an excellent teaching position in Atlantic City, N. J.

'12, Ph.D.—G. R. Hill, who took his Doctor’s degree in Plant Physiology this fall, has gone to the Shaw Botanical Garden at St. Louis, Missouri, where he will be associated with Dr. Duggar in botanical research.

'12, Ph.D.—R. J. Evans has been appointed to a position with the Utah Agricultural College.

'12, M.S.A.—Mr. Alfred Atkinson has resumed his duties at the head of the Agronomy Department of the Montana Agricultural College.

'12, M.S.A.—Mr. H. H. Vinall has returned to the Plant Breeding Department at Washington, D. C., where he will resume his duties as Assistant Agrostologist.

'12, B.S.—George Butler and A. H. White, last year’s Business Manager and Editor of the Countryman respectively, and Stanley White were in Ithaca for the Dartmouth game.

'12, B.S.—Miss Mildred Dudley has succeeded Miss Humphrey in her former teaching position at Corinth, N. Y.

'12, B.S.A.—James Kraker is with the fertilizer plant of the American Agricultural Chemical Company at Wilmington, N. C.

'12, B.S.—Edwin P. Smith, alumni notes editor of the COUNTRYMAN last year, is very busy managing a farm at Oxford Depot, N. Y. Mr. Smith’s work this fall has been largely along the lines of pomology, having set about 40 acres of fruit within the last few weeks.

'12, Sp.—Mr. W. A. Salisbury is in charge of a large Holstein herd on the Brotherton Farms at Waterville, N. Y.
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<tr>
<td>GLOVES</td>
<td>$1.00</td>
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<td>SHIRTS</td>
<td>1.00</td>
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<td>UNDERWEAR</td>
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<td>RAIN COATS</td>
<td>$5.00</td>
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<td>SUITS AND OVERCOATS</td>
<td>20.00</td>
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<tr>
<td>HATS AND CAPS</td>
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Chicago
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These publications include the annual Register, for which a charge of twenty-five cents a copy is made, and the following publications, any one of which will be sent gratis and postfree on request:

1. General Circular of Information for prospective students;
2. Announcement of the College of Arts and Sciences;
3. Courses of Instruction in the College of Arts and Sciences;
4. Announcement of Sibley College of Mechanical Engineering and the Mechanic Arts;
5. Announcement of the College of Civil Engineering;
6. Announcement of the College of Law;
7. Announcement of the College of Agriculture;
8. Announcement of the Medical College;
9. Announcement of the New York State College of Agriculture;
10. Announcement of the Winter-Courses in the College of Agriculture;
11. Announcement of the New York State Veterinary College;
12. Announcement of the Graduate School;
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ITHACA, N. Y.

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L. H. BAILEY, Director.

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The Rumely Oil Pull Tractor carried the day at Winnipeg. Gold and Silver Medals and Sweepstakes fell to the Oil Pull.

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<table>
<thead>
<tr>
<th>OIL PULL TRACTORS</th>
<th>Nearest Competitor in Class</th>
<th>Nearest Competitor in any Class</th>
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<tbody>
<tr>
<td>Total Points</td>
<td>449.75</td>
<td>415.45</td>
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<td>Economy Brake Test</td>
<td>175.8</td>
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<tr>
<td>Maximum Brake Test</td>
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<tr>
<td>Plowing Contest</td>
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<tr>
<td>Fuel cost per acre actual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winnipeg prices</td>
<td>33.7c</td>
<td>39.5c</td>
</tr>
</tbody>
</table>

Oil Pull scored highest in economy brake test, maximum brake test, plowing test, quality of plowing, possible distance traveled without replenishing water or fuel, overload capacity and total points. Oil Pull received perfect score for brake h. p. hours per unit of fuel and drawbar h. p. hours per unit of fuel. The Oil Pull Tractors finished every test in perfect condition.

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Nickel Silver absolutely will not—can not—rust under any condition. We guarantee it.

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Cream Separator

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LARGEST CAPACITIES
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Has more exclusive patented features of merit than all others—Has all the desirable points that can be put into a cream separator.

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**THE CO-OP**

Ithaca, N. Y.
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January, 1913

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Annual Meeting of the Western New York Horticultural Society.  Dudley Alleman

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WHAT IS HORTICULTURE?

By L. H. Bailey

I AM asked for a definition of horticulture; but I cannot define it. I can only describe it. Horticulture represents a group of human affairs; and as all affairs interlock and overlap in their human relations, so is it impossible to set up formal boundaries. We can not do better than to define it by the old way of naming the subjects of which it is comprised, without attempting to define those subjects themselves. Horticulture, then, is the growing of fruits, flowers, and vegetables, with as many of the scientific facts and practical applications and human ideals, as any man or woman cares to add thereto. This is the popular understanding in North America, and since we cannot change this understanding we may as well accept it.

When there were no plant-breeders known as such and when botanists carried a high disdain of work that may be applied, horticulture took to itself the breeding field and much of the plant physiology field as it relates to the arts of life. It is good testimony to the freedom of the subject that it took the new comers in. It may not have gone very deep, but it welcomed new points of view. For every related subject that is dropped, every remaining subject becomes deeper and more intense.

What horticulture shall comprise in a college organization is a question by itself, determined by the particular form of administration in a given institution and by the means and men at disposal. For the best efficiency in teaching and research, the subject should be divided into several parts practically or wholly independent; but even then it may be well for any organization to associate them into one administrative group to prevent duplication, to use the equipment economically, and to forestall inharmonious teaching in very closely associated work. In this case, and I hope this may be the development at Cornell, the name Horticulture may still be retained to designate a group association.

There is no end to the horticultural field any more than to any other field, either in farming or in teaching. There is abundant growing room for men and women; and the horticulturist places his hands on some of the choicest products of the earth.
PROBLEMS OF THE FRUIT GROWER
By Lloyd S. Tenny
Hilton, N. Y.

THE average fruit grower is conducting his business primarily from the standpoint of making it pay. We will grant that there are fine opportunities on the farm for recreation and for the pleasures that come from books, magazines, and other sources of entertainment and learning. The primary object of the farm, however, is to make a living for the owner and his family. The problems, therefore, that are of vital interest to the farmer, are those which affect either the size or conditions of his crop, or the financial returns when his crops are sold.

THE PROBLEM OF THE FARM EXPERT

In the past we have realized that our great problems have been connected with the producing end of the business. There are still great problems which confront the fruit grower, who desires to produce annually large crops of fancy fruit. To this end our colleges and experiment stations maintain a force of scientific investigators who study the various plant diseases and insect pests, working out methods of control and advising the fruit grower when to spray and with what mixture. These things are important and are the basis of all successful fruit growing. In fact, the diseases and pests are so numerous and can be controlled only by such systematic and thorough methods of spraying, that the problem is getting bigger than the average farmer can handle by himself and the question for him to solve is how he may secure the inspection and advice of a competent expert, who knows from first hand observation the conditions in the particular orchard under discussion. To this end there are being developed various plans of Fellowships, Scientific Experts, and Farm Bureaus, which aim to supply this scientific knowledge in one way or another to the individual farmer. One of the great problems before our farm people today is to work out the most successful method of securing this scientific yet practical advice. No doubt different methods will be used in different places; the problem is for the individual farmers in any district to have the needed information readily available.

THE PROBLEM OF SECURING BETTER FRUIT BY THINNING

Too much attention in the past has been given by the fruit growers to securing large yields. Possibly a better statement would be that too little attention has been given to the production of fine quality. A large yield is something in itself always to be sought after, but a large yield with poor quality is a distinct drawback. Better have, if necessary, a small crop with fancy fruit, for then the reputation of the fruit will be maintained and a more active demand for that fruit will be secured. Thorough spraying is the basis of good quality, yet it is doubtful if the average grower can spray with sufficient thoroughness to secure a uniform grade of fine fruit. This applies especially to the eastern apple growers who have the large spreading trees found in the old orchards. A method which can be used, however, to secure better quality in the harvested fruit is that of thinning the fruit during the summer months. Some of our best fruit men have realized for some time past that there were distinct advantages in thinning fruit and have practiced it. If the thinning operation is carried along during the summer months or even well toward harvesting time it offers an opportunity to discard much, if not all, of the poor fruit on the tree. When a tree is overloaded, it is impossible to secure the proper size and color without thinning. Some growers maintain that it is impracticable to put ladders into the trees and do a thorough job of thinning. That it is practicable on an
average farm has already been determined. It is a problem, however, for the farmer to arrange his labor and other work so that this additional work may be accomplished.

MARKETING PROBLEMS

But by no means are all the problems solved when a large crop of fine fruit has been grown. We are beginning to realize more and more that the fruit in itself is of little value to the grower; it is only valuable as it may be converted into money. This is a marketing proposition. With the development of our great railroads, the increase of cold storage facilities and refrigerator cars, and with the resulting wider distribution of farm crops, this problem of marketing becomes a more and more difficult one. It is now realized that the selling of the farm produce is a distinct branch of agriculture, separate and apart from that of production. Without question the great problems of the fruit grower of today lie along this line of his work. That individual or community will be successful largely in proportion as the marketing problems are solved. Unfortunately, too, this is a branch of agriculture which is receiving almost no attention from our Experiment Stations. The farmer must work out his own salvation along this line. Co-operative marketing has been the solution of this problem in some sections. Is this practicable everywhere? If not, what will take its place?

There must be proper distribution of a crop and how may this be secured without cooperation? What is the best method of packing and selling a crop of peaches or apples from a small orchard in a district where orcharding is not the principal industry? How much waste is there in a barrel of apples after it leaves the farm before it is sold from the grocery store? These and many more are the questions that are of great interest to many of our fruit growers over the state. The greatest problems before our growers today lie in this field of converting their farm produce into cash.
IN MY judgment there are three important items to be considered in pear culture, first the soil, second the selection of trees and varieties, and third management.

It has been demonstrated that the pear succeeds best on a clay loam with a clay subsoil, although it will do well on a gravelly loam with a clay subsoil. On the lighter sandy soils, or on peaty or black muck soils the orchard will not do well. On the former the trees are more susceptible to disease, especially blight, while on the latter they tend to an unhealthy growth and winter injury, and the fruit is of an inferior quality. If the orchard does not have good natural drainage, it should be underdrained, because pear trees will not thrive in ground that is cold and wet.

Never locate an orchard on low land but select a situation where there is plenty of sunshine and free circulation of air, as all trees require sunlight and ventilation to mature the wood and ripen the fruit.

The Bartlett is one of the standard varieties of pears and has for years been grown very profitably in most parts of the state. It is, however, more susceptible to blight than many other varieties, but this can be largely controlled by timely elimination of all blighted limbs as soon as they appear. Close observation is necessary because once established in the orchard, blight is apt to spread rapidly. The cutting should be done below any signs of blight on the limbs and the diseased portion should be burned immediately.

The same will apply to Clapp's Favorite which is also a profitable variety. It is a large summer pear and although a good shipper is especially adapted to local markets.

The Seckel is one of the best and most profitable pears grown. It is best adapted to gravelly or sandy loam soils. It does not blight seriously and the tree is one of the hardiest.

The Sheldon is a pear of good quality and a good seller but the fruit is liable to drop prematurely and, therefore, can seldom be grown with profit. It is somewhat susceptible to blight.

The Bosc is one of the best varieties both as to quality and commercial value. The tree is a crooked and irregular grower and should be top-worked on some strong growing variety. Do not use Kieffer stock, however, as it does not make a good union and decay is liable to set in. White Doyenne seems very good as it makes a healthy union. Sheldon or Boussock are also good. It is not as productive as some other varieties. It does not require much thinning as the fruit generally grows single and not in clusters, as do most other varieties. This variety is worthy of more extensive growing.

Winter Nellis is one of the best and most popular winter varieties, as the fruit is of the highest quality and is used largely for dessert purposes, therefore commanding a high price. It is a crooked grower like the Bosc and should be similarly top-worked. It is very productive and often requires thinning. The tree is very hardy and not as liable to blight as many other varieties. The above varieties should all be grown on standard stock.

The Anjou, the noblest Roman of them all, succeeds best as dwarf, budded on Quince stock. The tree is a good, strong, healthy grower and very productive, succeeding best on a clay loam. The fruit, when well grown and properly handled, commands the highest price on the market. It is a late autumn or early winter variety, used largely for dessert purposes. It has, however, a serious drawback in that the fruit is liable to be blown off by the heavy September winds. This is due to the fact that the Anjou is a
large, short stemmed variety, growing on spurs. In some years the losses will be very heavy. It does not drop of its own accord as does the Sheldon or Columbia.

We now come to the preparation of the land for planting. The soil should be thoroughly worked the year before setting, and the ground should be as near the natural level as possible, so that the trees may be set at a uniform depth. This is very important. When setting, all surplus and damaged roots should be trimmed off, and the tops should be headed back. The heading back should be about equal to the trimming of the roots. I head back to one or two buds knowing that the remaining buds will push forth stronger than if more are left.

Care should be taken not to plant too deep. Two inches below the collar or union for dwarfs and even with the collar for standards is sufficient. There is nothing gained in planting deeper as the roots will eventually come to the surface in seeking plant food.

The distances in planting depend upon the variety and the care given the trees. If they are annually headed back, as they should be, the result will be larger trees and it will be necessary to give them more room than if this method were not used. With the system that I follow the distances should be for the standard varieties named, twenty-five feet each way. For dwarfs fifteen by twenty feet is sufficient.

The land in the young orchard should be thoroughly worked. This can be done by planting to some hoed crop. If the fertility of the soil is such that it will produce a good farm crop no manure or other fertilizers need be applied for the first few years, after which the ground should be enriched. For this purpose I prefer well rotted barnyard manure. What fertilizers are best and what quantities are to be applied will depend obviously upon the needs of the trees.

In pruning the orchard, the trees should be trimmed systematically, according to the form that the grower has decided upon. I prefer the pyramidal form and trim to a leader. This is done by cutting the lower branches to four or five buds, those higher a little shorter and so on to the leader which should be left longer.

The person who trims should be able to tell what to cut, how to cut, why he cuts, and the probable effect of his trimming upon the tree.

The cutting back and thinning out should begin with the planting of the orchard, and must continue annually, to obtain the highest results. Whether this is done closely, must depend upon the variety and the vigor of the tree. Some trees have a tendency to set fruit more than others. It is necessary to watch the orchard and on trees so disposed the fruit spurs should be cut off; otherwise the tree will overbear and becoming exhausted will go into decline.

Trimming should be done during the dormant season which, in Western New York, is between November first and March first. No trimming should be done after the sap starts, as the removal of limbs after that time reduces the capital of the tree, and consequently, its vigor.
If a tree has become stunted and exhausted, from overbearing or other cause, it can, if not too far gone, be revived, by cutting back into the old wood and allowing the tree to make a top of new wood. I have done this repeatedly with success.

The orchard should be kept in thorough cultivation during the growing season, but this should cease about the first of September to allow the tree to ripen its wood. Cultivation has two objects: First to conserve moisture by keeping a fine mulch over the surface of the ground; and second, to liberate the plant food and make it available for the trees.

Although I approve of this method of cultivation as the safest, I recognize the fact that pears may be grown successfully and profitably in sod. It is, however, essential, in this form of pear culture that the grass be kept trimmed as closely and carefully as on a lawn, either by mowing it often, or by pasturing it with sheep or hogs. It is also necessary that the fertility of the soil be maintained by top dressings of barnyard manure, or other fertilizer. This is demonstrated on my farm, where I have a thrifty and profitable orchard, which has been in sod for thirty years. It is very productive and the fruit is of the highest quality, although the orchard is forty-five years old, and is made up of dwarfs, as well as standards. The trees are still vigorous and healthy.

Nearly all kinds of pears should be gathered at least one week before they naturally ripen on the trees, as pears allowed to ripen upon the tree lose much of their substance and quality.

In selling, the fruit grower should carefully study the conditions of the different markets, their requirements, the packages most in favor, and also ascertain the name and address of some responsible house with which to deal. He should pack his fruit honestly; it should be put up in a strong, attractive package and marked for what it is, and nothing else. If he has carefully done this he is in a position to realize the most for his crop, and will deserve it. It is carelessness in culture, a lack of knowledge for the wants of his trees and thoughtlessness in handling and marketing his crop, that accounts for most of the failures.
THE DEVELOPMENT OF THE PEACH INDUSTRY OF NEW YORK STATE

By E. L. Markell
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The beginnings of the commercial peach growing in New York State date back to the early part of the nineteenth century. Among the earliest plantings recorded is that of a small orchard of about a dozen trees set out in Monroe County in the neighborhood of Rochester in the spring of 1817. These were all seedling trees of the Royal Kensington variety. This orchard and others that were soon planted near it grew so vigorously and yielded such abundant crops, that the growing of peaches for marketing purposes rapidly developed. By 1825, the fruit was so abundant, and the marketing facilities were so poor, that many times the growers would throw the peaches from their market wagons into the river, rather than sell it for less than twenty-five cents a bushel. This rather discouraged the growers, and plantings decreased for a number of years. A demand for this fruit had been established, however, and the public had to be supplied with it, and by 1850 the peach was commanding in ordinary seasons from two to three dollars a bushel. These profitable prices naturally resulted in a renewal of the industry, and by 1853 some of the growers between Rochester and Lake Ontario had orchards of upwards of a thousand trees. It is recorded that in the fall of 1854 about 40,000 baskets were shipped out of Charlotte alone, chiefly by boat. During the season of 1859 over 80,000 baskets of peaches were shipped from Rochester by railroad. By this time the natural enemies of the peach tree became very troublesome and threatened to exterminate the industry. The "yellows" had been introduced, it is said, in nursery stock from New Jersey, and the borers and plum curculio had also made their appearance gradually and almost unnoticed. They now came forth with all of their strength, and the records of peach growing for the next forty years are chiefly of struggles against these obstacles. New sections of the state were developed as peach growing centers from time to time, and for a while, each one appeared to be immune from the attacks of insects and disease, but within a few years, they too were over-run, and it was only the constant demand and the high prices paid that kept the industry from dying out. The improved methods of orchard management so widely adopted during the past generation, has again put the industry on a firm basis.

The Census of 1910 records a total of 2,457,187 peach trees of bearing age in New York State. This shows a slight decrease since 1900, but when we consider that there is almost an equal number of young trees not yet in bearing, we are forced to conclude that the industry is decidedly on the increase at the present time. Over 66% of the trees and 73% of the crop is produced in five counties, as follows: Niagara, Monroe, Ulster, Orange, and Wayne. Niagara takes the lead with a production of about 30% of the total crop of the state.

The peach is undeniably one of the most profitable crops grown when planted under favorable conditions. Climate is the chief limiting factor to its productivity. The peach is rather sensitive to cold, and it is not a sure crop in regions subject to extreme winter conditions, or to late frosts in the spring. The most favorable localities in this state are those in close proximity to large bodies of water, which tend to moderate the extremes of temperature. Thus we find that almost two-thirds of the peach orchards of the state are located along the shores of Lake Ontario. The remainder are located chiefly in the Hudson Valley or in favored spots near inland lakes.
The peach generally comes into bearing the third year after it is planted, and profitable crops may be expected by the fourth year. The production steadily increases until the tree is ten or eleven years old, when the average yearly yield should be three to four bushels per tree, and then the yield gradually falls off. If an orchard is given the best of care, it ought to yield profitable crops until it is 18 or 20 years old. Under ordinary conditions, however, many of the trees begin to succumb to the attacks of borers or disease at the end of ten years and it is not profitable to keep an orchard longer than 13 to 15 years.

No fruit responds more readily to good care and management than does the peach, and no fruit goes down more rapidly if it is neglected. The peach will thrive on almost any well drained soil, but it prefers the lighter types, such as the sandy or gravelly loams. The popular belief that the peach is well adapted to poor soils that are not fit for other crops is erroneous. The soil should be rich and well supplied with humus. A clover sod, when turned under, makes an ideal soil for the young peach tree, if it is not too rich in nitrogen. If clover sod is not available, about ten tons of manure per acre, turned under in the spring, will serve the same purpose. Either of these should furnish plant food enough for the trees until they come into bearing. After the tree begins to bear, it generally needs liberal applications of potash and phosphates, but all of the nitrogen required may be secured from leguminous cover crops and barnyard manure. The condition of the trees should be the chief indication of the need for this element. If the foliage begins to grow pale yellow, and there are no borers nor disease present, it is a safe indication that the trees need nitrogen. Too liberal applications will result in too luxuriant growth at the expense of fruitfulness.

The orchard should be carefully pruned and sprayed every spring. The fruit should usually be thinned, and especially if the crop is heavy. It should then be intensively cultivated
THREE YEAR ELBERTA PEACHES SHOWING GOOD CULTIVATION.

until about the middle of July when the cover crop should be sown. Thorough cultivation is one of the most important factors in the growing of peaches. The conservation of water for the peach tree is so essential that some of the growers cultivate right up to the time the fruit is picked in seasons of a heavy yield.

The most important consideration of the prospective peach grower should be the selection of varieties. He is generally tempted to plant just what the majority of peach growers have planted, without allowing his own judgment to influence him at all. It can not be denied that the varieties most largely grown at the present time are not as high in quality as they should be. They are so widely grown, however, that they have become well known in the markets, and in consequence, there is a far greater demand for them than for those of higher quality. The white fleshed peaches, as a class, are superior to the yellow fleshed, but there is an unreasonable popular prejudice which in most markets causes the yellow fleshed peaches to sell at from 15 to 20% advance over the white fleshed. The public is gradually being educated, however, and it is slowly beginning to demand varieties of higher quality.

J. H. Hale, the Peach King, made the following remarks at a meeting of the New York State Fruit Growers' Association some years ago: "The yellow peach is usually of low grade. As consumers come to appreciate fine table peaches, they want the higher grade white fleshed peaches, and will pay more money for them. When I first planted my orchard in Georgia, I foolishly planted 60,000 trees of Elberta. Since then, I have planted white peaches only. In Connecticut, we are planting white peaches almost entirely."

There are a great many people in our cities who desire a better peach than Elberta. While the Elberta has the shipping qualities that enable it to withstand rough treatment and long shipments, it is not a good enough peach to warrant its being grown exclusively, and thrown upon the market in such quantities.

The following list of varieties recommended for commercial planting in New York State has been worked out with considerable care, but thorough investigations should be made regarding their adaptability in given localities, before they are planted. The varieties have been arranged in the approximate order of ripening:

- Carman, white fleshed;
- Saint John, yellow fleshed;
- Champion, white fleshed;
- Early Crawford, yellow fleshed;
- Niagara, yellow fleshed;
- Elberta, yellow fleshed;
- Smock, yellow fleshed;
- Stevens Rareripe, white fleshed.

The following list of varieties of high quality makes a good succession for planting in the home garden:

- Greensboro, Carman, Champion, Early Crawford, Niagara, Chair's Choice, Belle of Georgia, Stump, Late Crawford, Hills Chili, Stevens' Rareripe.
AN OLD precedent was shattered this year when the Western New York Horticultural Society held its regular winter meeting in Rochester, December 11, 12 and 13. In the past the meeting has been held in January, shortly after the time of the New York State Fruit Growers' Association. The latter organization will meet this year January 15, 16 and 17.

The meeting was well attended by old and experienced fruit growers and the program was very well planned. Every speaker was an authority on his subject and the practical nature of the addresses was a feature of the session. President W. C. Barry of Rochester delivered the opening address Wednesday morning, welcoming the old members back for another year and commenting upon the number of new faces in the audience before him. He was followed by Professor P. C. Steward of the Geneva Experimental Station who spoke on plant diseases. He stated that the apparent slowness of the plant pathologists in investigating new fungus diseases was due to lack of funds rather than lack of inclination, and that if the wherewithal were provided they would gladly "tackle" some of the serious problems now confronting the fruit grower.

In the afternoon Dr. W. H. Jordan, Director of the Geneva Experimental Station gave an address on soil fertility. He was followed by Professor C. S. Wilson of the Department of Pomology who discussed the thinning of apples. He spoke of the increasing demand for better quality in fruit and recommended thinning as one of the best ways to accomplish this end. Mr. Elwell Baker of Forest Lawn treated the subject of cover crops. Rye and vetch, he said, made an ideal cover crop, as they grow during the winter, furnish large amounts of nitrogen and humus and decay readily.

Mr. C. K. Scoon of Geneva closed the lectures of the day with a lecture on the mistakes he had made in twenty-five years of cherry growing. He recommended the Mazzard stock and urged fruit growers not to plant cherries closer than twenty feet.

On Thursday morning a symposium on cooperation was held. It was the opinion of all present that if an efficient highly paid business man were at the head of any cooperative association its success was assured. In the afternoon Dean Bailey addressed the convention. He was followed by Professor P. J. Parrott, of Geneva Experimental Station who talked on the apple aphid and allied forms. Dr. L. L. Van Slyke of the same institution spoke on commercial insecticides. Seth J. T. Bush of Morton, then discussed the subject of the possible overproduction of peaches. If all the peach trees in the country, he said, should bear even one-half a crop, the markets would be glutted. As it is, some of the peach growers of the state received very small returns from their crop this year. Extreme dissatisfaction was shown by the fruit growers present, with the very poor service given by the New York Central Railroad during the peach season.

Resolutions were passed condemning that railroad and recommending to the Public Service Commission that a charter be granted for another road thru Western New York to compete with the Central. The last speaker of the afternoon was Mr. George T. Powell of Ghent, who spoke on pear culture and discussed many of the more important varieties.

Friday morning, Professor Donald Reddick of the Plant Pathology Department spoke on the apple scab situation. Milford L. Hakes of Albion gave some of his experiences with the Bartlett pear. In his orchard the trees
were at first planted fifteen feet apart, and for a number of years very poor results were obtained. As a last resort every other row diagonally was cut out. The affect was apparent the following year and the orchard soon became one of the best in that section. Mr. Hakes thinks a large rooting surface is essential to success with this variety.

Besides the addresses one of the most pleasurable and instructive parts of the meeting were the "question box" discussions led by Mr. Edward Van Alstyn of Kinderhook. The way Mr. Van Alstyn brought together the abstruse and often ultra scientific discussions of the plant disease and entomological experts and the intensely practical questions of the fruit growers was truly masterly. The exhibits of fruit and machinery, while not as extensive as at some former meetings, was of the highest quality. A feature was the showing made by David K. Bell of Rochester, whose pears won the five and ten plate displays and most of the single plate premiums. Several of the exhibits of single plates of apples were very nearly perfect, but the packing in the box and barrel exhibits were not up to standard.

The machinery was displayed in the basement of Convention Hall and consisted of the usual display of spray machinery, cultivators, etc. A peach grader based on the two rope principle, attracted much attention from the fruitgrowers and was recommended highly in the meeting by practical men who had used it with success. This, after all, is the best test for a new machine.

Three of the students from the college, R. S. Williams, '13, H. M. Doyle, '13, and J. J. Swift, '14, did the judging. This is a very valuable experience, and one for which the students of the college should be grateful. Not only to the fruit judges, but to any of the students of our institution who cared to be present, did the society offer a hearty welcome. The fact that one came from Cornell entitled him to all the privileges of a member. Thru these columns the writer wishes to thank the society on behalf of the students who were present and say that he knows of no more profitable way for one interested in the science and practice of horticulture to spend a few days, than to mingle with these practical fruit growers, listen to their talks, and set for himself new standards in the way of ideal orchard management.

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**LAND VALUES**

*By Edwin K. Smith*

Fruit Storage Investigator, Victoria, B. C.

"Go West, young man, and grow up with the country."

—Horace Greeley

**IS THE West "grown up?"** What with the dispelling of the bison, followed by the flight and slow extermination of the Indian and with the evolutionary forces that have caused these changes, a person living near the Atlantic is apt to fear for the chances of the eastern youth who today takes seriously the Greeley advice given decades ago. But those fears are not well founded. The West is yet in its infancy and it is sure to be in a healthy growing period for a long time to come. There are yet vast tracts of uncultivated land that has yet laid asleep, waiting to have a chance to smile in vegetative productiveness thru the application of water. There are far-reaching forests that have not yet suspicioned the rush and greed of the sawmill. And there is an incomprehensible mineral wealth west of the Rockies that the miner's drill has never chipped.
A $1,000 PER ACRE APPLE ORCHARD IN THE WEST.

Yet to the young and uncapitalled agriculturist the West often appears to be in a very precocious infancy, far beyond its years. Often this precocity is advanced to such a degree that some parts of the East do not seem to have yet reached maturity when we think of land values. This advanced valuation of the West has come about thru the efforts of the real estate promoters and speculators more than it has thru the production of the land itself. Thus we see bare, uncleared land, eight and ten miles from a shipping point and over a thousand miles from a market selling for from $200.00 to $400.00 per acre. We see city lots selling for from $1,000.00 to $10,000.00 each when they are six and eight miles from actual city settlement and many years removed from the time when they will be visited by paving and building contractors.

It is a most astonishing situation, for the lots will probably never be worth that figure from the production point of view, which is the only sound point of view upon which to base land values. Still property sells readily to eager buyers. The uninitiated would ask, “Why is it?” But to those who have seen the spirit of the western “boom” and have felt the fascinating lure of the real estate game it is no wonderment, for if land is seemingly destined to rise in price investors are not slow in “picking it up,” no matter how high the price nor how low the value. There are not many men who are above taking the unearned increment. In fact, the West is full of men who are spending their life looking out for it.

Consequently we see men paying $200.00 to $400.00 for bare land and planting it out to trees, not that they ever expect to get their money back from fruit returns, but they know that when the orchard is six years old it may be sold for $800.00 per acre and when it is eight years it may be sold for $1,000.00 per acre. Thus the West is growing, but it is a sporadic and unintelligible growth to the young man with small capital and with ambitions for a permanency in establishment.

Let us look to the East and see if it has yet reached its growth. At a recent date the writer had offered to him 620 acres of hardwood land, uncleared, in the most promising region of the Michigan fruit belt, one-fourth of a mile from a railroad station and with the excellent markets of Milwaukee and Chicago right at its door, for $25.00 per acre. The first cost of clearing would be no greater than that
of a tract I saw held in the Okanagan Valley of British Columbia for $400.00 per acre. In New York state I have seen a great deal of land sell for from $30.00 to $75.00 per acre, cleared and ready for business, close to market and but a day's ride from some of the best and largest cities in the world. It was good land, too, but it was sold upon a past productive basis.

In the West land is sold upon a future productive basis. The production is very often hypothetical to a point that makes it unreal and impossible. In time the price of this land is bound to seek a level with its value based upon actual productivity then, but, "we will sell before then."

There is no doubt that more produce can be raised and that fruit trees will make a greater growth on the rich, irrigated lands of the Hood River, Yakima, Wenatchee, Okanagan and many other valleys of the northwest than on the sturdier and older soils of the East. But the East does not know the productive possibilities of its soils for they have not been handled in the past as they should be handled today. Neither does the East appreciate the advantages of its proximity to markets. "Distance" is a sad tale in connection with the western market situation and it should be taken more into consideration than it is when reckoning land values.

But if we are in the real estate game for the sake of speculation there are also opportunities both in the East and in the West. What is being done along this line in the West has already been cited in a previous paragraph. If the buyer pays $400.00 for bare land in the West and at the same time pays $50.00 for bare land in the East, invests the same amount of money in draining and planting in each and after ten years sells the irrigated land for $1,200.00 per acre, what will he have to sell the eastern farm for to make an equal profit? Are eastern orchards worth $150.00 per acre? Can you bring eastern orchards into bearing in ten years?

The last question can not well be answered at present for the graduates of eastern agricultural colleges have not done as much as they might in way of going on the land to show the world its value on a true productive basis. When they do this, as they are bound to do in the near future, the young man will be better able to know where land values are to make the better and healthier growth and then he will be better able to consider the weight of Horace Greeley's well said advice, construed in the present day.

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To John Craig

By Hugh Findlay

He was a friend to Nature's beauty and to Nature's art,
He caught the Nature's message in his soul,
Full of eventful years, he reaped a harvest of kind thoughts,
He lived content and clothed his life with work,
He stepped triumphant and he faced his duty, conquered Fate,
In manly workmanship in field and wood,
Simplicity his moral strong, and manliness his creed,

His conscience clear, his will invincible,
He felt one right, and that to be a brother to all men,
His kindness and his cheer he's left behind,
He mantled his heroic life with love and sympathy,
He planted sunshine where he found a cloud,
And as the constellations gleam so bright before the dawn,
So memories of this good man will live on and on.
THE BUSINESS OF FLORICULTURE

By A. C. Beal
Assistant Professor of Horticulture, Cornell University

THE florists are the most intensive cultivators. In a few handfuls of soil in a flower pot, they are able to grow a plant many times larger than the pot. To accomplish this result, it must be practicable to control the climate, moisture, temperature and, to a large extent, the light. This can only be done practically and successfully by means of greenhouses. This is true in a greater degree in America than in Europe where many commercial flowers are grown in the open.

Not many years ago greenhouse structures were looked upon, more or less generally, as a means for the gratification of the desires of a comparatively few wealthy individuals, or to serve for the growing of ornamental plants of botanical interest but of no strictly economic value. Within twenty-five years or less, this view has changed; and now the construction of greenhouses and the production of cut flowers and plants are regarded in much the same light as the development of a manufactory, for the modern greenhouse establishment is often in its organization and capitalization, and more often in its management, a factory where the forces of nature are utilized to reverse the seasons and convert into wealth the products of the soil.

Forty years ago, greenhouses generally were small structures, probably ten or twelve feet wide and fifty feet long, glazed with small panes of glass, and heated by flues. Some of the more progressive or fortunate growers possessed houses of greater size heated by hot water or steam. The investment compared with average establishments of the present day was quite small. The same is true of the volume of business done in these establishments. It was sufficient, however, for a hard working proprietor, generally of European birth, to make a living and to put something aside for a rainy day.

The methods of culture were crude. It is said that even at Boston, then the leading flower market, it was impossible to secure one hundred roses at any time when that number was wanted. To fill such an order either required notice sometime in advance in order that the plants which were then largely grown in pots or boxes, could be taken into the greenhouses and forced into bloom or it was necessary to send some one to visit all the greenhouse establishments for miles in every direction to gather up a supply. There were few roses to be had before the holidays, and it was regarded as a notable achievement when it was found that varieties like General Jacqueminot could be forced for Christmas. Again, at certain seasons, every one had roses, and the supply was greater than the demand. This latter came about through the practice of some growers who planted their roses in deep beds.

The production could not be controlled under this system. This led to the adoption of the method of growing plants in shallow benches since it combined the advantages of two systems indicated above, thus enabling the grower to have a more constant supply of flowers.

The adoption of the system of shallow bench culture marks the turning point in American commercial floriculture. With it came the increasing demand for long-stemmed flowers. Instead of allowing all the buds on the flower stem of carnations to develop, it became the practice finally to remove all but the terminal bud, so that at the present time carnation flowers should have eighteen to twenty inches of stem.

This change in taste reacted on the methods of greenhouse building, for in order to grow long-stemmed flowers it was necessary to make the greenhouses higher and at the same time afford more light. The developments
in the manufacture of iron pipe whereby it became a staple article of commerce, enabled greenhouse builders to substitute pipe for the heavy wooden posts used for the walls and interior supports. The general adoption of cypress which combines great strength with great durability, led to the reduction in size of the other wooden members of the house. The dimensions of the houses increased as well as the number.

The development of greenhouses has taken two directions, first, the ridge and furrow type; and second, the very large, separate house type. In the former, by supporting the valley gutters upon iron posts seven to ten feet high, and by eliminating the interior walls, it is possible to cover a great area with glass. In the cities it was possible to cover entire blocks, as may be seen at the establishment of Peter Reinberg, in Chicago, where many entire blocks are covered with greenhouses. These ranges are in reality large greenhouses for having no division walls, one crop is grown in the entire area. This great establishment covers between twenty and thirty acres of land, and one cannot but be impressed with the magnitude of the business as he looks over acres of carnations and walks through acres of blooming roses. Under the ridge and furrow system of construction there is apparently no limit to area which can be covered. This is impressed upon the visitor to the establishment of Pochlmann Bros. at Morton Grove, Ill. Here is an establishment, probably as large as the one given above, but composed of two great ranges of houses which are being added to nearly every year.

The separate or detached house has had a remarkable development also. The largest individual house in the United States is 50 x 1350 feet, and 23 feet high at the ridge. Twenty-eight lines of one and one-quarter inch pipe are sufficient to heat the house in the coldest weather—thirty degrees below zero. Houses five, six or seven hundred feet long and thirty, forty or fifty feet wide, are not uncommon. The extreme in width is 172 feet.

One may ask why build such large houses? Are they not difficult to heat and operate? It has been found, for example, that a house 40 x 700 can be heated with eighteen runs of pipe,
whereas a twenty foot house of the same length requires twelve runs to heat it to the same degree of temperature. The greater the volume of air in the house, the less the fluctuation in temperature. This, then, is one of the great advantages of the large house or the series of connected houses.

I have indicated some of these large establishments not for the purpose of boasting upon the achievements of florists, but to point out some of the engineering achievements. In long runs of pipe the expansion of the pipe must be taken care of, the circulation must be economical, and the radiation adequate. All the devices in use in large heating plants, no matter what their cost, if adaptable to greenhouse heating, are employed by the florists. Steam traps and pumps, electric circulators and the various means of improving circulation, and mechanical stokers, are used. It is said that in one large plant the coal is delivered in the coal sheds from gondola cars run upon an elevated track and dumped. The establishments using ten thousand tons or more of coal must use economical methods of handling fuel. The boilers are the largest sizes used in heating work. One to two hundred horse power boilers are very common. Altogether it will be noted that florists have heating plants that rank them among the largest manufacturers of heat.

The foregoing will serve to indicate that a modern greenhouse establishment is in a sense a flower factory. In the United States there are, according to the Census of 1910, 10,614 commercial florist establishments reporting products valued at $34,872,000. The number of establishments increased twenty-one per cent. and the value of products increased $16,113,000 or 85.9 per cent. in the last ten years. The increase for the middle Atlantic division was 67.1 per cent., while the largest increase was in the west south central division, 268.9 per cent. The Pacific division increased 200 per cent.

In New York, the leading state, there are 1398 commercial establishments producing $5,149,000 worth of flowers and plants. The amount of land covered with glass is not known at this time, but in 1899 it was 13,635,440 square feet or 313 acres. This represented an investment of $8,692,939. The value of flowers and plants produced by florists ranked ninth among the important crops of New York State. This represents only the commercial phase of the business. It does not include the value of the ornamental plants grown upon public and private grounds. There is no value placed upon these, but if they could be in-
cluded the amount would be vastly larger. In ascertaining the value of the other farm products of New York, we have first the total value of the fruit or of the vegetables, for example, produced upon all farms in New York. Then we have a classification of the farms into fruit farms, vegetable farms, and flower farms. For these there is a statement of the investment and the value of products. When comparing the status of floriculture with the other branches of horticulture and agriculture, make the comparison from the latter figures so that the deductions may be fair to floriculture.

We have shown something of the development and present status of the business. The business is no longer in the hands of persons of European birth, for the capital is furnished largely by Americans. Large amounts of capital, from $100,000 to $500,000 or more, are invested in some establishments. Business men believe that the business of selling flowers is capable of yielding as good financial returns as any line of commercial work. It has been abundantly proven that a bright, capable florist, with ability to manage a business, can enlist any reasonable amount of capital for launching a greenhouse enterprise. With the continual growth in wealth and population, there is an increasing demand for flowers and plants, and it is certain that no line of horticultural work offers greater opportunities for the young man than floriculture.

VEGETABLES AND THE HIGH COST OF LIVING

Albert E. Wilkinson
Instructor in Horticulture, Cornell University

SO MUCH is heard of late concerning the high cost of living, and in many cases so poor in quality is the produce that is obtained in exchange for money spent, that some discussion of this subject from the point of view of the vegetable industry would be worthy of consideration. This high cost of living, as far as vegetables are concerned, could be reduced somewhat, providing the consumer would look into or study some of the many details, which would have to be taken into consideration, if any form of correction is attempted.

There are at least three ways that could be followed with some chances of success in the reduction of this high cost. First: there does not seem to be any good reason, if the consumer has available land, why he cannot become a producer as well as a consumer. It is possible, by proper and thorough study of the question, for the consumer to plan and obtain the maximum quantity and quality of vegetables from the minimum amount of space. This, however, would require a thorough and understanding study of varieties of vegetables and their requirements, so that not only the best may be selected, but the most desirable from the point of adaptability to conditions under which they are to be grown.

Not only the above should be considered, but some investigations into the sources of where to obtain the most reliable seed would have to be undertaken. Perhaps it would be better to order only certain varieties from one seed house, and certain others from another establishment according as this or that firm has undertaken the more careful selection or breeding of one or more strains of certain varieties.

Some attention should also be given to the advantages of hotbeds and coldframes. It is without doubt a very desirable addition to any one diet to be able to have succulent vegetables to consume out of their normal season. This, of course, is obtained by the use of greenhouses, but the largest majority
of the consumer-producers are not able to afford this expensive luxury. However, the hotbed, which is a simplified greenhouse, is within the reach of practically all small land-owners, being moreover, very cheap as to construction and quite reliable as to results in the hands of the amateur gardeners. Coldframes are even a cheaper form than hotbeds, but they require to be run in a less cold season than the former.

The garden plan itself with the laying out on paper of the small plot of ground will require considerable study and should be accompanied by either some general knowledge of the requirements of each variety, or should be planned by the use of available written material on these points. The Horticultural Department of the New York State College of Agriculture stands ready to help. In this planning, the question of companion and succession of crops should receive a large amount of careful thought, as it is possible by the use of these two methods to obtain the desired results—maximum returns from minimum space.

Second: Providing the consumer has no available space for a garden or does not desire to become a producer, he may, with great benefit to himself and the producers, place his demands or wants in closer contact with the direct source of supply—the farmers or gardeners. This may be brought about by obtaining from the producer a direct shipment of high class, strictly fresh from the field produce, put up in an attractive package and delivered at the door. Or, if the consumer is near enough to the producer, he may take the democratic market basket and journey to the fields, making a selection himself that will suit his requirements. If the gardens or truck farms are not within easy reaching distance, it is often possible to obtain the desired vegetables from the producers when there is a public market in the city or town. It must be borne in mind, however, that the earlier one comes on this market to purchase, the larger the possible selection and the fresher the purchases. The latter method seems to be out of fashion in many of our northern cities. It should be encouraged, for it is the solution in many cases of the problem of high cost of living. Many claim that the markets open too early and that there are very poor transportation facilities at that particular hour of the day. In some cases this is true, but there is not any good reason why this could not be changed.

There is also some dissatisfaction with the class of people that take advantage of the present markets. Of course, this patronizing of the markets by the poorer people is a direct result of the high cost of living, and the search on their part for fresh vegetables at low prices. It seems, if they have been wise enough to take advantage of the lower priced market and thereby reduce the cost of living, that their more fortunate brothers may need to copy the method from them, or have more education on this one point.

Third, the consumers may group together and lump their orders, thereby obtaining the desired fresh produce. The Granges, Women's Clubs, Improvement Societies, Neighborhood and other forms of organization, may have for one of their fundamental functions the massing of the requirements of their members in regard to vegetables, following this by subsequent ordering of these supplies from the large wholesale houses, or more direct from the vegetable farms; and, as the order would in most cases be quite large, make it possible to obtain the vegetables at a lesser price than at retail and attain the object desired.

Whatever form is selected to reduce the high cost of living from the vegetable side, it must be borne in mind that the consumer must perform a certain amount of labor for this outcome, as well as the producer. From a study of the situation on both sides, the consumer and producer are at a point where they would be quite willing to advance to a better understanding of each other's side for the mutual benefit of both.
BEE KEEPING IN MICHIGAN

By R. H. Pettit
Professor of Entomology, Michigan Agricultural College

FOR a long time, Michigan has enjoyed the reputation of being a good bee state. The natural forests of basswood and tulip, and the marshes covered with late-flowering composites were early recognized as favorable to bee culture, and as if to prove it, one finds very many bee-trees scattered all over the Lower Peninsula.

Only a few years ago, a farm was hardly considered complete without a few colonies of bees, and even now, one sees the hives scattered here and there, but gradually the industry is coming into fewer and fewer hands. The total number of bees kept is rather on the increase but the number of apiaries is dwindling. One does not have to look far to find the reason for this change. The really good locations are undergoing the change consequent upon the subjugation of the land. Forests are disappearing—the marshes are being drained, to make ground for celery, mint, onions and all the rest, and gradually the apiaries are clustering about certain centers; then too, the old-school bee-keeper, with his small apiary of twenty to fifty colonies, is losing out. The colonies die from disease and are not replaced. Many practices in vogue when the field was clean, must be abandoned now because of the danger of spreading disease. The shifting of combs must be done with caution if at all, and all sorts of precautions have to be taken now, whereas a few years ago, one could ignore such measures almost with impunity. Further than this, we have come to realize that we can make more honey and also more money by extracting the crop, than by running for comb honey, and the season of extracting is naturally one of danger. There is a constant tendency toward robbing at that time and if the disease is present, some of the bees that get into the extracting-room are sure to get contaminated honey and are likely to carry it home to be fed later to the brood. The danger of contaminating the extracting frames is also to be reckoned with. All in all, it is much easier to restrict disease in an apiary run for comb honey than in one run for extracted. The natural consequence is that the business is gradually falling into the hands of fewer but better read and more careful men.

Michigan raises only a little alfalfa for seed, and therefore the mass of alfalfa raised here is practically useless for honey making purposes, but the practice of mixing red, white and alsike clovers is becoming more common every year. Now we use clover as much as anyone can, and this mixture results in an early honey-flow of the finest quality. The clover, with basswood and raspberry, yields the greater part of the early light-honey flow. It is followed in late summer and autumn by a flow of honey from golden-rod, aster, Spanish needle, and a profusion of marsh flowers which produce an amber-colored honey of rich flavor.

Our great possession and one that we can hardly conceive as ever being exhausted, is the great area of wild raspberry growth in the North. One sees, not acres but almost counties of cut-over lands grown up to tangles of wild raspberry and blackberry, the honey from which is about as near perfection as can be imagined, and the supply seems inexhaustible. To be sure it is a cold place in the winter but dry because of the sandy soil, and the wintering is done successfully in camps or in log-walled cellars, built where plenty of logs are to be had for the hauling.

The favorite race of bees naturally is the Italian. To be sure, many black bees and more hybrids are to be met, but most everyone seems to
agree that Italians are best suited to our conditions. A very desirable strain of Caucasians is beginning to appear, and their trusting nature is to be appreciated after working with hybrids for a time.

In this part of Michigan we miss the buckwheat that is so universally grown in New York, but after all the amber marsh honey sells at a higher figure than the darker buckwheat, even if it is not quite so rich or highly flavored.

We have a state branch of the National Bee-keepers' Association and this branch maintains quite an elaborate system for marketing the crop.

There is some little interest now awakening among the fruit-growers because orchards and small fruits in the vicinity of bees seem to produce more and better fruit due to the offices of the bees in fertilizing the flowers.

This is very fortunate in the interests of peace. Up to comparatively recent times it was with difficulty that the bee men and the fruit men could see any good in each other, the bee men claiming that the arsenical sprays killed their bees, and the fruit men that the bees injured their grapes and peaches. The old feeling of antagonism is now passing with a better understanding of both bees and fruit and many common interests are helping to cement a friendship sufficiently strong to bridge over some little differences.

Once in every ten or fifteen years we have a trying winter. Last year we passed through such a winter and following came a season of excessive swarming. Now that it is over, the bee-keepers up here are looking forward to a period of normal summers, on the theory that it is needed to maintain the general average.

ENGLISH WALNUT CULTURE IN THE EAST

By E. C. Pomeroy

Lockport, N. Y.

OWNERS of country estates and orchardists throughout the United States are just now devoting more and more attention to the culture of the English or Persian walnut. In fact, horticulturists everywhere are tremendously interested in the propagation of this delicious fruit, both from a commercial and an aesthetic point of view.

For many years the English walnut has been cultivated with more than ordinary success in California, but only very recently has a sufficiently hardy variety been found to withstand the severe winters of the northern and eastern states. The late Norman Pomeroy of Lockport, N. Y., while attending the Centennial Exposition in Philadelphia in 1876, noticed a species of tree totally new to him. On investigation, he found it to be an English walnut tree of surprising beauty. It was the fall of the year and the ground underneath the tree was covered with nuts. He propagated young trees from this acclimated variety, feeling certain that from these he would ultimately obtain an English walnut of superior hardiness, capable of resisting the rigors of almost any climate.

He planted these young trees about his residence in Niagara County, N. Y., in the spring of 1877 and they grew steadily, making surprising growth each year until now they stand fully 50 feet high, with a spread to their branches of 40 to 45 feet, and yielding nuts of the finest quality and in great abundance. During the 35 years of growth where the temperature has frequently descended far below zero, they have not had a single setback, maturing even earlier than the black walnut or the oak.

The elder Pomeroy's remarkable success has attracted the attention of nut culturists, horticulturists and pro-
gressive farmers in all parts of this country and Europe. Nut specialists from California came East and examined the Pomeroy trees, and were well satisfied that a hardy variety for the colder states had at last been found.

So promising has the culture of the English walnut in the Eastern and Northern states become, that owners of farms and suburban tracts are beginning to set out large orchards, in preparation for the immense demand that is already being shown for this most edible of all nuts.

It is only a few years ago that the cultivation of the English walnuts for the market started in California. Today they are shipped from that state in car and train loads. To show, however, that the supply does not begin to meet the demand in this country, it may be stated that the United States consumes more than 50,000,000 pounds of English walnuts a year, and that about 27,000,000 pounds of these have to be imported every year.

And when it is known that the price is steadily advancing, it will very readily be seen that the possibilities of commercial success are unusually great.

In California the nut industry is rivalry that of the orange, and even now, there are more dollars worth of nuts shipped from the state per year than there are of oranges. This statement is meant to include all varieties of nuts, although the English walnut figures large in the proportion.

As to planting and cultivating, English walnut trees seem to require no particular soil, but should not be set out where it is low and wet. The trees should be planted 40 to 50 feet apart immune from insect pests, a certain alkali sap which they possess serving to drive away the parasites which are so ruinous to the chestnut and nearly all other fruit trees.

A California grower of English walnuts who recently visited an orchard in western New York declared the specimens which he saw there to be the very finest he had ever seen. "You have a better flavored nut and you have proved beyond a doubt that the variety is thrifty and hardy," were his exact words. This same grower said that his 60 acres of young California trees gave him in 1911 a crop which he sold for $10,000.
The Cornell Countryman

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January, 1913

We are pleased to announce the election of Harold M. Stanley of Syrae-...
The Cornell Countryman

is a great step towards bringing the farmer into closer touch with the consumer. The service will extend over more than 1,435,000 miles of transportation lines, including 233,900 miles of railways, 164,400 miles of star routes, 29,280 miles of steamboat lines, and 1,007,770 miles of rural mail routes. The limit of weight on fourth-class matter is extended from four pounds to eleven pounds, and the postage rate is lowered from sixteen cents a pound to a graduated scale (based on distance) of from five cents to twelve cents for the first pound, and one cent to twelve cents for each additional pound. The country is divided into a series of postal zones in order that those who send packages to nearby points will not have to pay part of the cost of a longer haul.

The parcels post rates are as follows:

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Special stamps have been printed for this service and must be used in all cases. Packages must have the address of the sender written plainly on the outside.

Although new in this country, parcels post is by no means an untried experiment. Every one of the European nations—with the single exception of Spain—has a parcels post system in satisfactory operation. We may therefore feel confident of the success of the American parcels post.

Our first special number of the present college year we have devoted to the field of Horticulture. We have neither hoped nor attempted to thoroughly cover the entire subject but have endeavored to bring together articles which will represent several of the most important branches.

The State of New York stands at the head in floriculture, olericulture, and in the production of fruits adapted to its climate. Fertile soil, favorable climate, and proximity to markets unite to make opportunities along horticultural lines as great in this State as in any State in the Union. Great problems of transportation, marketing and other semi-public questions remain to be solved and rapid development along technical lines in all branches of Horticulture may be expected in the near future. There never were better opportunities for the well-trained horticulturist in the commercial line to produce goods of the highest quality and to market them in the most economical and profitable manner, or in technical work to solve problems of a more or less scientific nature which are ever confronting the practical grower.
CAMPUS NOTES

The second meeting of the 1915 Ag class was very successful and well attended. After a short business meeting, the class was entertained by stunts, given by various members of the class. Then followed a very interesting and helpful talk by Professor C. S. Wilson on “College Habits.” Life, he declared, is a “bunch” of good and bad habits combined. As success in life depends largely on the results of our habits, we should as far as possible eliminate all bad and increase our good habits. To illustrate, the Professor cited the example of Benjamin Franklin, who wrote down thirteen good habits which he desired to acquire. But after attempting to live up to all thirteen at one time, he finally had to give this up and take one at a time.

“While at college,” he continued, “the student should cultivate three habits. First he should acquire the reading habit. An excellent plan is to set aside an hour every day to read good literature. Part of this time should be devoted to lines in which the student is specially interested and part to some other standard literature. Every Cornellian should read the Autobiography of Andrew D. White, in which the development of Cornell is treated. College is an excellent place to start a library, for the student has so many free and valuable bulletins as his disposal.” Secondy, he said, “the student should cultivate the acquaintance of the faculty. Dean Bailey reserves Sunday evening for meeting the students and many other professors have evenings at home for this purpose.” Lastly, “accuracy of thought ought to be acquired and high scholarship attained, because the hard working students are those who succeed in life after they leave college. History shows that men who take the highest places in life are the best scholars.”

* * *

A precedent was established in the College last month on Dec. 13 and 14 when the musical clubs of the college gave two concerts away from town, one in Ovid on Friday night and the other at the Willard State Hospital on Saturday afternoon. The men left on the 6:42 Friday evening and the concert began two hours later. The members were very courteously entertained by the townspeople.

Saturday a pilgrimage was made to the Willard State Hospital. The concert that was given was even more successful than the one of the previous evening. So successful was the trip that the authorities in both places extended a most hearty invitation to come down again next year.

The management has endeavored this year to elevate the standing of the Clubs as a musical organization and put them on a well-established basis. This has been possible through the efforts of the best director we ever had, and through the conscientious work of the members.

The management consists of the following: President, C. W. Barker, ’13; vice-president, E. J. Hoffman, ’13; manager, L. C. Treman, ’14; assistant manager, R. C. Shoemaker, ’14; director, A. Horner, Jr., ’13; leader of

* * *

The Professors and Instructors of the Department of Plant Industry have continued the informal meetings of the Plant Industry conference. This is composed of about 35 members, who meet monthly at the houses of the members. At the December meeting Prof. Gilbert of the Department of Plant Breeding gave an interesting talk on the Chautauqua Schools, showing photos of the place and the work being carried on.

General discussion of the problem of giving city bred students of agriculture sufficient practical work, was earnestly discussed.

* * *

The Department of Forestry has just issued a separate announcement of its work as one of the official publications of the University. This announcement contains more details regarding the five year course than have been published heretofore, and every person who is thinking of taking up professional forestry work at Cornell should get a copy. It can be obtained from Secretary Mann, or from the Secretary of the University, or from the Department of Forestry.

Professor Stone of the Department of Farm Practice, has some interesting data on the recent examinations in Farm Practice. Of the 295 Freshmen who have reported this year to date, 95 were raised on farms, 5 were partly raised on farms, while 195 reported not raised on farms. This shows in a striking degree where the agricultural student of the present day is coming from.

* * *

L. S. Tenny of Hilton, N. Y., a practical fruit grower, who after graduating from the University of Rochester, accepted a position with the United States Department of Agriculture and worked several years on the problem of transportation of fruit, recently gave up his work there to go back to his farm and is now here teaching in the Winter Course.

* * *

Professor C. S. Wilson of the Department of Pomology, was at Rochester on December 12 at the meeting of The Western New York Fruit Growers' Association. During the week of December 16 he attended the meeting of the Lucerne County Fruit Growers' Association in Pennsylvania. On December 31 he attended a meeting of the Society for Horticultural Science at Cleveland, Ohio. He will also attend a meeting of the Virginia State Horticultural Society at Lynchburg, Virginia, on January 8.

* * *

Edwin S. DeLany, formerly business manager of the College of Agriculture, has resigned in order to take charge of the management of the DeLany Amusement Company, and has left Ithaca for Norwich, Conn. The DeLany Amusement Company owns moving picture and vaudeville houses in Norwich, Hartford, Schenectady, New York City and Pittsfield, Mass.

* * *

Professor G. W. Herrick and Professor Donald Reddick, of the College attended a conference of the Oswego Fruit Growers' Association in Oswego last month. Professor Herrick spoke
on "Insect Pests of Fruit," while Professor Reddick gave a speech on "Fungus and Bacterial Diseases."

The Entomology department had an exhibit of insects that are injurious to fruit trees and fruit. A large number of charts and photographs showing the different stages in the development of these insects were shown.

Professor W. A. Stocking, head of the Dairy department, accompanied by six members of the department faculty and 40 or more of the short course students, attended the annual convention of the Western New York Dairymen's Association, held at Syracuse. The departments of Farm Management and Dairy Industry prepared exhibits and materials for a booth at the Dairymen's Show. Butter and cheese made by Cornell undergraduates was entered in the scoring tests.

Professor W. M. Wilson of the department of Meteorology has just returned from a visit to 20 of the cooperative Meteorological stations in the state.

As a result of his visit to Alfred University he recommended that a special Meteorological station be established in connection with the State School of Agriculture at Alfred. If his recommendations are carried out Alfred will have a fully equipped Meteorological station similar to that at Cornell.

He has also recommended a special forecast, frost and cold wave service for the vegetable growers on Long Island. Also a Meteorological station in connection with the Long Island State School of Agriculture.

Professor Fippin of the Department of Soils, spoke at an extension school meeting at Perry, Wyoming County, a short time ago.

Professor Riley of the Department of Farm Mechanics, was in Chicago, December 11-14 investigating the development of harvesting machinery from the old to the new.

Professor Riley, who is one of the Directors of the Syracuse College of Agriculture attended a meeting there December 10.


Mr. Arthur Bernhard Recknagel, who takes up his work in the College of Agriculture beginning February first as Professor of Forestry, comes to this institution with a thorough training and broad experience which will make his work in the Department of Forestry exceedingly valuable. Mr. Recknagel was born in Brooklyn, N. Y., in 1883, and, after preparing for college in one of the leading schools in Brooklyn, graduated from Yale with the degree of B.A. in 1904. He finished his course in forestry at the Yale Forest School in 1906 and immediately entered the U. S. Forest Service. From then until February, 1908, he was engaged as a Forest Assistant in New Mexico, Utah and Arizona on timber sale work in the National
Forests. During the year, 1908 he organized and conducted the work of reconnaissance for the Forest Service, the object of which was to determine with a greater degree of accuracy than had heretofore been done the existing resources of the National Forests, and the preparation of type maps and estimates of standing timber, which would form the basis for future working plans.

When a part of the administration of the Forest Service was transferred to districts in the West, Mr. Recknagel went as Assistant Chief of Silviculture in District 3, with headquarters at Albuquerque, New Mexico. He was promoted to Assistant District Forester in January, 1910, and from that time until October, 1911, was engaged in field work and administrative work in the office of silviculture.

The year from October, 1911, to September, 1912, Mr. Recknagel spent in study and travel in Holland, Germany, France, Switzerland and Austria. During this year abroad Mr. Recknagel accumulated a vast store of knowledge concerning the practical application of scientific methods of forest management and, because of his previous large experience with field conditions in this country, was in a position to concentrate his time on studies which would have a direct bearing on forestry work in this country. The Department of Forestry is, therefore, particularly fortunate in securing a man whose experience and training are so wide and varied.

Mr. Recknagel is now in New Mexico, having charge of silviculture in District 3, and will remain there until he takes up his duties at this college on February 1, 1913.

"The Theory and Practice of Working Plans," a book which is the embodiment of a part of Mr. Recknagel's experience and study, will be issued very shortly by John Wiley and Sons of New York.

GENERAL AGRICULTURAL NEWS

The great Fifth National Apple Show was held at Spokane, Washington, November 11-17, at the Interstate Fair Grounds. There were 20 carload exhibits of fruit and several thousand boxes of less than carload lots in the racks, making more than 2,500,000 individual apples on display outside of plate displays. Among all these apples the judges found only one wormy apple. In all the Northwestern states it is illegal to ship wormy apples and so the growers try to put out what is practically a guaranteed pack.

The discussions in the Fruit Growers Conference centered mainly about the By-Products, Storage and Marketing. The interest shown in the conferences indicate that these phases of the apple industry are coming to be regarded as of more importance than all the rest, although definite information about these is most lacking.
A packing school was also in operation under the supervision of J. M. Carrol of Mosier, Oregon, while Miss Gertude McKay, formerly head of the Department of Home Economics at the Washington State College, lectured on apple cookery.

* * *

Several new laws relating to the taxation of forest land in New York State went into effect recently. These laws give complete exemption from taxation in some cases, and a reduction or limitation of the tax in other cases. In order to get this relief from taxation the land must be used for forestry purposes. It must be planted with forest trees if it is not already well wooded. If it is now covered with brush or with an unsatisfactory stand of timber, it must be under planted; that is, good trees must be planted under the existing growth. If it is already well wooded, it must be maintained as a satisfactory forest.

One of the great objections which many people have raised to giving care to their forest lands is that the taxes take much of the profits. By these new laws the state now guarantees reasonable taxation on forest lands that are managed as true forest properties. The state also furnishes trees from its state nurseries for planting, the trees being sold at the cost of production. It is hoped that the owners of lands which are not well adapted to cultivated farm crops will see their opportunity and will take advantage of this twofold help in making their forest lands more profitable.

* * *

Of all the exhibits for prizes at the Land and Irrigation Exposition in New York, at the 71st Regiment Armory, none aroused such keen competition or such keen interest as the Eastern apples competing for the $750 silver cup awarded for the best exhibit of fifteen boxes of apples grown by a single orchardist or company located in New England, New York, New Jersey, Pennsylvania, Delaware, Maryland or Virginia, each exhibit of fifteen standard boxes, consisting of three varieties, five boxes to each variety, a single variety to each box. Professor H. E. Van Deman, formerly United States government pomologist, acted as judge scoring the apples; quality and condition of the fruit counting 65 points, packing counting 30 points, and the package itself 5 points.

As a state exhibit New Jersey excelled by far, but the award was made to T. W. Steck, of Winchester, Va., though the four New Jersey competitors all ran close seconds, the lowest being less than 1 1–3 points behind the winner, with Granville W. Leeds, of New Jersey, who won second, only two-thirds of a point behind in the race.

* * *

In the world’s production of coffee, Brazil holds the preeminent place. In 1800 the exports from Brazil amounted to 1,729 pounds; they have steadily increased until in 1909 they were more than 2½ billion pounds. The area in Brazil suitable for coffee cultivation covers about 1,158,000 square miles, or an area larger than the States of New York, Pennsylvania, Ohio, Indiana, Illinois, Iowa, Kansas, Missouri, Nebraska, Michigan, Wisconsin, Oklahoma, Texas and California; but the area under cultivation is small compared to that which could be cultivated but little over two million acres being in coffee in 1905. About three-fourths of the world’s output is grown in Brazil and the State of Pan Paulo alone produces one-half of the world’s supply.

Production of Apples in Barrels, 1911, 1912

<table>
<thead>
<tr>
<th>State</th>
<th>1911</th>
<th>1912</th>
<th>Per cent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>35,765,000</td>
<td>38,370,000</td>
<td>100.0</td>
</tr>
<tr>
<td>New England</td>
<td>3,125,000</td>
<td>3,060,000</td>
<td>8.8</td>
</tr>
<tr>
<td>New York</td>
<td>5,600,000</td>
<td>6,900,000</td>
<td>15.6</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>3,200,000</td>
<td>2,100,000</td>
<td>8.9</td>
</tr>
<tr>
<td>The Far West (Colorado, Idaho, Utah, Montana, California, Oregon and Washington)</td>
<td>3,860,000</td>
<td>4,425,000</td>
<td>10.8</td>
</tr>
<tr>
<td>Southern Piedmont, West Virginia, Virginia, Maryland, Kentucky and Tennessee</td>
<td>5,400,000</td>
<td>5,900,000</td>
<td>15.1</td>
</tr>
</tbody>
</table>

Per cent of total
FORMER STUDENTS

'06, B.S.A.—Charles Fredrick Shaw was born on a farm in West Henrietta, New York, May 2d, 1881. He attended the local district school, and later attended the Scottsville High School, graduating in 1907. A summer was spent in a drug store in Rochester, N. Y., and two years in farm work and in 1906 he entered Starkey Seminary, graduating in 1902. He entered the College of Agriculture, Cornell University that fall, with the class of 1906, completing his course in January, 1906. In College he specialized in Soils and Agronomy, and in 1905–1906 was Assistant in Soils.

Entering the Bureau of Soils, Washington, D. C., in February, 1906, as Scientific Assistant, he assisted in soil surveys in Louisiana, Arkansas, and Texas. From January to April, 1907, on leave of absence from the Bureau of Soils, he was Instructor in Agronomy at the Pennsylvania State College, establishing the courses in Soils at that institution. During the summer of 1907 he had charge of the soil survey of Center County, Pa., and in September he entered the regular employ of Pennsylvania State College as Instructor in Agronomy, being held on the rolls of the Bureau of Soils as Classified Collaborator. In 1909 he became Assistant Professor of Agronomy, having charge of the instruction in Soils and Fertilizers. During the summers he continued in soil survey work, in 1908 and 1909 assisting in the Reconnaissance Survey of Pennsylvania, and during 1910, 1911, and 1912 having charge of that work. The completion of this work, in 1912, puts Pennsylvania in the lead, as the only state, except Rhode Island, which has a completed map showing the soils of the commonwealth.

Mr. Shaw has resigned his position in Pennsylvania, to accept the chair of Soil Technology at the University of California and will take up his work there on January 6th, 1913. In California he will have charge of the instruction in Soils, will carry on a soil survey of that state, and will carry on investigations of the physical properties of soils.

'77, B.S.A.—F. M. Pennock is manager of the Porto Rico Pineapple Company at Rio Piedras, Porto Rico.

'03, B.S.—Walker G. Rappleye of Oswego State Normal teaching-staff was married in June to Marion Bradenburg. His present address is R. No. 2, Oswego, N. Y.

'08, B.S.A.; '05, M.S. in Agr.—J. W. Gilmore who has one more year to serve as president of the College of Hawaii, has accepted the position of Professor of Agronomy at the University of California.

'01, B.S.A.—D. L. Van Dine is carrying on entomological work for the Porto Rico Sugar Growers' Association at Rio Piedras.

'02, B.S.A.—A. F. Brinckerhoff has moved his landscape offices from 103 Park Avenue to 15 East Fortieth Street New York City.
'05, B.S.A.—Mr. Hayes C. Taylor is managing the home farm in Doe Run, Chester County, Pa. He has become one of the leading grangers in that county, where the Grange is unusually strong.

'05, Agr.—Sidney G. Rubinow is at present teaching Physiography, Biology and Agriculture in the Flathead County High School at Kalispell, Montana.

'06, B.S.A.—W. G. Brierley is Instructor and Farmers’ Institute Lecturer in the department of Horticulture of the State College, Pullman, Wash.

'06, B.S.A.—C. W. Mann, who is engaged in fruit storage investigation in California for the U. S. Dept. of Agr., spent several days in Ithaca during December. Mr. Mann’s headquarters in California are in Pasadena.

'06, Sp.—Mr. Lowell B. Gable is managing the Glen Cable Farms at Wyebrooke, Chester County, Pa. He has a fine herd of registered Guernsey cattle, and by his excellent management has made the farms show excellent results. Mr. Gable is prominent in Masonic and Grange circles, and has held important political offices in his district.

'07, B.S.A.—The career of Miss Minnie Jenkins since graduating from this university makes very interesting reading, illustrative of what some of our graduates are accomplishing in the scientific field. Miss Jenkins received her Master’s degree here in 1909 and went to Washington in the capacity of Assistant Bacteriologist with the Bureau of Chemistry of the United States Department of Agriculture. Her work here dealt with the chemical examination of foods such as milk, water, frozen and dried eggs, in search of Pure Food Law violations. In a number of cases Miss Jenkins had to act as an analyst witness in court proceedings. In June she was transferred to the Food Research Laboratory of the same Department at Philadelphia where she now is. Most of her work at present has to do with the examination of frozen and dried eggs.

'07, B.S.A.—John B. Sheperd recently visited the College for a day. He has been raising truck crops at San Marcos, Texas.

'07, W. A.—Fred E. Tyler is managing a 600 acre farm at Boardville, N. J., for Mr. Edward Hewitt of New York.

'08, M.S.—Mr. E. L. Worthen who has had charge of Fertilizer and Soil investigation in North Carolina, has accepted the position of Assistant Professor of Agronomy at Pennsylvania State College, and will enter his new duties in January, 1913. He will have charge of Soils and Fertilizer courses.

'08, B.S.A.—Clarence Lounsbury of the U. S. Bureau of Soils is now working on a soil survey of Pope County, Arkansas.

'08, Sp.—Dean M. Barber, who has been employed in Porto Rico as manager of a grape fruit farm has returned to Skaneateles, N. Y., to take up work there.

'09, M.S.A.—Robert L. Latzer who is now president of the Highland Milk Condensing Company, Elkland, Pa., visited the College on Dec. 14th and 15th.

'10, B.S.A.—George C. Becker is instructor and acting entomologist at the experimental station of the University of Arkansas at Fayetteville, Arkansas.

'10, B.S.A.—Ray E. Duel was married to Miss Diana Constable of Norfolk, Mass., on December 24. Mr. and Mrs. Duel will be at home in May at The Warelands, Highland Lake Station, Norfolk, Massachusetts.

'11, B.S.A.—David E. Fink is with the United States Bureau of Entomology. He is stationed at Norfolk, Va., with the Virginia Truck Experiment Station.

'11, B.S.A.—W. E. Garnett has the position of Director of Agriculture at the New London Academy, of Forest Depot, Virginia.

'12, B.S.—E. W. Peterson who has been doing work in West Virginia, visited the college just before Christmas.
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<th>Varieties</th>
<th>Eggs Laid 1st yr</th>
<th>Eggs Laid 2d yr</th>
<th>Eggs Laid 3d yr</th>
<th>Total eggs laid 3yr</th>
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<tr>
<td>Lady Cornell</td>
<td>257</td>
<td>200</td>
<td>191</td>
<td>648</td>
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<tr>
<td>Madam Cornell</td>
<td>245</td>
<td>131</td>
<td>196</td>
<td>562</td>
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<tr>
<td>Cornell Surprise</td>
<td>180</td>
<td>198</td>
<td>220</td>
<td>660</td>
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THE CO-OP

Morrill Hall.
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**Feb. 1913**

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THE motherly instinct of the domestic fowl to deposit her eggs in a secluded place and the invention of trap nests have made possible the accurate recording of daily egg production. This makes it practicable, at least for scientific purposes, to do systematic selection and mating of fowls, according to their egg-producing value. The invention of pedigree hatching trays and serviceable types of leg-bands have provided the means by which we may segregate, mark and record the offspring from special matings. These discoveries are destined to revolutionize the productive power of the domestic fowl.

The fact that the breeder now may know the daily record of his hens, enables him to make many observations of individuals under different and varying conditions of production. By these observations the breeder may discover important relationships between the physiological and environmental conditions and the egg-laying qualities of hens. For example, he may ascertain the correlation between prolificacy and climatic conditions as regards temperature, length of day, etc.; or the physiological conditions as regards fatness, weight of fowl, age of fowl, color of shank, condition of molt, size of the egg, etc.; or the laws of inheritance as regards control of sex, the comparative prepotency of male and female; or the correlation of type of fowl to performance. Already several of these correlations have been sufficiently worked out to warrant their acceptance. Many more are not fully established but give promise of important discoveries of important laws which will be far-reaching in their influence, scientifically and commercially. Among the more important of these are the possibilities (1) of lengthening the commercially-profitable-productive life of the domestic fowl, (2) of increasing the powers of reproduction, (3) of developing greater vigor of constitution to withstand the strain of heavy egg production, (4) of improving the commercial quality of eggs and flesh, (5) of discovering external characters by which the high or low producing individuals may be recognized without resorting to expensive trap nesting methods. In the light of what has been accomplished through scientific breeding it may be reasonably expected that these possibilities may become probabilities or realities.

In this article some of the more important observations from a study of the daily egg records for three years of two flocks of Single Comb White Leghorn hens will be presented.

Hens Normally Lay Most Eggs the First Year, Less the Second, and Least the Third

The impression one receives when studying Table I is that a large pro-
portion of hens made their best record the first year, their medium record the second year, and their lowest record the third year. The average production of eggs per year per hen of the 38 hens in Flock "B" that lived to complete three years of production was: 1st year—145 eggs, 2d year—125 eggs and 3d year—109 eggs. These may be taken as reasonable expectations of the manner in which egg production is distributed for three years with Leghorn fowls in New York State.

What Constitutes High and Low Production?

The question of greatest importance in the breeding of fowls for egg production is to determine accurately the egg laying character of the individuals used in mating, because on this, the breeder must base his interpretation of the laws of inheritance. The laying records of the fowls and their ancestors are the terms of the equation. If the terms are not correct, the conclusions cannot be considered sound. It has been assumed by some authorities on breeding that the domestic fowl possesses the character of "high productiveness" or the absence of high productiveness which ordinarily may be termed "low productiveness" or non productiveness. A casual examination of large numbers of daily egg records shows that there is no natural line of demarcation that may be used to group fowls into arbitrary classes of high, medium or low productiveness. On the contrary, it will be seen in Tables I and II that the gradations in productiveness between the hens whose records are here given for example, are for the first year's production of flock B, from 248 eggs to 53, in the second year's production, 219 to 60, in the first and second year's production combined, 448 to 113, in the third years' 220 to 1, and in three years' combined 661 to 154. Notwithstanding this wide range in individual production all of these records, as a rule, show only slight differences in egg yield between the fowls next above or below any given individual when arranged in the order of their production as is done in Table I. Rarely is there a difference of more than 5 to 10 eggs in the record of adjacent hens in any given year. These differences frequently, are either increased, obliterated or reversed when the ratings of the same fowls for other years are considered. One may select from Table I for illustration any pair of fowls at random for any given year, and note the way in which the "difference" between their egg yields will vary: For example, Table II.

In view of these wide differences in production of the same hens different years it becomes of prime importance complete year's production, according to the date on which the hens were hatched or the date on which they commenced to lay.

The records of egg production, broodiness, etc., on which this study is based, are essentially accurate. Slight errors in trapping or in recording may have occurred, which, if known, might affect, slightly, the general results here shown by a change in the groups where differences in yearly egg yield is slight. However, great care was exercised in trapping, and recording and in checking the data, which warrants the assumption that the figures here given are as accurate as is humanly possible when large numbers of fowls and many records, and the human element, are involved.

In all tables used in this article, the black-faced type indicates the highest production; the Roman type, medium production; the italics, the lowest production in any given group of fowls.

Author's Note—The data and illustrations in these studies are based upon calendar year records. They show what actually took place as regards the egg production, broodiness, etc., of 90 Single Comb White Leghorns each day for three years in two flocks of 45 hens each.

A study of these records, based on actual "laying years": that is, three years from the time each hen laid her first egg, or three years from the day she was hatched, would slightly change the results as regards the groupings and the annual production, but would not materially alter the final conclusions as here presented. To make a study of the "laying year" records as suggested would require the fourth year records, which are not available at the time this article is written. The fowls are now in their fourth year and will be retained during their lives. The data will be presented when it becomes available, to show each
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to determine what constitutes high, medium or low productiveness. We should have some accurate means if possible, of standardizing performance if we are to draw accurate conclusions regarding the inheritance of fecundity.

A more striking method of showing by comparison the way in which the estimated egg producing power varies, according to the method which is used to determine productive value, is to compare the "ratings" of various hens, Table I.

Here we have a different rating for each hen, depending upon which method we use to determine her value as a producer.

Hens Differ in the Distribution of Egg Yield Each Year and for Periods of Years

In Table III are grouped the egg production of two flocks of hens each year for three years and the total for three years, with the object of showing the proportion of hens and their egg yield that (1) laid the most eggs the first calendar year, less the second, and least the third year; (2) least the first year, more the second, and most the third, etc., as indicated.

It will be seen that in group I, by the use of different styles of type, that forty-eight per cent of Flock A and forty-two per cent of Flock B laid most eggs the first year, less the second and least the third respectively; that in group II nine per cent of Flock A and five per cent of Flock B laid least eggs the first year, more the second, and most the third, giving a total yield for three years of four hundred and thirty-eight and three hundred and ninety eggs respectively; that in group III, nine per cent of Flock A and twenty-six per cent of Flock B laid most the first, least the second, and medium the third year, or a total for three years of four hundred and fifty-six eggs and four hundred and sixteen eggs respectively. Combining groups I and III, that laid the most eggs the first year, we find fifty-seven per cent in Flock A and sixty-eight per cent in Flock B; while, if we combine groups II and IV, those laying the least the first year, we find fourteen per cent in Flock A and fifteen per cent in Flock B; combining groups V and VI, the groups that made the medium production the first year, we find eighteen per cent in Flock A and nine per cent in Flock B. It will be seen that the largest total yield in three years is to be found in group III; namely, four hundred and fifty-six eggs, where the hens laid most the first year;
### DISTRIBUTION OF EGG PRODUCTION BY ONE YEAR PERIODS AS AN INDICATION OF PROLIFICACY

**Flock A. Table III**

**Three Calendar Year Records of 33 S. C. White Leghorn Fowls at Cornell University**

<table>
<thead>
<tr>
<th>Group Symbol</th>
<th>No. Hens</th>
<th>% of Total</th>
<th>Egg Production</th>
<th>Total Eggs for 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>16</td>
<td>48.5</td>
<td>175.2</td>
<td>427</td>
</tr>
<tr>
<td>II</td>
<td>3</td>
<td>9.1</td>
<td>114.7</td>
<td>438.7</td>
</tr>
<tr>
<td>III</td>
<td>3</td>
<td>9.1</td>
<td>187.0</td>
<td>456.8</td>
</tr>
<tr>
<td>IV</td>
<td>3</td>
<td>159.3</td>
<td>40.5</td>
<td>440.6</td>
</tr>
<tr>
<td>V</td>
<td>2</td>
<td>12.1</td>
<td>144.0</td>
<td>421</td>
</tr>
<tr>
<td>VI</td>
<td>4</td>
<td>3.0</td>
<td>70.0</td>
<td>172</td>
</tr>
<tr>
<td>VII</td>
<td>1</td>
<td>117.0</td>
<td>125</td>
<td>367</td>
</tr>
</tbody>
</table>

**Flock B**

**Three Calendar Year Records of 38 S. C. White Leghorn Fowls at Cornell University**

<table>
<thead>
<tr>
<th>Group Symbol</th>
<th>No. Hens</th>
<th>% of Total</th>
<th>Egg Production</th>
<th>Total Eggs for 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>16</td>
<td>42.1</td>
<td>158.8</td>
<td>382.8</td>
</tr>
<tr>
<td>II</td>
<td>2</td>
<td>5.26</td>
<td>116</td>
<td>390</td>
</tr>
<tr>
<td>III</td>
<td>10</td>
<td>26.31</td>
<td>165.6</td>
<td>416.3</td>
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<tr>
<td>IV</td>
<td>4</td>
<td>10.5</td>
<td>144.2</td>
<td>360</td>
</tr>
<tr>
<td>V</td>
<td>4</td>
<td>10.5</td>
<td>99.7</td>
<td>392.7</td>
</tr>
<tr>
<td>VI</td>
<td>1</td>
<td>2.63</td>
<td>112</td>
<td>329</td>
</tr>
<tr>
<td>VII</td>
<td>1</td>
<td>2.63</td>
<td>82</td>
<td>212</td>
</tr>
</tbody>
</table>

least the second, and medium the third year in Flock A, and that group III, that laid most the first, least the second, and medium the third, produced four hundred and sixteen eggs in three years. Many other interesting comparisons can be made, all of which indicate the apparent impossibility of finding a group in any given flock of fowls where one can determine, by a first, a second or a third year record, which hens are the highest and which the lowest producers.

Problem: If we are to select the highest producers and discard the lowest producers, for a breeding flock which groups shall be chosen from Table III?

---

**FACTORS IN BREEDING FOR EGG PRODUCTION.**

The nest that traps the hen

The late molting highest producing

The pedigree tray that segregates the chicks

The scales that weigh the eggs and chicks

Continued in the next issue with color plate, showing the daily egg production of thirty-three hens for three years.
THE Britain is a natural born breeder of domestic animals. Nearly every farmer throughout the entire country is a breeder of some kind of pure bred farm stock, to say nothing of the tens of thousands of pet animal fanciers, who are breeding everything from guinea pigs to fallow deer, from guinea hens to birds of paradise.

Although England is but a little larger than the State of New York, her breeders and fanciers have produced more distinct families of domestic animals from the original stock of the country than all the rest of the world combined. They have at the present time some twenty-four or five distinct breeds of sheep, twelve breeds of cattle, and seven breeds of horses. We pride ourselves, as a nation, on our development along every line, but we must in frankness admit that we are about two hundred years behind the breeders of England in the art and science of breeding for improvement. England has not only long since become the "Stud Farm of the World," but she is likely to maintain her supremacy.

The question is often asked, "Why is it that in America we cannot or do not produce equally as good farm stock as is produced in Great Britain?"

There are a great many things that have contributed to the success of the English breeders. The principal one is the climate which seems especially suited to the production of nutritious pastures. In addition to this the gentlemen of the country, including the nobility, are landowners and farmers almost to a man, and to a man they are breeders of one or more kinds of farm stock. Not only are the present owners breeders, but their fathers, grandfathers and great grandfathers bred the same kind of stock on the same estate, and their studs and herds have been handed down to the present generation, together with the traditions of the race. The fathers were very ambitious to improve their breed of stock and it is not unusual, therefore, for their sons to be born with the same desire, strengthened and intensified.

So it comes about that the English breeders are born to the art of breeding and know many things intuitively that we, their less fortunate sons, have to learn by hard experience and failures. An intuitive knowledge of animals and horticulture has made the Englishman the best breeder and his country the most beautiful one, from a rural standpoint of view, in the world.

Not only have these studs, herds and flocks descended from father to son, from generation to generation, but there are any number of stud grooms, herdsmen and shepherds scattered all over England whose fathers, grandfathers and even great grandfathers were on the same estate in the same capacity before them.

When we contrast this state of things with the conditions in our own new country in which few of us have had the example of a father or even neighbor to guide us, we see how handicapped we have been in comparison. Our assets are that we are young and willing to learn; and about the first lesson that we will acquire is that the best animals we can get are poor enough, and so on until we finally discover that the fountain head is the best source to which we can turn to insure getting the highest type, breed and prepotency of blood that is necessary to produce the results we are aiming to attain.

Occasionally a breed is benefited by a change of climate, but as a rule most breeds attain the highest state of perfection in their own native land. In order, therefore, to transport the breed to another country it becomes necessary for many years to return to its native land for fresh blood in order to maintain the true family type.
My advice is, chase after no man's rainbow, but try and produce one in your own yard. Do not be carried away by a great noise that has only wind and money in it. If you would have a fine animal try and breed it. There are thousands of great animals born every year that are never developed beyond the ordinary, because the owner is looking elsewhere to some other breeder who is making a lot of noise and money in proportion over some other particular animal or family.

BREEDING AMERICAN MERINOS FOR TYPE

By David K. Bell
Rochester, N. Y.

After careful observation of the various flocks, I am thoroughly convinced of the fact that at the present time there is a woeful lack of uniformity in appearance, quality and general characteristics of the individual American Merino flock.

Before going farther I wish to define the term "Breeding for Type." It is mating the sexes so that the offspring shall have the same characteristics in conformation, style, quality and general appearance that exists in both sire and dam.

In breeding for type, first select the type that you wish to breed, and then the ewe branch of the flock. Be careful that their ancestors, as far back as it is possible to trace, possess the same qualities and type you wish to reproduce. This is important, for by so doing you will, to some extent, avoid variations in the offspring. Natural ways are always the same, and if there are different forms and type in the ancestors they will reappear in the offspring, as circumstances permit, according to the law "Like produces like."

After selecting the ewe flock as I have described, choose the ram. He should be one that would meet all the good qualities of the ewes, but more intense in type. His breeding should be upon the same lines as that of the ewes, and his ancestors should carry in their pedigrees the same characteristics that you wish to perpetuate in the flock. It will never do to use a ram because he is a good individual and not supported by a satisfactory pedigree. If his blood lines are defective you may be certain that the defects will appear in his get. In some sense the statement that the ram is half the flock is correct. It is true, figuratively, that he gets half the increase in lambs. But is he entitled to half the value in the increase? This will depend largely on the breeding of the ewes, for if they are more intensely bred in type than the ram, his share will be less than half, as the ewes will transmit more of their good qualities than the sire. If you have ewes that are producing lambs according to your ideal, do not dispose of them, for as breeders they have an unlimited value in your flock.

It will be seen that I am a firm believer in line breeding. Line breeding is mating sexes of the same breeding, but having different immediate ancestors and bred with the same object in view. It is not necessary that they shall be bred in the same flock, but it is necessary that they have the same characteristics and all the particulars of type, and that they be of the same line of breeding. This, I believe, is the safest and surest way to obtain the best results and to maintain uniformity of type. I cannot concur with those who believe that closely in-and-in breeding is the surest and best way of breeding the Merino, although I admit that it is the surest and quickest way of establishing uniformity in type and, in the hands of a skilled breeder, may be continued successfully for several generations. This
The same system that Cruickshank of Scotland, used to improve his Shortorns, and that Ed Hammond of Vermont, and Peter Martin of New York, the latter of the present day, raised the standard of their Merinos. Some of the best animals of both cattle and sheep that I have ever seen were closely in-bred. But one trouble in this manner of breeding is that defects and undesirable qualities appearing in both sire and dam, or in

CHAMPION AMERICAN MERINO RAM.

their ancestors, will be more marked in the lambs, and how few there are of us who have the courage to eliminate these imperfect offspring from the flock or herd. I presume all will agree with me that there is seldom or ever an animal that has not some undesirable qualities that the owner, if he be a good judge, knows what and where they are. I think there is no surer way to perpetuate and establish these defects than by closely in-and-in breeding.

Some may desire to know why I consider it so important to breed for type. It is because it is the only way that a breeder can maintain to a high standard the individuality, uniformity and general characteristics of his flock. The tendency of all domestic sheep is to degenerate to what they were in ages gone by, and the breeder should constantly keep this fact in mind. This is clearly demonstrated in many of the flocks of Merino sheep of the present day, that at one time had obtained a high standard of perfection, where carelessness and indiffer-
bred ram that is now known as "A" type American merino, to a plain Delaine ewe, expecting by this cross to establish in the flock a type known as the "B" type. No doubt many of the offspring of the first cross will prove satisfactory, but only disappointment awaits the breeder in his second or third cross; for in the produce there are two distinct elements at work in the one animal, inherited from the sire and the dam. The forces at work throughout the gestation period will demonstrate what the offspring will be. They may inherit some of the qualities of their great-great-grand sires or dams, thereby producing an unevenness in the flock which should be avoided. This is confirmed by all experiments in this and foreign countries.

Then again they cross the American Merino with the German, or French branch (Rambouillet), of the Merino family, claiming that they can establish a breed of sheep by making one or two crosses. That these two families have been bred in different lines with different environments for the past century, thereby establishing two distinct breeds, and to think that the uniting of these two elements, after this long period, could produce satisfactory results, is beyond scientific reasoning. Harry Stewart in his work on "Domestic Sheep," in speaking of the Rambouillet, says that "By selection and breeding, a distinctly new race, indeed, a well defined breed, was produced, differing in important points from the original foundation stock." Before a breed is entitled to a name, it should be able to reproduce itself with some assurance of form, conformation, quality and general appearance, and with such crosses this is not possible. It is true that the increase of some of the crosses may prove satisfactory in the show-ring, but as breeders will be very disappointing.

It is well known to most breeders that many of our flocks have not particularly been bred to type, and even those that have, have in their ancestors some characteristics and qualities not desired and there will occasionally come among the offspring lambs that inherit some of these objectionable qualities, although, perhaps far removed. With this I think all will agree with me. Now what is a breeder to do when instances of this kind occur in the flock? I would advise eliminating all such animals, but before disposing of them remove the ear label, so as to prevent them from being used as breeders in other pure bred flocks. This is the plan that I adopted long ago.

In many Merino flocks at the present time there are both the American type and Delaine type, both pure bred, intermixed through the individual members of the flock. The owner wishes to purchase a ram to head the flock. He procures a grand individual and pays a high price expecting that he will reproduce himself in the offspring. This is a Herculean task for the ram, and the results may not be as satisfactory as the breeder would like. The ram is very likely to be blamed, which is unfair to him. The same animal, but in another flock where the ewes have been carefully bred to the same type, would prove a great success. Instances of this kind have come within my own observation.

No doubt the reader realizes that I consider line breeding, coupled with the same qualities of type in both sires and dams, and long pedigrees accompanied with good individuals, are the most essential things for successful sheep breeding. Another essential point is the care given to the flock, for after the careful breeding of the sheep, in order to obtain the best results, the flock must be given the best of care, using all the improved methods now known for health, together with all the natural foods obtainable in winter as well as summer. The young and growing part of the flock should be developed to its utmost by using judgment in care and feeding, for I know that a breeder cannot succeed and obtain the best results and maintain the high standard in type which he is aiming to produce unless he does.
THE CORNELL EXPEDITION TO OKEFENOKE SWAMP

By J. C. Bradley
Assistant Professor of Entomology, Cornell University

There is a fascination about a swamp in which no other form of nature shares. The very word suggests mysterious and uncanny places, half lights, and weird creatures in noiseless activities, bent upon the fulfilment of their varied destinies. As our familiarity with the swamp increases, the fascinations do not vanish, but rather the wonders increase. Here as nowhere else, hidden lives are being led, hidden tragedies enacted. Here indeed is life in its fullest intensity without the disturbing human element. Such places challenge the naturalist to discover their secrets.

Among the swamps of eastern North America, the Okefenokee is surpassed in size only by the Everglades, and is in many respects unique. William Bartram, in recounting his travels thru Georgia and Florida in the 18th century, tells of a vast morass at the source of the St. Mary's and the Suwanee Rivers which was called by the Indians Oaquafenogan, meaning trembling earth. He did not visit the swamp but mentions some of the strange legends with which the Indians had surrounded it. One quaint legend told of a race of women of unbelievable beauty that dwelt on an island in the recesses of the swamp which receded like a will-of-the-wisp before the approaching traveller. The swamp has remained until the present day almost a terra incognita and even to the naturalist its wonders were almost unknown. The maps which have been published are highly inaccurate and disagree even in their leading features altho in the last part of the past century, some attempt was made at a rough survey. It has remained a sanctuary for birds, bears, deer, alligators, and innumerable other animals, and is today one of the very few extensive tracts of land in the eastern United States which shelters a fauna and a flora essentially unchanged by the destructive activities of the white man.

As special assistant entomologist of the State of Georgia, the writer in the summers of 1909, 1910, and 1911, several times laid plans for a trip into the swamp but each time was obliged to postpone the venture, except for a brief reconnaissance of the eastern and northwestern edges.

During the past winter, the Okefenokee swamp was a topic for much discussion among the biological departments of Cornell. Too long, it was declared, had naturalists been content to speed by its very edges on fast trains without stopping to penetrate its secret fastnesses. It was deemed high time that the biology of the swamp be investigated, for in a few years it might be changed forever by the encroachment of the woodman's axe.

Since no funds were available for an official expedition it became necessary for those who contemplated going to beg, borrow, or in some way raise the necessary funds, which after all were not very considerable. However, on the twenty-fifth of May a substantial party was found gathered in the Union Station at Washington, ready after a wordy and protracted session with various ticket and baggage agents, to board the New York Atlanta and New Orleans limited for the sunny southland. The party consisted of Assistant Professor C. R. Crosby of this college, D. A. H. Wright of the department of Vertebrate Zoology, M. D. Leonard, '13, S. C. Bishop, '13, A. R. Cahn, '13, and the writer. E. L. Worsham, ex '07, now State Entomologist of Georgia joined the party at Atlanta, where we spent a day.

Fargo, a little lumber village on the Georgia, Southern and Florida railroad, was where we left the railroad early the following morning for the trip into the
swamps, and found awaiting us C. S. Spooner, '07, and Paul Battle, Boy Scout, from Bainbridge, Ga. Mr. Bennett of the Fargo Land Co., had very kindly made arrangements for guides to take us into the swamp, and his company carried us to the edge of the swamp on a train road that they had built for logging purposes.

Encamped at last on Billy's Island, well in the heart of the swamp, our work began in earnest. A log cabin was fitted up for a laboratory, and the work of exploration and collection commenced.

The Okefenokee swamp extends about 45 miles north and south, and about 25 east and west. Within it arise the St. Marys and the Suwanee Rivers, the latter made famous by the old plantation song, the one flowing into the Atlantic Ocean, the other into the Gulf of Mexico. The water in the swamp is clear, flowing, never stagnant, perfectly healthy to drink, but of the color of strong clear coffee. It is disagreeable because always quite warm. The area of the swamp consists in general of three types, the so-called prairies, the islands and the swamp proper.

The prairies form most of the eastern and southern parts of the swamp. They consist of vast shallow inundated areas, with a bottom of muck into which one would sink for a long ways, were it not for the presence of the roots of water lilies or other plants. Some of these prairies are thickly covered with rushes, so as to give the appearance of fields of hay. Others are covered with a wonderful profusion of water lilies, which were in full bloom at the time we visited them. Where the water lily roots afford a foothold, one can walk about the prairies quite freely without getting above waist deep. Arrow-arum and a purple-flowered bladderwort grow in great profusion on the prairies, as well as several other plants.

At intervals the prairies are interrupted by copses of cypress trees among which have grown up impenetrable tangles of bushes, all bound together by bamboo briers. The falling leaves and branches build up a tenuous floor, through which, when disturbed, the water readily seeps. Many of the copses are very beautiful indeed, rising as they do from the lily covered lakes, the bushes so dense as to give the appearance of a homogeneous mass from which arise the majestic cypress trees, often vine-clad, and always draped with a luxuriant growth of pendant Spanish moss. On the eastern prairies they are more remote and few in number, but the Honey Island Prairies are so studied with them as to assume the aspect of labyrinthine passages or waterways among innumerable islands, of every shape and size, each different from the rest, and yet so bewilderingly alike as to suggest that the ill-directed wanderer who ventured among them might by chance, but not by skill, extricate himself.

Within the prairies, circular open areas of varying extent, where the water lilies have been rooted out and no plants suffered to grow, mark the homes of alligators. One such "gator hole" we assayed to seine or fish, first chasing out the gator with much grunting on the part of the guide (the grunts are supposed to be an irresistible stimulus to the alligator to rise) and by repeated proddings with an iron pointed gig. Then in order to draw the seine it became necessary to strip and swim across the hole and pull the ropes along either edge. This was one of the earliest experiences in the swamp, and I will be believed when I say that nothing but the sight of our guides themselves within the water lent us courage to jump overboard. Every root felt like an alligator's tail.

Scattered chiefly along the western half of the swamp are the islands. They vary from small to very large timbered areas, raised slightly above the level of the swamp, sandy, and covered with a fine growth of pines. Billy's Island, on which we camped was nine miles long and several wide.

The vegetation of the islands comprises three vertical zones. The lowest consists of goose-grass and a great
The real cypress and black gum swamps occupy enormous areas in the western and northern part of the Okefenokee, separating the islands and the waterways. The water within the swamp may be said to average from knee-deep to waist-deep. There white cypress and black cypress grow to tremendous size, and vying with them black gum and red and white bays. The so-called sweet bay does not grow so tall. All of these trees arise directly from the water, and show the enlarged bases characteristic of trees growing under such conditions. Around the cypress trees multitudinous bushes of several kinds obtain a foothold, and they are all bound together in a dense mat by thorny bamboo briers. The trees are covered with wild grape and other vines, and always festooned with gray Spanish moss.

At intervals the swamp opens out to disclose a sphagnum bog. In these the water is much deeper, and the sphag-

variety of sedges and herbaceous plants, none of which are sufficiently abundant as to be considered typical. The dominant types of the shrub zone are saw-palmetto, sheep laurel, several kinds of huckleberries, and two herbaceous shrubs, which the natives call "gall-berry" and "poor-grub." The huckleberries grow to great size and to almost unbelievable profusion. The tree zone consists almost exclusively of a fine growth of long-leaf pines. There are a few live oaks. The soil of the islands is sandy without any surface muck, and they are sufficiently high to be dry except after rains, when the water may lie from two to six inches deep over much of them for a day or two. Here, there and everywhere on the islands are ponds surrounded by a swamp vegetation, and also extensive stretches of true swamp. The edges of the islands bordering the swamp display a more luxuriant "hammock" vegetation.

The Cornell Countryman
SWAMP SCENE.

RATTLE SNAKES OCCUR WITHIN THE SWAMP.
num, sagging up and down with each footstep for yards around, affords a very precarious foothold. Indeed, one is continually breaking through and if he were not to catch himself would sink to, I know not where. It is these quaking bogs that give the swamp its name, Okefenoke, meaning in the old Creek language “trembling earth.” Sometimes the sphagnum is covered waist deep with black stemmed ferns among which the alligator runs are plainly discoverable.

Finally, there are the lakes and the water-ways, where the water is often deep, and entirely free of trees, often of all vegetation. I despair of doing justice to the weird and unique beauty of some of these, especially Billy’s Lake and of the Tupelo swamp at the head of the Suwanee River.

The animals of the Okefenoke, from great to small, are legion. Several bears were shot by members of the party and the guides. They are the Florida black bear, smaller than his more northern cousin. The tiny Florida deer is also quite abundant in the islands. Wild cats, otters, racoons, and other mammals are also to be found.

The bird life is full of interest, and occupied most of the time of Dr. Wright. I could not begin to enumerate it. The most interesting birds within the swamp are the ivory billed woodpeckers, now almost extinct, but which have one of their best nesting places in an almost impenetrable part of the swamp. The swallow-tailed kites with their long scissor-like tails were of much interest and afforded a very beautiful sight, as they soared overhead around and around, then suddenly dropped like a parachute, down, down, until with a quick flash of white they turned and were up again. There were long necked, comical water turkeys, or wake-birds as they are often called, herons, and beautiful white ibises. Once we saw a flock of nearly a hundred wood ibises rise higher and higher, until, mere specks in the sky, they could not have been distinguished from a flock of soaring buzzards. Then there were egrets, of which we saw but very few. Dr. Wright visited a herony near the edge of the swamp, but the birds were mostly little blue herons.

We were surprised to learn that not only alligators, but very rarely crocodiles are found within the swamp. Lizards and turtles are innumerable. Two sorts of rattle snakes occur within the swamp, but were rarely met with. Water moccasins, common along the water ways, or lurking in the tangled undergrowth of the edges of the islands were a source of nervousness on the part of some of the members of the party who were not ardent herpetologists. Perhaps, though, the enormous hairy spiders that frequented the trees in the swamp were equally annoying to some of the snake-hunters.

The swamp seems to be a paradise for dragon-flies, horse-flies, and certain butterflies, and of course mosquitoes. The latter were of the Anopheles, or malaria-bearing kind, and without protection in the form of smudge fires, citronella compounds and mosquito-proof tents to sleep in, would have made life unendurable. “Yellow flies,” a kind of tabanid, were very abundant in the swamp proper, and painfully voracious. The most curious insects were the green cow-flies, a kind of large pale green horse-fly that appeared in swarms at dusk and more especially at day-break, buzzing around the outside of the tents like a swarm of angry bees.

The extensive collections that were made are being prepared for study. It will take months and in some cases even years to complete the work upon them, and as it progresses new questions will arise, indeed have already arisen, the solutions to which can be answered only by subsequent visits to the swamp. So the expedition is to be looked upon only as a preliminary one, the merest beginning toward the study of the life of this fascinating place. The party is unanimous in the conviction that a permanent biological laboratory established there could be of the utmost value, not only for research but for instruction, and that a few weeks spent in the swamp would teach the student more real biology and natural history than a long time in a laboratory.
IN COMMON usage at the present time, the term “pure bred” is confined to such individuals of any given breed except poultry as are registered or eligible to registry in the pedigree registration books of the breeders’ organizations of the particular breed. In practically every herd book registration in the United States at the present time the prime requisite to constitute eligibility for registration is descent from parents both of which are already recorded either at home or, in the case of imported animals, in the native locality of the breed. A herd book organization is, therefore, a close corporation and the animals entered in its records are virtually members of an aristocracy.

There is of course a wider definition of the term pure bred which should be considered in any discussion of the subject. Broadly speaking any animal or race of animals may be said to be pure bred in which the type of characteristics has become so fixed and uniform that it exists in each individual with but a minimum of variation and is uniformly transmitted from generation to generation. Wild animals or the wild forms from which domestic races have sprung may and should be considered as pure bred in this sense and there are whole populations of domestic animals existing under many conditions and in many localities that are as truly pure bred as though they were carefully fostered by an exclusive herd book organization with strict rules for registration and a carefully elaborated scale of perfection of characteristics. A typical example of such a pure bred race was the semi-wild cattle known as Texans, that were descended from the cattle brought into Mexico by the Spanish conquerors and that formerly roamed the plains of the south-west in immense numbers.

A study of the causes, conditions and factors giving rise to the origin of such breeds and types opens up the whole subject of the principles and practice of modern stock breeding as well as the more theoretical subjects of heredity, evolution, and transmission of character and, as such, is entirely without the scope of the present article.

It is, therefore, plain that a breed may arise and continue indefinitely without the assistance or fostering care of a herd book organization or pedigree registration and as a matter of fact most of the improved breeds of the present day have had such an origin. That is, the breed has been formed and its characteristics at least fairly well fixed before herd book registration has come in as an aid to preservation and future development. But whatever may have been the relation of herd book registration to the formation of a breed, there can be no question whatever as to its usefulness as a means of preserving the characteristics and increasing the development of a breed. In this the various herd book organizations have played a most useful part in the past and at present they are better organized, more active and more progressive than ever before. To modern stock breeding they are indispensable and their influence, importance and usefulness is much more likely to increase than to diminish.

It is often urged and it is true that an animal without the herd book especially if a high grade, may be a better producer and even quite as reliable a breeder as one that is pure bred. It is asserted that herd book organizations for selfish purposes and to maintain fictitious prices aim to restrict members and it is also claimed that mere pedigree registration admits many worthless individuals and ex-
cludes many of merit, but admitting the force of all these faults, there can be no doubt that modern registration of pure bred animals is the most important single factor in the improvement of the domestic live stock population of the country.

The Federal Census Office has never attempted to gather statistics as to the number of pure bred and grade live stock so that there can be no means of exact comparison. In 1910 the Commissioner of Agriculture of the State of New York gathered and published as complete a list as possible of the pure bred live stock in the state.* From the bulletin, as if in New York State more than two per cent of the domestic animals of the four larger classes are pure bred.

Even though the percentage of pure bred animals is small it is not difficult to trace their influence in many ways. A very important influence of the pure bred is seen in the production of grades through the use of a pure bred male. The value of this has been shown statistically many times and in many ways in all sorts of live stock production. Recent farm surveys in Tompkins and Livingston Counties have given a fresh confirmation of this, in showing that not only was the production increased in those

<table>
<thead>
<tr>
<th>County</th>
<th>No. of Dairy Cows</th>
<th>No. of pure bred cattle</th>
<th>% pure bred cattle to dairy cows</th>
<th>Av. yield per cow, 1910 lbs. milk</th>
<th>Increase 1900-1910</th>
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<tr>
<td>Madison</td>
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<td>5146</td>
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<td>3976</td>
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compared with the federal Census of 1910, the following table shows the proportion of pure bred animals of each class.

<table>
<thead>
<tr>
<th>Class</th>
<th>Total number</th>
<th>Pure bred</th>
<th>% of pure bred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horses</td>
<td>591,008</td>
<td>1,505</td>
<td>0.25</td>
</tr>
<tr>
<td>Cattle</td>
<td>2,423,003</td>
<td>45,462</td>
<td>1.9</td>
</tr>
<tr>
<td>Sheep</td>
<td>930,300</td>
<td>13,893</td>
<td>1.5</td>
</tr>
<tr>
<td>Swine</td>
<td>666,179</td>
<td>5,102</td>
<td>0.76</td>
</tr>
</tbody>
</table>

All classes 4,610,490 65,902 1.2

Commissioner Pearson’s figures are confessedly incomplete, but making every possible allowance it is doubtful

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and including about two-thirds of the whole number of cows in the state, have been arranged in the order of the greatest number of pure bred cattle to the whole number of cows; a column is also given showing the average milk yield per cow in 1910 and one giving the average gain or loss per cow since 1900.

The table clearly shows the influence of the pure bred animals, the counties containing the largest proportions of pure breeds include the counties in which the average yield was highest and the counties which made the largest increases in yield during the ten years. Of the twelve counties having more than two and one-half per cent of pure bred animals all but two, Jefferson and Steuben, made noticeable increases in yield in the decade, while of the eight counties having less than two and one-half per cent of pure breeds only two, Lewis and Broome, made very noticeable gains. In the ten counties having the largest percentage of pure bred animals the average yield per cow was 4769 pounds of milk with an average gain of 358 pounds, which in the ten counties having the smallest percentage of pure breeds the average yield was 4245 pounds of milk and the average gain in the decade was only 85 pounds.

A very important influence of the purity of breed is seen in the extremes of production. It is only the pure bred animal that the owner considers worth while to develop to the extreme of production. The fastest horse, the champion ox, the heaviest porker, the highest milk or fat production, the greatest number of eggs always come from and give form to a pure bred individual. Such animals represent the advance guard of development. In themselves they may be freaks. They may never give birth to offspring anywhere near their equal. Their production may be of no profit or even a money loss to their owner. They may be injured or even lose their lives as a result of their extraordinary performance; nevertheless, their performance is worth while even if its only result is to stimulate others to seek to equal or surpass it. The competitive element is so large a part of man's nature that progress along the whole line largely comes through the performance of the winners.

As was said at the beginning, the purely bred animals form the aristocracy of their breed. Because of the care with which they are bred and their pedigrees are recorded, their merits are recognized by the general public. An individual working by himself and without the pale of the herd book may breed just as carefully and skilfully and with just as good or even better success than his neighbor who has herd book animals, but the public does not recognize the fact and life is far too short and the process is too expensive for the single person working alone to convince the public and so he fails his market. If it is worth while to breed animals at all with the care with which they ought to be bred, one cannot afford to breed other than herd book animals.

I should sum up the present status of the pure bred animal as follows:

Pure bred animals represent the highest and best types of production in their respective breeds. In numbers they are still small but are rapidly increasing. There is no immediate prospect that the demand for such animals will decrease or that the business will be overdone. The breeding of pure bred animals exerts a favorable influence on the live stock production and on the general agriculture of the community. Pure breeds are of great use in improving the common stock through the production of grades by the use of pure bred sires but are well worth while breeding for their own sake from the standpoint of production and lastly no well educated farmer can afford to waste his time, energy and skill in producing any other than well selected pure bred registered animals.
MEETING OF THE NEW YORK STATE FRUIT GROWERS' ASSOCIATION

By J. S. Brown, '13

It is doubtful whether any specialized division of agricultural activity in this section of the country can bring together a larger, more enthusiastic, active or prosperous group of men than that which assembled in Convention Hall, in Rochester city during the week of January 15-18—the meeting of the New York State Fruit Growers' Association. We hear of late, occasional pessimistic reports which have led some of us to believe that the fruit growing industry is being so over fostered that it is simply a matter of a few years before a reaction is certain to set in. However, if one may judge from the success of this year's meeting and from what the fruit growers themselves say about such a possibility there is little foundation for such a fear. The good work of the Association is showing more and more each year. Some 1500 people were in attendance at this year's meeting, representing all parts of the State, and the business report showed the Association to be in a most flourishing condition.

The work of the committee in charge of the meeting has been two-fold,—to hold an exhibit, and to arrange an interesting schedule of talks, lectures and discussions. Convention Hall is almost ideally fitted for both of these purposes. The big bright auditorium amply cared for the large audiences in attendance each day, and the two stories and basement of the main building nicely housed the exhibits. A large bank of apples—200 boxes representing some 95 varieties—exhibited by the Experiment Station of Geneva was the central feature of the exhibit. Scattered about this were the booths of concerns handling all sorts of fruit growing apparatus, nursery stock and machinery. Both Cornell and Geneva had educational exhibits, endeavoring
to be of service to the members of the Association. Further exhibits of fixtures and automobiles occupied the balcony while an excellent display of machinery was found in the basement. A new and interesting feature of this year's exhibit was a candy-making contest held by a nut growing firm of Rochester. The plates of candy were judged by three girls from the College of Agriculture.

Before reviewing the program of the week, special mention should here be made of the excellent showing made by the student members of the College of Agriculture who took part in the annual speaking contest held Thursday afternoon. The first prize of $35 was taken by G. E. Matter, '14, speaking on "Cooperative Credit for the Fruit Grower," while W. H. Bronson, '13, discussing "Western Apples — Eastern Markets," was awarded the second prize of $15. Dr. W. H. Jordan, Director of the Geneva Experiment Station, in commending the excellence of the contest in both delivery and subject matter, remarked that the work of the students "reflected credit upon themselves, upon the families from which they came and upon the University which sent them." The other two judges were Prof. J. R. Slater, of the University of Rochester and Edward Van Alstyne, director of Farmers' Institute.

President Allis in his opening address pointed out that "the high cost of production is a worse evil for the fruit grower than the high cost of living is to the consumer, and that as prices for farm products are surely on the down grade, anything that adds to the growers' expenses should be carefully investigated." Blaming the Republican administration in a large measure for this state of affairs, Mr. Allis severely criticised the work of some of our public officials, the franking privilege and the large amount of poor road construction in the state.

Wednesday afternoon was devoted to the diseases and insects affecting the fruit grower, Professors H. H. Whetzel and G. H. Herrick reading reports and Prof. P. J. Parrott of Geneva discussing "Spraying Problems for 1913." In the evening, Mr. A. T. Henry of Wallingford, Conn., gave an interesting illustrated address on peach growing. Mr. Henry succeeded in making money from his peaches this year—lots of people did not. Later there was a round table on peaches led by Dr. Donald Reddick, E. L. Markell of Cornell and Samuel Fraser of Geneseo.

Thursday morning, after an election of officers for the ensuing year, U. Grant Border, Chairman of the Advertising committee of the International Apple Shippers' Association, spoke on "Advertising the Apple" and W. S. Farnsworth on "Packing and Marketing Our Fruit for the Greatest Profit." During the afternoon, Prof. Cavanaugh spoke on conserving the fertility of orchard soils and Prof. U. F. Hedrick discussed "Color in Apples." There was also a round table on grapes held during the morning in which F. Z. Hartzell and F. E. Gladwin were the chief speakers.

The fourth annual banquet of the Association was held Thursday evening in the Armory with more than 700 attending. The principal address was made by Senator George F. Argetsinger of Rochester using as his subject, "All Manner of Fruit." Other speakers were Dr. W. H. Jordan, Rev. George W. Stewart and Rev. William R. Taylor. Miss Moll's orchestra and a male quartet furnished the music. Thus was spent one of the most enjoyable evenings of the session.

Commissioner of Agriculture, Calvin J. Huson expressed himself as to the duties of the state toward the fruit growers very ably Friday morning. Other speakers were J. W. Burke, Miss Flora Rose and B. J. Case.

A feature perhaps more interesting than any other because of the degree of enthusiasm and interest which it showed to be present was the open informal discussion of the "Question Box." These questions are sent in during the year by different members
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and are discussed at this annual meeting.

The officers elected for the ensuing year were: President, L. L. Morrell, of Kinderhook; vice-presidents, A. C. King, Trumansburg; Luther Collamer, Hilton; C. W. Burke, Byron; G. R. Schauber, Ballston Lake; secretary and treasurer, Edward C. Gillett, Penn Yan; Executive Committee, Charles G. Porter, Albion; Willis P. Rogers, Williamson; Wessel Ten Broek, Hudson; Frank Bradley, Barker; Grant Hitchings, South Onondaga.

It was thought that a member would be elected to the Executive Committee from Monroe county.

COOPERATIVE CREDIT FOR THE FRUIT GROWER

By G. E. Matter, '14

Editor’s Note. [This speech was awarded first prize of $35 at the annual speaking contest of the New York State Fruit Growers' Association.]

WE HAVE had a fine harvest this year and an unprecedented one at that. To produce such a harvest more than a mere hocus pocus acrobatic performance was necessary. Nor could we have accomplished such a feat by merely tickling mother earth with a hoe around the trunk of the trees with the hope of having the branches laugh a harvest. It came about in an entirely different way. Indeed in such a way that the harvest alone can speak for the work done upon it.

As a result of this work we feel highly gratified. In truth our harvest augurs a year of prosperity, and while we think of this prosperity each one of us inaugurates in his own mind’s eye a crusade for better living on the farm.

But before congratulating ourselves further let us look into the future to see if we can spy any forthcoming factors of opposition, such as would upset the plans that our good crops encourage us to make.

Great crops do not always bring a proportionate amount of prosperity to those who labor for its resulting proportions, nor do they properly reduce the troubles that I shall enumerate. With a number, the farm mortgage, with high interest, had to be paid some time ago.

The short time loan of several hundred dollars, with interest possibly at 10 per cent, drawn for harvesting our crops, comes due at the end of this month. The western grower is beginning to threaten the eastern producer with his 7,000,000 barrels of most attractive fruit. Our fruit, which, for want of working capital during the summer months, unfortunately was not properly thinned, sprayed and graded, lies rotting in the storage waiting for higher prices. Or it has already been sold at a price that did not justify its sale. But here do not misunderstand me, I am not speaking of that exceptional grower, the one we read about. I am speaking of the average; those who have not inherited a fortune, nor yet produced any; those who are not at the present time getting the full fruits of their toil. I repeat, if this grower has sold, he most likely lost, and when selling at a loss what good reason has the consumer to complain about the enormous prices the producer is “not getting.” Why should there be dissatisfaction both on the part of the producer and the consumer? This is why: A certain New York State fruit grower realized only two cents a box on his grapes; he traced them up, and found the city people paying 40 cents for them.
Fellow agriculturists, these, most obviously are the most serious problems before us today, namely, the middleman, the western grower, and the enormous interest rates.

"If we wish to get more of the consumer's money, without adding to the high cost of living to the consumer," we must not only apply the spray to our fruit but also to the "middleman." To do this we must follow out a more thorough system of cooperation, and in order to practise cooperation we must have easier access to the capital necessary to start.

If we wish to compete in the future with the western grower we must adopt more scientific methods, and this requires more capital. Our troubles are all economic, every one of them. And this is where the shoe really pinches.

But, before it is advisable to use more capital we must have a lower rate of interest. At the present time the American farmer is forced to pay an interest that would consume the entire wheat crop of this country. This annual interest of $510,000,000 is creating friction in the agricultural fly-wheel from which all other activity derives its impetus. Credit is a lubricant necessary for the proper working of every wheel of business. Yet we may truthfully say that the American farmer is lacking in this respect.

The present banking system is inadequate when applied to the farmer. It is a rich man's system; it was originally designed for that purpose. With such a system the poorer class of farmers cannot get credit. They are discriminated against. To make a long story short, no matter how much brawn or brain a man may have, he gets no credit because he is poor, and he remains poor because he has no credit. As the system now is, the borrower can not say, "Here is my security, now give me a proportionate loan at the current rate." No. The lender dictates the terms, and in case of need the borrower finds himself at the lender's mercy. The farmer is in an insecure position, and each farmer that borrows under these conditions adds to the insecurity of the agricultural industry. To secure the agricultural industry we must secure the individuals that constitute it, and we should aim to accomplish this in consideration of society at large.

This question of furnishing our farmers with a credit at a rate that will encourage him to adopt economic improvements and so secure him that he may have unfaltering confidence in the outcome of his "pursuit of happiness" on the farm, is a question of the widest national scope; and one that is attracting the attention of those who hold the destinies of a nation in their grasp.

Our esteemed Secretary of Agriculture Wilson says that three per cent is about the correct net income from the average farm in the older states, and that present conditions of loaning will in 50 years eat up the entire farm.

In the September number of the World's Work Mr. Yoakum says that cheaper money for farmers is the first of our agricultural problems. Gov. Sulzer says that the farmer's needs must constantly be kept in view, and that a more reasonable rate of interest for farmers must immediately be provided for.

And President Taft says, that the American farmer adds each year to the national wealth $8,400,000,000. They do this on a borrowed capital of $6,046,000,000. On this sum, counting commission and renewal charges, they pay an interest averaged at 8½ per cent as compared with 3½ per cent to 4½ per cent paid by the farmers of Germany or France. But why is it that the farmer cannot get credit at a rate at least as low as the industrial corporation, whose security certainly is no better than that of the farmer? President Taft says that the advantage enjoyed by the industrial corporations lies in the financial machinery at its command, which permits it to place its offer before the investor in a more attractive, and more easily negotiable form. The farmer lacks
this machinery, and lacking it suffers unreasonably.

All that is necessary then is for the American farmers to build one of these financial machines. But to successfully construct this machine we need assistance, for obviously we cannot cope with the money trust, financially unorganized and scattered as we are over this wide country. The machine must have certain control to break the tendency for some irresponsible people to overrun it. In other words, we need a background, and we need a strong one. Our situation affords us but one Good Samaritan, and it is our government. We have the same right to ask assistance now that the industries formerly had. But the question arises, in what terms are we going to ask, and will these terms be practical? Here a review of the successful agricultural coöperative credit systems of European countries would be deserving, but space forbids. I shall therefore merely outline a system that would fit American conditions and at the same time not create any serious results to the present banking system.

Granting now that our government has sanctioned coöperative credit, and that our present national and other banks are appointed agents to carry out the work. For example, suppose that we were the members of a small farming community. Finally some rainy day we'll decide to go to the bank to sign up to form a coöperative credit organization. We do this with the express purpose of combining our liabilities, thus making a stronger guarantee for the credit that we will want later, which means that we can get money when we want it, and at a much lower rate of interest. If we want to go together to buy large quantities of fertilizer, or seed, or coal, the bank is now more willing to loan us the money. In all truthfulness this will encourage more cooperation among farmers and especially among fruit growers.

But suppose we want a long time loan. Such as is needed in setting out an orchard, or buying a stock bull, or building a cold storage plant. All we need to do is to go to the bank, pledge our security, or an individual may do it with the consent of the other members. He may need $1,000. The banker issues a bond for that amount, to expire maybe in fifty years, and then puts it on the market to be sold the same as the bonds of our large corporations. We pay the banker a small fee for floating the loan, and each year pay the market interest on bonds, which in agriculture would be about 3 to 4 per cent, and if we pay three-fourths of 1 per cent each year additional by the time the bond expires the whole principle will be considered paid.

In all, this would make a saving of about 40 per cent of the $510,000,000 which we now pay each year, and this is not considering the profit to be derived from the economic improvements which we could make.

It is safe to say that if the American farmer would enjoy coöperative credit, and the indebtedness were equally distributed, every farmer could send his son to college.

Imagine at this point how coöperative credit would influence rural tastes; and culture would have a better atmosphere in which to work, and to advance out of the rut that our city brothers have been criticizing us about. More and more should we recognize that if agriculture is not prosperous it reacts unfavorably upon the nation as a whole. For, remember the nation depends not only upon the rural population for its food, but also for a greater proportion of its statesmen. And, not long ago, the chanticleer hat proved that the city folks look to our farm yards for some of their styles.

Certainly these influences should be encouraged. Our standard of rural life must be raised, and the only way to effectually do this is to put more working capital into the rural communities.

Coöperative credit will do this. It has most successfully accomplished it in European countries, and it is sure to come in this country.

It is a product of evolution.
We can oppose it no more than we can oppose the Genesee river or Ontario lake.

But the rapidity of its realization depends upon us as farmers.

If we do not rouse ourselves to have this annual burden of $510,000,000 which is creating friction in the agricultural flywheel wiped out, no one else will.

If we wish to get our share from the products of our toil, and at the same time make living easier for the consumer, we must have easier access to the money necessary to start a more thorough system of cooperation, in order to get rid of the middleman. If we wish to "hold candles" in the future with our western competitors, we need easier money for the adoption of scientific methods.

And finally, if we wish to have the nation benefit from the influence which the agricultural industry is capable of exerting with cooperative credit, then we must agitate! Agitate! ! Yes, agitate! !

NEW AGRICULTURAL BUILDINGS

By H. M. Stanley, '15

In the last year the new quadrangle of the agricultural buildings has been the scene of extensive building operations. At present there are six building in process of construction or nearing completion. The first building at the south end of Garden avenue, facing Alumni field, is the new clinical and hospital building of the Veterinary College, really three buildings in one.

At the north end of the avenue and at the west end of the new quadrangle is the new Auditorium of the College of Agriculture.

This is one of the finest buildings of its kind, having every convenience desired of such a building. It is designed to seat over 2400 persons, and when finished will be the largest auditorium on the Campus.

Note:—The cuts used to illustrate this article were loaned by the Cornell Alumni News.
Directly east of the Auditorium is the new Home Economics building, which is now very near completion, except for a few finishing touches. The roominess, lightness and appointments of this building are the best possible.

Out past the Carnegie Filtration Plant, ground has been broken for the excavation for the new Forestry building, which will soon occupy its commanding site on the knoll overlooking Beebe Lake.

One of the best equipped buildings on the Campus is the new Poultry building, which is now complete and stands east of the forestry site. At present it is the last building at the east end of the Campus. Just over the hill and near the road that runs from Sibley College to Forest Home is the new heating plant of the College of Agriculture. This structure is very noticeable, because of the immense smokestack, which towers high above the rest of the buildings.
All of the new buildings are built of nearly the same colored yellow brick, which is laid up in tapestry effect. The whole effect of the new quadrangle, which will be entirely of agricultural buildings, will be especially pleasing, due to the regularity of design and structure of the buildings.

In short, we may say that such a complete, convenient and well appointed set of buildings for the study of one science would be hard to surpass.

A COUNTY BREEDERS' ASSOCIATION

By Elmer S. Savage

Editor of the Tompkins County Breeders' Journal

SINCE February 1911, Tompkins County, New York, has had a County Breeders' Association. To quote its Constitution, its object is,— "to promote the breeding and improvement of high-grade and purebred livestock in Tompkins County, and to aid its members in buying, breeding, and selling first-class animals." This association has been productive of good in the community and its ideal is slowly being realized in that, even in so short a time, the interest in better livestock has been greatly stimulated.

Early in the winter of 1910 and 1911 the writer attended a Farmers' banquet in Waterburg, N. Y. The subject of the talk given by him was "Community Breeding" in which the idea of a County Breeders' Association was mentioned. Three weeks later five or six breeders who had been present at the banquet visited the writer and proposed to form such an association. The idea grew and flourished so well that by May 15, 1911, eighty-two breeders signed their desire to become charter members. With this nucleus the association was formed. The customary constitution and by-laws were adopted and officers elected.

The constitution and by-laws were made as short and concise as possible. The officers are: president, a vice-president and a secretary-treasurer. In addition to these officers, there is a director from each township in the county. These officers and directors are elected by the association. The officers of the Association and the directors form the executive committee. The office of director carries with it the privilege of calling local meetings and the duty of looking after the interests of the association in that township.

The membership of the association consists of persons who are interested in the object of this association and who pay the required annual fee of one dollar. Any person who wishes to join the association must be recommended to the executive committee by a member. He becomes a member by vote of the executive committee and by paying the required fee.

The persons who formed the organization had it in mind to make it simple and effective, with as few cumbersome details as possible. It is the duty of members to cooperate with their fellow members in the use of pure bred sires and in buying and selling animals; also to get new members and to encourage them in the practice of better methods in caring for their herds and flocks.

The activities of the association have taken five forms: there is held an annual meeting or field day in the interest of more and better pure bred stock in Tompkins County; there have been special premiums offered at the local fairs in Tompkins County to members of the Tompkins County Breeders' Association; the association has advertised the surplus stock of
its members in two of the leading farm papers in the eastern United States for the past six months; the association publishes a monthly journal of twenty pages called the Tompkins County Breeders' Journal; the association has projected the establishment of a Farm Bureau in Tompkins County which shall be controlled by the farming people of Tompkins County.

Two annual meetings have been held. The accompanying illustration shows that one of them was a success from one point of view at least. The association has grown to a membership of one hundred and fifty. These members have a common, definite object. They are educating each other to a better understanding of the benefits of better practice in livestock farming.

As a direct result of the activity of the work of Tompkins County Breeders' Association, there was distributed in 1911 in Tompkins County to the members of the association $650 at the county fair and $325 at town fairs within the county. In 1912, the county fair paid $650 to members of the association, the town fair mentioned above paid $325 and a second town fair paid $75. The total paid out in two years amounts to $2025. All of this money except the amounts paid to the fair associations as entrance fees has been distributed among our members. A greater interest in the stock show departments of the fairs has been stimulated. This spells permanent improvement in the herds and flocks of the county. About 80 per cent of the money above noted has come into the county from the State Department of Agriculture, as that part of the fair premiums paid according to State law from the funds appropriated for this purpose by the State legislature. This sum of $1600 would never have come to our breeders if it had not been for the activity of this association. The fact that many of our breeders are getting material benefit from the work of the association makes of these members workers in the interests of the association.

The association has received in the past six months one hundred and sixty replies to its two advertisements. Thirty-five have asked for the sales list (explained under the journal below) fifty-five for Guernsey cattle, thirty-eight for Holstein cattle, fourteen for Jerseys. Three persons have
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asked for Shropshire sheep and one each for Southdowns and Hampshires. Berkshires have been wanted by five persons, Chester Whites by two and Tamworths by one. Twenty-five persons have inquired for cattle, thirteen for sheep and ten for swine without mentioning any breed.

The cost of advertising in this way has been to date $66.80. This cost has been borne by the association. Two sales have been made. The manner of making sales is this: the answer to the advertisement comes to the Secretary of the association; for a time he has sent the sales list as printed in the Breeders' Journal, of late he has been sending the name and address of the inquirer to those members having stock for sale or the particular breed wanted. The number of answers to the advertisement has been remarkably large. The reason why more sales have not been made is solely due to the fact that the breeders have not had the stock wanted from the standpoints of quantity and quality. There is no question of the opportunity for the sale of stock if the members will only produce it of the proper quality. There is a great opportunity in this field of cooperative advertising of surplus stock.

The Tompkins County Breeders' Journal has tied the association together. This little magazine has been mailed to subscribers for twenty-five cents per year. It has had a list of about two hundred fifty paid subscribers and has been sent free to as many more each month. The journal has been devoted to the interests of better farming. A Grange department is maintained to which correspondents in each local Grange contribute from time to time. A Breeders' Directory is maintained in which is listed the names of all those members of the association who have any pure bred stock. The name and address of each member is listed under the breed of horses, cattle, sheep, swine or poultry which he raises.

A sales list is maintained in which members may list each month those animals which they have for sale. Each member is charged for this the bare cost of printing and he may make his list short or long. This department has great possibilities when more stock is available.

Lastly the Breeders' Association has projected a Farm Bureau for Tompkins County. The question of a Farm Bureau was brought before the Tompkins County Pomona Grange by a member of the Breeders' Association and the Grange responded by hearty cooperation. It is hoped that other county agricultural organizations will also cooperate. Through the combined efforts of the Breeders' Association and the Pomona Grange the question was brought to the attention of the County Board of Supervisors, who appropriated $1000 by unanimous vote for Farm Bureau work in Tompkins County. The Pomona Grange had already appropriated $100 from its treasury. The New York State College of Agriculture has promised aid in every way possible except by direct money contribution. The aid of the New York State Department of Agriculture will be asked to the extent of $600. This will probably be given bringing the total in sight to $1700. The different agricultural organizations will be thoroughly canvassed to raise $800 for this purpose.

The facts here given are presented for what they may be worth for the consideration of other communities interested in stock breeding. The members of the Tompkins County Breeders' Association think that the results already obtained have been worth the effort. However, the greatest results from this work are yet to be realized. In the words of Professor Wing "When we have pure bred chickens, pure bred hogs, pure bred sheep, pure bred cows and pure bred horses, we will have pure bred men and women and that is what we all want."
ESTATE MANAGEMENT IN THE COMMUTING ZONE OF NEW YORK CITY

T. E. Milliman, '12 Sp.
Manager "Timber Point," Great River, L. I.

ONE of the fields of endeavor ordinarily overlooked by a man leaving the Agricultural College is estate management. On the outside, it would appear that the average private estate offers little opportunity for the practical man. This statement is true in so far as turning a real profit is concerned. It is obviously impossible to return a dividend where so much labor and land are used for unproductive purposes. This objection can be found with nearly all the wealthy estates in the commuting zone around New York City. If the labor income factor is not considered it can be truthfully said that estate management offers exceptional opportunities for advancement and success to the college man.

To visit a private estate, is in effect, to visit a fruit farm, a poultry farm, a dairy farm, a market garden and a private park. An estate has not all of the earmarks but some of the features of each. Each department is run as a speciality and has one or more men in charge, who are responsible to the manager for their respective departments. The farming proper is usually done by the same men who care for the lawns and driveways.

Most of the crops are used on the farm with the possible exception of hay, potatoes and some fruit. The methods employed in caring for the crops are often out of date and expensive, due to the hand labor ideas of promoted English and Scotch gardeners who act as managers. There is great room for development in the cropping systems of the great estates on Long Island and in New Jersey and southeastern New York. It remains for the modern agriculturist to accomplish this work.

The lawns, flower gardens and ornamental shrubs and trees usually offer an unlimited opportunity for development and study. A knowledge of landscape gardening is especially valuable in this branch of the work. It devolves upon the manager to plan and execute the making of new drives, lawns, flower beds, shruberies, etc. A working knowledge of tree surgery is essential in keeping the many trees and shrubs in a thrifty condition.

The live stock on an estate is usually pure bred. This means that time and study must be given to selection, breeding, registration, etc. Milk is produced in the most up-to-date cleanly manner. Usually all milk products are used at the residence of the owner and at the various tenant houses.

Poultry and hogs are usually kept in large numbers, principally for home use. The poultry plant in particular must be thoroughly equipped and run on a strictly modern basis, with a good man in charge of it so to meet the requirements demanded of it.

The vegetable garden occupies a position of importance on a large estate. Demands are made upon it every day in the year. By proper handling the garden will grow all of the vegetables that are needed whether in or out of season. In addition there is usually a surplus which finds a ready market in nearby villages. A great variety of common and semi-rare vegetables is grown. In order to have vegetables at all seasons of the year recourse to hot houses, cold frames and forcing houses is made. On Long Island, as a solution of the drought problem overhead irrigation is being introduced with considerable success.

The work of the manager is to see that each department and the business as a whole is run efficiently, economically and smoothly. It is
obviously impossible to specialize in any one branch of the work; the demands of each department being such that little time is left for concentration on one subject.

There is a growing dissatisfaction with the way the large country estates have been managed in the past. Lack of the proper kind of system and heavy cost of maintenance are two of the chief complaints. Owners are turning to the younger generation and particularly to college men for a solution of the difficulty. How to build up an efficient and economical system on a type of farm traditional for its extravagance and waste is the problem that confronts the newcomer. That it can be done there is no doubt. In general the same principles of farm management that are true on the general farm hold equally true on the estate. Crop rotation, soil amendment, modern machinery and cost accounts are some of the remedies. Much can be accomplished by keeping the unproductive enterprises separate from the productive and introducing labor saving devices and systems wherever possible.

As compared with the ordinary farm of equal size the country estate is more complex, has more money invested in it and is much more intensively cultivated. On the farm the same men perform all of the different operations. On the estate each man is more or less of a specialist with the possible exception of the manager and one or two other men. A due regard must be paid to neatness and appearance on the estate, while on the farm much can be sacrificed for utility.

To the graduate and others who wish to specialize in management the country estate offers exceptional opportunities for development. While perhaps it is not desirable as a life work yet as a training ground for executive ability and the art of handling men it is surely comparable with the other great lines of agricultural work.

THE NEW ANIMAL HUSBANDRY BUILDINGS

By R. E. Deuel
Instructor in Animal Husbandry, Cornell University

The location of the new Animal Husbandry buildings is at the east end of the Alumni playground and west of the new College barns. This seems to be a most fitting site for these buildings, inasmuch as it will give the student greater advantage to more closely correlate his theoretical and practical training.

The buildings, two in number, are greatly needed by the department, which like other departments of the College has been at work under adverse circumstances. The main building will be used for lecture, class rooms, and office work, while the other will be a judging pavilion.

The contract has been let for the main building and ground will be broken in the early spring. Ninety-one thousand dollars has been appropriated for this structure, while thirty-eight thousand dollars is available for the judging pavilion, but as the contract has not as yet been let operations will not be put into motion until a later date.

Under the old conditions the faculty has been handicapped in the bringing forth and working out of certain new ideas in the work of the department, due to lack of equipment. The main building, having basement and three floors, promises opportunity for the carrying out of these and other new ideas.

Not only will it make possible the giving of more practical work in the courses already offered, but will afford room for several new courses,
the need of which has been felt by both staff and students. Beside the locker and storage rooms there will be found in the basement, laboratories for milk testing and meat curing, also a farm slaughter room.

The demonstration and instruction in slaughtering will be among the new adventures of the animal husbandry department. The instruction will take the form of practical work in the slaughtering of the various types of meat producing animals. The demonstration of the different cuts of meat, the curing and preserving of the same, and reduction of the fats to lard will be part of the course. A large refrigerator will be installed for cooling and holding meats for a short period.

That this work may be of greater value from the economic as well as the educational point of view plans are being made whereby the department, through this new branch of its work, may provide as far as possible the meat to be used in the cafeteria of the new Home Economics building. Such practical instruction will be of inestimable value to the students.

For experimental breeding purposes there will be quarters in the basement for the care and housing of such small animals as guinea pigs, white rats and pigeons.

The main lecture room, forming a wing on the east side of the building, will have a seating capacity of about three hundred, making it the largest departmental lecture room in the
College of Agriculture. Small rooms suitable for the preparation of demonstration material for lecture work will be built in the easterly corners, and animals may be brought before the class in front of the lecturer's desk from these rooms. Inasmuch as the room will have three outside walls there will be good light, and because of the amphitheatre style of room the students will find great ease in seeing the lectures and demonstrations.

On the same floor will be located the offices of the head of the department, a large class room and seminar room, also the general office of the department. The advance registry room, where the records of the official testing of pure bred stock, which are supervised by the Cornell Experiment Station, are cared for and the various details connected with this work will also be found on this floor.

The second floor will be given over to the study of animal nutrition, and opportunity for laboratory work along microscopical lines will be offered, while a large laboratory for the study of feeds and for class room work is provided. The professor having this work in charge will be officially located on this floor.

The third floor, similar in detail to the second, will be used for the study of the principles of breeding. There will be a library containing the herd and flock books of the different breeds. A reading room will contain periodicals relating to animal husbandry, and will also be used as a
THE CARE OF CORN FOR SEED

By C. P. Hartley

Physiologist in Charge of Corn Investigations
United States Department of Agriculture

SOME idea regarding the economic importance of corn may be had by a realization that in the United States it exceeds in acreage, yield and value, wheat, oats, barley, flax, rye, buckwheat and potatoes combined. An increased value of one cent per bushel would mean an additional income to the farmers of the United States of twenty-five million dollars, while an increased production of but one bushel per acre at fifty cents per bushel would add fifty million dollars annually to the national wealth.

In addition to its magnitude, the crop is important because of the wide range of industries in which some portion of the corn plant plays a more or less important part. In fact, it may almost be said that there is no industry into which some product or by-product of the corn plant does not enter. Therefore, any conditions which effect the production of this king of crops are of interest to every citizen of the United States.

Each spring many farmers discover when it is too late, that their seed corn either fails to germinate or produces but a weak growth. They must either pay high prices for viable seed, which may or may not be acclimated and adapted to their conditions, or by means of laborious tests they may pick out such of their seed as will at least "come up."

With very few exceptions the best possible seed may be selected on the farm on which it is to be planted. The process of seed selection is of too great importance to be conducted incidently while husking, and in many localities if selection is delayed until husking time, the vitality of the seed will have already been injured by an early freeze. As soon, therefore, as the crop ripens, go through the field with bags and husk the ears from those stalks which have produced best without having had any special advantages, such as space, moisture or fertility. Late maturing plants with ears which are heavy because of an excessive amount of sap should be ignored.

Other things being equal, short, thick stalks are preferable. These permit of thicker planting, are not so easily blown down, and are usually more productive than slender ones. The tendency to sucker is hereditary. Other things being equal seed should be taken from stalks having no suckers.

When the seed corn is gathered, the husked ears should be put in a dry place where there is good circulation of
air, and placed in such a manner that the ears do not touch each other. If no previous arrangements for caring for the seed have been made the ears may be suspended with binder twine, tying them about two inches apart. The twine will support fifteen or twenty ears.

If this method cannot conveniently be followed, tables may be improvised by placing boards across boxes or barrels. These boards should be dry and not too wide, and should be spaced one or one and a half inches apart. The seed ears can be put on these tables using care to have them spread out to insure a good circulation of air among them. It will be advisable to move the ears a couple of times at intervals of about two days, when first put on the tables.

The seed should be placed in a shed or building, having a good circulation of air, and where it will be protected from rain and excessive cold, as well as from rats and mice. Do not store the seed in a cellar. The driest cellars are too damp and do not afford a free circulation of air. If seed corn is stored properly it should become thoroughly dry and if kept dry it will be safe from injury except by insects and vermin.

By the proper selection and care of seed corn the yield may be greatly increased with but a slight additional expense. Increases of 18 bushels per acre, due to properly preserving the seed, have been obtained. In every phase of present day agriculture, the tendency is toward efficiency. The days of large profits under profligate methods have passed, and there is no cheaper or easier way of increasing the profits from the farm than by properly selecting and caring for your seed corn.

THE COÖPERATIVE CREAMERY

By W. B. Liverance
Professor of Dairy Industry, University of Wisconsin

THEORETICALLY, the coöperative creamery system is the ideal one for the farmer. Practically, wherever the coöperative creamery has been properly organized and managed, the theory has proven to be true. Why should it not? Webster says to cooperate is "to combine with others in an enterprise for economic purposes" or "to operate together or jointly for a common object or to a common end or result." Surely this is the purpose of the coöperative creamery. We see throughout a dairy state proprietary creameries, or those owned by individuals, returning a good income to their owners. This is due to the fact that the farmer receives a set price for the butterfat in his cream and the owner of the creamery gets the benefit of the overrun, or that part of the butter that is made up of water, salt and casein or curd. This, in a well regulated creamery, will amount to about 20% of the original butter fat, or for each pound of butterfat in the butter there will be one-fifth of water, salt and curd which is sold at the market price for butter. Hence, with butter at 30c per pound, for each pound of butterfat there will be a gross profit of 6c. To be sure this is not clear gain, but with a creamery working on an economical basis and manufacturing a fair quantity of butter, the cost of making should not exceed 3½c per pound at the maximum. Therefore, the 2½c which would be the creamery owners profit would go to the patron in case he were selling to a coöperative creamery.

Many coöperative creameries throughout the country have failed. This has been due to one or more of many causes. It is essential that a coöperative creamery be in a locality with sufficient cow population. This is very important because if enough
cream can not be secured, the cost of manufacture runs so high that the creamery can not operate. In the second place many co-operative creameries are being managed by farmers, business, or professional men that have no practical knowledge of creamery work and hence make a failure of it. Too many creameries are employing incompetent men as buttermakers because their services can be had for a very small wage. When one considers that the buttermaker is alone responsible for the overrun and the quality of butter made, it is self-evident that cheap labor is not the most economical in the long run. The writer visited a co-operative creamery recently where the buttermaker, who was also manager, could not test cream and was getting a negative overrun. It is needless to discuss the financial condition of this creamery. This is only one of many similar instances.

Many of the failures of co-operative creameries are due to the creamery promoter. This man is a representative of a firm which preaches that it is doing the dairy industry much good by going into communities where there are no creameries and organizing co-operative plants. The promoter is usually a very smooth agent who shows the co-operative creamery in very fly colors and very often succeeds in blinding the farmers to the true conditions. No attention is paid to the number of cows to be found in the community and no effort is made to assist the farmers in getting either a good manager or competent buttermaker. Invariably, from 75 to 100% is charged for the building and equipment. Is it at all peculiar that such creameries fail? Dairy Schools, State Dairy and Food Departments and the Dairy Division of the U. S. Department of Agriculture have competent men who will gladly assist a community in organizing a co-operative creamery without any cost to the organizers. Why not then take advantage of the experts whose salaries are paid by the taxpayer? Such a man will represent true conditions and will say whether or not a creamery organization is advisable and will save the community very much money in case a creamery is built.

Many co-operative creameries are being operated very successfully, especially in the middle west. Numerous instances could be cited where the patrons of such creameries are being paid from one to three cents more per pound of butterfat than are patrons of proprietary creameries in a near locality. However, many co-operative creameries are paying less than private creameries, because of inefficient management. Such a condition should not exist, but if it does aid should be asked of either the state or federal authorities.

As before mentioned the co-operative creamery is ideal for the farmer. It not only gives the patron his share of the creameries' profits but he has a close interest and can be prevailed upon to produce clean, sweet cream and to patronize the creamery even though it has keen competition. When proper cooperation is practised the farmer sees the advantages of dairying. He gets more and better cows and eulls out the poor ones; he sees the results of good feeding and soon builds a silo; he sees the necessity of good breeding and profits thereby, hence such a creamery pays in many ways.

In summarizing, we can see that while a cooperative creamery is essentially a proper investment for a community, it is imperative that enough cows should be had at the time of organization to insure enough material to make running expenses. Good management and a competent buttermaker are essential, and perfect unity must be had among the patrons.
The People and The College

The Countryman heartily welcomes all who are visiting the College of Agriculture at this time either to attend or to take part in Farmers’ Week. Aside from the information, enthusiasm and inspiration gained from a week spent here, the people of the State of New York are given an excellent opportunity to see for themselves what is being done here and what is needed. They will find a rapidly growing institution, an unexcelled staff of instruction and an appreciative and enthusiastic student body. They will see that rapid as is the increase in buildings, still more rapid is the growth in the number of students. Several departments are seriously handicapped by lack of room; none have room to spare. The people have every proof that all the money appropriated for the College of Agriculture is being utilized to the best possible advantage.

We trust that every visitor will return home with a fuller sense of responsibility for and a keener interest in the affairs of our college. The College of Agriculture is for the people, it should cooperate with the people in order that the fullest opportunities for service may be realized.

This issue of the Countryman is devoted largely to the subject of breeding live stock. We feel that the farmers of this state are neglecting an industry which is, at prevailing prices, extremely profitable. During the decade from 1900 to 1910 the number of horses in the state decreased by more than 35,000, yet it is estimated that New York pays $16,000,000 a year for horses imported from other states, at prices very much higher now than formerly. In the same period of time, the number of sheep has decreased from 1,745,000 to 930,000, while the number of dairy cows has remained constant. There are certainly abundant opportunities for the wide-awake breeder in this state.

A Department of Botany

The present botanical laboratories have been for sometime inadequate to accommodate the constantly increasing number of underclassmen in the College of Agriculture as well as those students of the College of Arts and Sciences who have wished to pursue courses in that department. So great had the crowding become that it was necessary to relieve the present freshman class of the required...
course in botany for the current year although that science is recognized as one of the foundations upon which to build an agricultural education.

We are, therefore, very much pleased to announce that at a meeting of the Board of Trustees held January 18 in New York City, Dr. Karl McKay Wiegand was appointed Professor of Botany in the College of Agriculture. Professor Wiegand graduated from Cornell in 1894 and received the degree of Doctor of Philosophy in 1898. He was for a number of years Professor of Botany in Cornell University. Since that time he has been Professor of Botany in Wellesley College.

Dr. Wiegand has been a frequent contributor to technical, botanical literature. One of the most widely circulated of his works is a manual entitled "The Trees in Winter." During the past few years he has spent a great deal of time in studying and describing the flora of Newfoundland.

The COUNTRYMAN can but express the satisfaction of the undergraduates and faculty at the return of this man of science who went out from Cornell and has made good.

Au Revoir

To those who have completed the Short Course and to those regular students who have graduated and are leaving the University at this time The COUNTRYMAN extends a most hearty goodspeed. You are leaving associations which have become endeared to you to put to practical application the facts gathered while here. It would be impossible to find a more fitting message to you who are departing than the following words of Dean Bailey:

"Everywhere you will find men and women who know more than you know. Some of them may be the most ignorant workmen. Recognize their knowledge and their skill, and give them the honor that all knowledge and all skill, no matter how small, is entitled to receive.

"You must be properly conscious of your short comings and make no boastful display of your knowledge. With many men with whom you come in contact, physical skill counts for more than intellectual training. Recognize the fact and give them their due. There will be a man who can outdo you in sticking a pig, or binding a load of hay, or in getting a wagon out of a rut, or in tying up a horse's tail, or in adjusting a clevis on a plow. Do not disregard the small things. Life is made up of small and homely things and a man masters in big things only because he has first mastered in little things. Some persons never get beyond the small things.

"You must always keep your thinking ahead of your working. We are often told that we must practice what we preach. That is very wrong advice. It is poor preaching that does not set its stakes at least a little ahead of the day's work. When we catch up with our preaching, we cease going. I would give you Emerson's advice, to hitch your wagon to a star; but be sure that you stay in the wagon."
CAMPUS NOTES

The first Assembly of the new year was held Thursday evening, January 9, 1913, and again the capacity of the auditorium was taxed to the utmost. After the singing of the Alma Mater the program continued with selections by the Girls' Glee Club and the Mandolin Club, both of which pleased as was shown by the enthusiastic applause which they received.

After reminding us that, contrary to the opinion of most of us, there are things worth while in the fields in January, that there is satisfaction in adapting ourselves to the times and in being in touch with our environment the year around, Dean Bailey spoke in part, as follows:

Some one is responsible for the affairs of life, for the things that go right and for the things that go wrong. It is difficult to know who is responsible. It is difficult to find the man or woman in society who sets forth ideas. We are all trying to 'Find the Man' that we may know who they are and where the responsibility rests.

In many cases we are endeavoring to center our government on certain responsible men so that we can find the man. We need persons who stand out, who stand for something personal. The power of the individual is going to grow in the future rather than the opposite.

The fundamental factor in all country-life movements and organizations must be the personal contact of man to man and of woman to woman.

Farm work is individual work. The farmer must depend on his own efforts, for he is an individual and independent man.

I would rather see the Farm Bureau grow and not be pushed; the people must stand behind it and not merely look on. Just as when you go back to your farm the responsibility of it lies in yourself, so the responsibility of your education lies in yourself. The development of your education depends on your own "self teaching". And remember, that "Opportunity knocks unbidden at every gate".

After some very pleasing selections by the Banjo Club followed by the Evening Song the program gave way to the customary social hour.

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Prof. H. J. Quayle, of the department of Entomology of the University of California, stopped at Ithaca on his trip around the world. He is making an investigation of parasites for citrus scale insects.

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Prof. A. J. Clark, California State Commissioner of Horticulture, has come East to investigate the Mediterranean fruit fly. He is interested in keeping it out of this country.

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Mr. H. E. Wilkinson of the Department of Horticulture, is scheduled to give a series of six lectures during the months of February and March at the Buffalo Y. M. C. A.
Professor and Mrs. M. W. Harper were gladdened on January 9, 1913, by the arrival of a six pound boy.

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N. P. Underdown, who is managing the Rockland Park Farms, visited the Campus January 3.

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The Chautauqua County Branch of the Students' Association held a meeting at Jamestown on December 30. The 90 men present were addressed by Professors Mann and Gilbert, who represented the College of Agriculture.

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Mr. S. S. Stewart, proprietor of Brookside farm, Newburgh, N. Y., has given to the Department of Dairy Industry $50 to be offered as prizes for a clean milking contest. This contest is open to those students who are taking milking practice in Animal Husbandry 10. The money has been divided into two prizes, one prize of $25 being offered for sample showing no growth of bacteria, and another prize of $25 to be divided pro rata for counts between 1 and 2000 bacteria per cubic centimeter.

Mr. Stewart conducts a certified milk farm and he has produced milk exceedingly low in bacteria content. For the first three months of the year just past, the average bacteria count of Brookside milk was only 86 germs per cubic centimeter and the average for the first six months of the year was only 97 germs per cubic centimeter as reported by the New York Medical Milk Commission. These are very low counts even for certified milk, and this is especially low when the length of time over which the record extended is taken into account.

* * *

The excavation work for the new Forestry building has been completed and the actual work of construction will be started as soon as weather conditions permit.

The Department of Forestry has again moved into different quarters and is now located in the new Home Economics building.
The fourth annual meeting of the Students’ Association of New York State Agriculture College will be held Thursday, February 13 at 10 a. m. during Farmers’ Week. Director Bailey will deliver his annual address to former students at this meeting.

* * *

The executive committee of Cornell University appointed Director Bailey to represent the University at the installation of Professor Clyde August Dunway as president of the University of Wyoming in January. Professor Dunway graduated from Cornell, College of Arts in '92 and later became president of the University of Montana. Director Bailey was in Laramie for one day and returned to Ithaca immediately.

* * *

The Society for Horticulture Science held its ninth annual session at Cleveland in connection with the American Association for the Advancement of Science during the holidays. The College was represented by Professor C. S. Wilson of the department of Pomology and Mr. Paul Work of the department of Horticulture. The latter presented a paper on “Teaching Vegetable Gardening”, a subject which is clearly receiving far more attention among our colleges than ever before. There are now in American colleges nearly sixty separate courses dealing with vegetables and this branch of horticulture is being rapidly placed in the hands of men who give their whole time and energy to it.

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The Poultry Department has removed from their old quarters in the Dairy building into the new Poultry building which has just been completed.

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Professor Rogers was in Rochester, January 11, with a class in Breeding and Judging at the Flower City Poultry Show.

* * *

The Winter Course students took an excursion to Buffalo on January 17 to visit poultry farms. They visited the poultry farms of Mr. Roy Dunn at West Henrietta, Mrs. A. Hooker at Genesee, the Yates Farm at Orchard Park and the Connors poultry farm at Angola. There were about a hundred students that took the trip.

* * *

Professor Webber of the Department of Plant Breeding is now in California making plans for the new Citrus Experiment Station and Graduate School of the University of California to be located at Riverside, California. Before his departure from Ithaca, Professor Webber was entertained by the Synapsis Club at the residence of Dr. Love. Many friends both in person and by letter, took advantage of the occasion to express their best wishes for Dr. Webber’s success in his new and important position.

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Professor J. M. Trueman, who formerly was instructor in the department of Dairy Industry, was grieved by the death of his son Thompson, December last.

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L. C. Johnson, W. C. Dairy, has been employed for some time by the De Laval Separator Company, Moravia, N. Y.

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Professor Stocking has resumed his regular work after an illness of three weeks’ duration.

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Professor Ross recently gave an address before the Rushville Grange on “Keeping Cow Records.”

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The Cornell Dairy Association will hold their annual meeting on Wednesday, February 12, during Farmers’ Week. Important questions will be discussed and the annual election of officers will take place.

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Mr. W. W. Robbins, formerly instructor in botany at Lehigh College, and Mr. J. K. Wilson, formerly
Mr. M. J. Prucha, formerly Associate Bacteriologist of the New York State Experiment Station, Geneva, N. Y., has succeeded Dr. M. M. McCool as instructor in Plant Physiology. Dr. McCool is now Assistant Professor in Soils at the Oregon Agricultural College.

Mr. Benjamin was in New York city during the holidays on an excursion of the class in Marketing and Poultry for the Home.

The Long Island Branch of the Student Association met on January 16 at Riverhead, L. I. Professor H. H. Whetzel, who represented the College of Agriculture, addressed the meeting.

On Tuesday, January 21, the following of the Agricultural Association officers were elected for the current term: President, E. A. Brown, '13; vice-president, L. J. Benson, '14; secretary, Miss P. V. Decker, '14; treasurer, B. N. Phelps, '14.

* * *

Leslie E. Hazen of Centralia, Kansas has accepted a position as assistant in the Department of Farm Mechanics. He graduated '06 from the Kansas Agricultural College, and took a position in the Department of Plant Industry at Hayes, Kansas, investigating Dry Land Agriculture. After he worked in this capacity for a little over a year, he spent two years improving the home farm. He was then called upon to start a course in agriculture at The Southern Academy in Eureka. After remaining here for a year, he again took up Dry Land Investigation under the United States Department of Plant Breeding. He has been in charge of this work since 1911 at Armville, Texas. Mr. Hazen, in the afternoon, will instruct in the Farm Mechanics Laboratory, and in the morning, he will take a course in Mechanical Engineering at Sibley College, in order to train himself to be an Agricultural Engineer.

His wife and two children will arrive in Ithaca, Feb. 15th, when they will go to their home in Forest Homes.
THE CONCRETE ICE-HOUSE FOR THE FARM

Nothing adds more to the comfort and profit of country life in the long hot summer months than a good home ice supply. To obtain such a supply it is necessary only to erect a small ice-house and for this purpose, no material is as satisfactory as the fire-proof, rot-resisting, and permanent concrete.

To build such a concrete ice-house, first select a well drained site, preferably one that is shaded by trees or buildings. For the average farm with a small dairy, it has been found that dimensions of 10 by 14 feet (inside measurements), 9 feet to roof, and 13 feet to ridge pole, will house an ample supply.

The house may be erected after any of the recommended methods for the construction of concrete buildings; but special attention should be paid to good floor drainage, roof ventilation, and wall packing.

Such a family ice-house may be erected at a cost of $75. Moreover, it is a life-time investment and one that constantly yields rich dividends not alone in hot weather comforts, but also in additional profits through the more advantageous storage and marketing of fruit, poultry, and other farm products.

NATIONAL ROADS

National Roads as an exact form in which the Government should participate in highways construction, is a belief which is becoming country-wide in its acceptance. The latest proposition brought forth along these lines is by Representative Stanton Warburton of Washington State, who contends for a system of National Military Roads. Mr. Warburton proposes to make the tobacco users of the country pay for the building of these National highways through the imposition of a tax so small that the smokers will go right on smoking as usual without consciousness of the great benefit they are bestowing upon the people of this country.

Assurances from various members of Congress are to the effect that the memorial to Abraham Lincoln should be in the form of the projected National highway from Washington to Gettysburg. It is generally recognized that this highway would furnish an excellent object lesson of what national participation in the building of good roads means, and will besides, if constructed, fit admirably into any great system of national highways which is certain to come in future years.

THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION

The Panama-Pacific International Exposition of 1915 will include an agricultural exhibit of an extent and character never equalled in any previous world's fair. The display in the great Palace of Agriculture will reveal to every observer, the giant strides made in agricultural progress throughout the world.

Special attention will be given to the display of farm implements and machinery, and improved methods in agricultural operations will be accurately and graphically illustrated.

A very large sum of money will be offered as prizes in the Live Stock exhibit. More than 200 cows will be entered in the dairy tests and a complete modern creamery will show in detail each process involved in the manufacture of dairy products.

The Horticultural exhibit, favored by the soil and climate of California, will be of greatest interest to every orchardist and florist. The whole world is being searched for rare and beautiful plants and the entire exposition grounds will be transformed into one great enchanted garden.

* * *

New York State Agricultural Society

—The old and great New York State
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Agricultural Society, which had slept for nearly two decades when it was revived to usefulness again by Raymond A. Pearson, then Commissioner of Agriculture, held its annual sessions at Albany last week. The meeting was a successful one in spite of the fact that the attendance was smaller than last year. The latter was due principally to a lack of proper advertising, although the coming of the State Fruit Growers' meeting so soon after undoubtedly had much to do with it.

The meeting was a success because some big problems were there discussed and to a certain extent were clarified in the minds of most of those who attended. The problem which received the most attention was that of farm credits. It is fair to say that those who came to the meeting believing that this was not the greatest problem confronting farmers found much to substantiate their beliefs. Farm credits appear to be in a better condition in this country than many persons believe. It appears, too, that the conditions which have made farmers' coöperative loan societies in Europe so necessary and so successful there are found in this country only to a limited extent.

Coöperative marketing received some much needed attention and was one of the live questions up for discussion. Some progress was made toward definite plans to develop this work in the state.

Another important matter which came up for discussion, and which, though not settled, had a much needed attention focussed upon it, was the necessity of limiting and correlating the agricultural work being done in the state. The Legislature is being asked for appropriations for agricultural work from all sides. The energies of the state are being scattered so that efficiency is impaired. Many members of the Legislature, though liberally minded toward agricultural needs, are uncertain as to what they ought to do. As the clearing house for all the agricultural organizations in the state it is the duty of the state society to take a position on these questions.

BOOK REVIEWS


This book was written for those people who want to make a success of the poultry business either on a large or small scale. Beginning with the initial step it discusses clearly and completely every factor which goes to make success—the choice of breed, hatching and brooding with the mother hen and the incubator and artificial brooder, feeding and food values, disease, its prevention and the various remedies, the different kinds of houses, the raising of ducks and geese, of guinea hen and quail.


This book discusses concisely and yet fully the characteristics, life histories, and means of control of the more common injurious insects. A feature of the work is the illustrations, numbering more than 600, which have been prepared with the purpose of showing, entirely independently of the text, the characteristic injurious stage, or the typical work of the insect where that is characteristic.
FORMER STUDENTS

L. O. HOWARD.

'77, B.S.A.; '83, M.S.—Altho this particular space has always been reserved in The Countryman as a place in which we could briefly outline the life of some graduate of the College of Agriculture who has made good since leaving college, it is seldom that it receives a worthier subject than Dr. Leland Ossian Howard of the class of '77. Dr. Howard was born in Rockland, Ill., June 11, 1857. He was a son to Ossian Gregory and Lucy Durham (Thurber) Howard. After receiving a good common school education in his home town he came to Cornell and specialized largely in Entomology. He returned after graduation to take his B.S. degree in 1883. From this time on his work had to do almost entirely with entomology. Taking a position as Assistant Entomologist with the department at Washington, he soon became Chief of that Bureau. Dr. Howard's rise from this time on was rapid, holding one responsible position after another and being elected to many societies. He was hon. curator of the U. S. Nature Museum in 1895 and a lecturer on insect life at Swarthmore and at Georgetown Graduate School the same year. Since then he has been permanent secretary of the A. A. A. S.; president of the Association of Economic Entomology in 1894, and president of the Biological Society of Washington (in 1897). For several years he was editor of "Insect Life"—a journal of the Bureau of Entomology, U. S. Dept. of Agriculture. His name appears in many Government bulletins and in three books—"Mosquitoes, How they Live," "The Insect Book" and "The House-Fly Disease Carrier." This latter book is now being published in Hungarian and Swedish. Dr. Howard also contributed to the Webster and Standard dictionaries and the new International Encyclopedia. At present he is a Trustee of Cornell University. He was granted his Ph. D. in 1896 by the Georgetown University. In 1911, he was granted the degree of M.D. by George Washington University for "distinguished services to science in the line of preventative medicine." In the same year he was given the degree of LL.D. by the University of Pittsburgh.

Dr. Howard was married in 1886 to Marie T. Clifton of Washington, D. C.

'87–88, F. H. Richards, manager of F. C. Stevens' Hackney Stud Farms at Attica, N. Y., will be at the University during Farmers' Week to select several Short Course men for positions on the farms.

'96, B.S.A.—The appointment of assistant Prof. H. C. Troy to a full professorship was announced by the Dairy Department at the beginning of the college year. In addition to his duties as lecturer on the winter course staff, Professor Troy has for several years efficiently filled the position of
dairy chemist in the local laboratory of the State Department of Agriculture. He is the author of several important bulletins and one book "Milk and Milk Testing." His promotion comes as a well merited recognition of that which has gained for Professor Troy the reputation of being the leading expert in the state on problems related to dairy testing.

'98, W.D.—John E. Kruse is connected with the New York State Agricultural Department and is stationed at Randolph, N. Y. Mr. Kruse has been in the department for fifteen years.

'98, B.S.A.—Percy O. Wood spent the holidays in Ithaca. Mr. Wood is in the employ of the U. S. Bureau of Soils and has recently surveyed an area in Kansas. From Ithaca he will go to Georgia to begin a survey there.

'02 and '03 Forestry School—Mr. Clyde Leavitt is now located at Ottawa, Canada, as Forester to the Conservation Commission and Chief Fire Inspector to the Dominion Railway Commission. Until recently Mr. Leavitt has been connected with the United States Bureau of Forestry.

'02, A. B.—Mr. J. P. Kinney, who was a student in the old Cornell Forestry School, has left his position as Assistant Chief of the Indian Forest Service of the United States Department of Agriculture to take a year of study along the lines of Forestry and Irrigation Law, at Cornell. Mr. Kinney will receive his Master's degree in Forestry at the end of the present year and will be the first graduate of the new Department of Forestry.

'02, Sp.—Mr. T. M. Curran who for several years has been a forester in the Philippine Service has been called to the Argentine Republic, where he will act as one of a board of three men who are to organize a Forest Service in that country to be modeled after the Forest Service of the United States.

'03, B.S.A.—Arthur Cowell has been appointed Assistant Professor of Horticulture at Pennsylvania State College.

He will be at the head of the Department of Landscape Art.

'04, B.S.A.—Mr. Walter Brown. Announcement has been received of the marriage of Mr. Brown to Miss Clara Louise Raddas of Corvallis, Oregon, on Tuesday, December 31, 1912. Mr. and Mrs. Brown will be at home at "Old Baldy Orchards" at the above place after March 1.

'04, Ex.—F. E. Lewis Margolian, formerly with Clark and Lyford, Consulting Foresters of Portland, Oregon, has entered the office of the United States Forestry Bureau at San Francisco, California.

'04, F. E.—Clyde Leavitt is at Ottawa, Canada, as Consulting Forester for the Conservation Committee of the Dominion of Canada.

'06, B.S.A.; '07, M.S.—Chas. F. Clark is with the United States Department of Agriculture in the Bureau of Plant Industry at Washington, D. C., engaged in investigating cotton and truck diseases and those of the cane sugar plant.

'06, B.S.A.—H. Freeman Button is director of the Manassas Agricultural High School at Manassas, Va., having charge particularly of the departments of Agriculture and Chemistry.

'07, Ph.D.—J. E. Coit of the Whitter Experiment Station, California, has been appointed Assistant Professor of Citriculture at the University of California.

'09, B.S.A.—E. G. McCloskey holds a position at the Sparks Agricultural High School at Sparks, Md. Mr. B. H. Crocheron of the class of '08 is principal of this high school. Mr. McCloskey's address is Glencoe, Md.

'09, B.S.A.—Chas. F. Boehler, until recently with George H. Miller, Landscape Architect, is now with Warren H. Manning, also a Landscape Designer at 1101 Tremont Building, Boston, Mass.

'09, B.S.A.—L. B. Cook who was instructor at Cornell Dairy Department last year has secured a position in the department at Washington. Mr. Cook's work now has to do with
Market milk investigations instead of Bacteriology as it was at Cornell.

'09—Ralph R. Root has just accepted a position as Assistant Professor of Landscape Art in the University of Illinois.

Ex '10—F. N. Darling, teacher of vocational agriculture in the high School at Walton, N. Y., spent the holidays in Ithaca.

'10, Ph.D.—Dr. O. Butler, formerly research instructor in Horticulture at the University of Wisconsin has been recently appointed Professor at New Hampshire College.

'10, Ph. D.—Dr. H. A. Harding, Bacteriologist of the Experiment Station at Geneva, N. Y., has accepted a position as chief of the Dairy division in the University of Illinois.

'10, B.S.A.—H. N. Kutschbach is very busy building a new barn and running his farm of 800 acres at Sherburne, N. Y.

'11, B.S.A.—Mariano de Ycazo. Announcement has been received of the marriage of Mr. de Ycazo to Miss Caroline Mary Hillick of Ithaca, N. Y., on Monday, January 6, 1913.

'11, W.D.—H. F. Cole has accepted a position as Dairy Superintendent on the Homestead Stock Farm at Jamesville, N. Y. On this farm which is owned by the Nottingham Bros., Mr. Cole has charge of some 300 head of pure bred stock.

'12, B.S.—David Elder is an instructor in the agricultural department of the Harwich High School at Harwich, Mass.

'12, B. S.— E. W. Peterson of Gouverneur, N. Y., visited the College on December 19th on his way home from Virginia. For the past few months he has been employed by the Agricultural Experiment Station of Virginia in fruit work.

'99-00, W. A.—W. E. Underdown has closed his services at Nyack and is preparing for a new enterprise in agriculture. He expects to make a partnership arrangement and run a private farm.

'10, W. D.—G. C. Holmes has accepted a position in the market-milk plant of George M. Oister at Washington, D. C.

'06, W. D.—John H. Lewis has started in the creamery business at Jordan, N. Y.

'12, Sp.—Thos. Murray has accepted a position with the West Virginia Experiment Station at Morgantown, West Virginia.

'12 B. S.—Walker S. Rappleye was married in June to Marion Fradenburg. Mr. Rappleye's present address is R. No. 2, Oswego, N. Y., where he is manager of a large farm. The COUNTRYMAN would like to call particular attention to this item, because in our January issue we printed same as referring to Walker Rappleye, '93, in error.

'12, B.S.—H. E. Dibble is taking a graduate course in agriculture at the University of Wisconsin.

'12, Sp.—Tom Murray is assistant at the West Virginia Experiment Station, Morgantown, W. Va., in the Department of Horticulture.

'12, W.A.—James D. Edwards, formerly manager of State Farm at Gowanda, N. Y., and later at Industry, N. Y., is now chief inspector of farms for the State of New York, with headquarters at Albany.

'12, B.S.A.—Silas Hilton Crouse, Jr., was married on Nov. 26th to Miss Eloise Roswell Erwin, daughter of Mr. and Mrs. Charles Roswell Erwin of Oak Park, Ill.

'12, B.S.A.—Henry R. Davis was married to Miss Grace M. Bierbower on Oct. 7, at Azusa, Cal.

'12, B.S.A.—Y. Hsuwen Tsou is a graduate student in Entomology at the University of Illinois. His address is Box 78, University Station, Urbana, Ill.

'12, B.S.A.—Buchanan Tyson is with the Pierce-Arrow Company at Buffalo, N. Y. His address is 60 Anderson Place.

'12, Ex.—Wade E. Malcom of Marion, N. Y., is spending a few months in Chicago, in the commission business. Mr. Malcom had been associated with his father in the canning business at Marion since he left here but about the middle of December their factory was entirely destroyed by fire.
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A PLAN FOR A RURAL COMMUNITY CENTER EXHIBITED BY THE NEW YORK STATE COLLEGE OF AGRICULTURE AT THE FIFTH NATIONAL CORN EXPOSITION, COLUMBIA, S. C. (See page 75.)
JAMES Wilson, who closes his notable career as Secretary of Agriculture at Washington, on March 4, was born in Ayrshire, Scotland, August 16, 1835. Few men in their seventy-eighth year can show either such remarkable activity or such reserve vigor as Secretary Wilson. That he did not enter permanently upon sedentary occupations until in middle life following decades of outdoor life on his farm, is no doubt one of the causes of his ability for sustained vigorous service nearly to the age of four score years. His sixteen years of service as Secretary of Agriculture gives him the longest record by several years of any cabinet officer in our government.

Secretary Wilson came to the United States when sixteen years of age—ten years before the Civil War. His father, who was a farmer on the Waters Edge in West Ayrshire, when he came to this country first settled in Connecticut, but in 1855 moved his family to a pioneer farm in Tama County, Central Iowa. The son completed his education in the public schools of Iowa and in Iowa College. He was for a time a rural school teacher near his home. In 1861 he began farming in that same neighborhood on his own account and has continued on the same farm ever since, that farm serving as his base of operations when in public work. Three of his sons have portions of the old farm and the other two sons are prominently associated with agricultural education and agricultural enterprises elsewhere.

Mr. Wilson served three consecutive two year terms in the State legislature of Iowa, beginning in 1857, at the age of thirty-two. During his last term he was Speaker of the House. From 1873 to 1877 he represented his district in Congress, and again from 1883 to 1885. During the autumn after his first election, while husking the “down row” in gathering his crop of corn, he committed to memory, Robert’s Rules of Order. The book was kept in view while he worked by placing it under the end-gate-rod at the back end of the wagon into which the ears of corn were thrown. This was his start at becoming a skilled parliamentarian. Though a relatively young man he was placed on the committee on rules of the U. S. House of Representatives much to the disappointment of older members who coveted the honors and the opportunities of a place on that committee.

From 1877 to 1883 he was a member of the Iowa railway commission. This was during the time when railway regulation was coming forward as a new principle in government, and Iowa was taking a leading position. During his last term in Congress his seat was contested. He won the applause of both Democrats and Republicans by withdrawing from the contest in order that General Grant might be made Lieutenant-General and placed on the retired list in the days of his declining health. This act was remembered with great appreciation by Congressman McKinley, later President, and by other veterans of the Civil War.
Secretary Wilson stands preeminent among American agriculturists. The beginning of his farm philosophy dates back to the Ayrshire farm where his father and other Scotch farmers worked out a splendid system of farm management and animal husbandry. There he was thoroughly trained in the ways of what was then advanced agriculture. Then followed his broad experience on the prairies of Iowa. He was one of Iowa’s group of great leaders in reducing farm practice and animal husbandry in that State to a permanent basis of soil fertility and productiveness. Mr. Wilson was one of the early organizers of the Iowa Live Stock Association, which in those days was the great agricultural society of that region. Along with Dr. S. A. Knapp and other pioneer speakers, writers and teachers of agriculture, he did a large service. He was also associated in all the leading movements to reduce the cost of transportation of farm products to the markets. He took a leading part in the grange movement in its time of growth in Iowa and when he left Congress in 1885 he entered vigorously upon agricultural editorial work. At one time he edited an agricultural page, plates for which were supplied by his county paper to one hundred county papers in Iowa. Thus in a series of papers and editorial notes he became the leading teacher of agriculture in the State. In 1891 he was elected Professor of Agriculture and Director of the State Agricultural Experiment Station of the Iowa State Agricultural College at Ames.

As head of the agricultural department of Iowa State college, Mr. Wilson did in a smaller way what he afterwards did in Washington. The department of agriculture at the college had never been built up, except for a brief time some years before under Dr. S. A. Knapp, who afterwards did such notable service at Washington under Secretary Wilson in organizing demonstration farming. The scholastic, engineering, and scientific departments of the college in those days were popular, while the agricultural department had become quite depleted of its students and little successful work was being done. During Prof. Wilson’s six years of work the college farm was established on a thoroughly educational and research basis and attracted a large student body in agriculture. A strong faculty was organized, and that department was placed on an enduring basis which has made phenomenal growth ever since.

At the beginning of President McKinley’s administration in 1897, Mr. Wilson became Secretary of Agriculture. During the administration of Secretary Rusk, 1889 to 1893 a spirit of growth had been developed in the Department of Agriculture. But the intervening administration had started out with the idea of not rapidly developing this Department, though it is claimed that Mr. Morton changed his mind toward the end of his administration and believed that he should have developed more thoroughly its activities. When Secretary Wilson’s administration began, the Department of Agriculture had an annual appropriation of $2,448,763, with 2,444 employees. At the close of his administration, March 4, 1913, the annual and permanent appropriation of the Department of Agriculture, not including moneys which go direct to State experiment stations and agricultural colleges is $23,303,044.81, an increase of nearly one thousand per cent. This growth, averaging more than a million dollars annually shows that there has been very great enterprise in starting new lines of work.

When Secretary Wilson took charge of the Department of Agriculture it was composed of various divisions and offices which were not highly organized. As he leaves it a dozen or more bureaus are highly organized each with numerous division. It has 13,858 employees, approximately one-third of whom are scientists or technicians in positions for which special education is required.

The scope of the work of the Department of Agriculture has greatly broadened during the sixteen years
of Secretary Wilson's incumbency. Notable among the new lines of work are the plant breeding and plant introduction, the study of plant diseases, the study of farm management, the teaching of farming by the demonstration method, the study and control of animal diseases, the regulation of the manufacture and sale of foods and the slaughter of meats, and the federal investigations of the good roads problem. A great Bureau of Entomology has been built up, soil and biological surveys have been extended to a large part of the country. The statistical service has been greatly extended in scope so as more completely to include acreages, conditions, and yields of staple crops, also numbers of live stock and has been placed on a basis to give general confidence in the integrity and accuracy of its reports. Education through departmental and college extension to persons not in schools has been greatly stimulated and assisted both in agriculture and in home making. Methods of research and teaching of farm management have developed well-nigh into a science, and this is now being taken to the entire people by cooperating with the States and counties through a national system of departmental and college extension and farm demonstration instruction. The publications of the Department have become both numerous as to kinds and numerous as to numbers. Thus half a million copies of the Year Book of several hundred pages, are issued annually. Hundreds of Farmers' Bulletins have been issued, some of which run up into editions of millions. These cover many phases of farm management and details of farming, and also numerous phases of home making.

A former President is quoted as having said that if he had any large question at issue, particularly if it had a political bearing, he would rather have Secretary Wilson's advice than that of any other man in the country. A former president of Iowa State College said of Secretary Wilson: "I believe he has done more for this country than any man save Washington and Lincoln." It is generally recognized that Secretary Wilson has been one of the most influential persons in America if not in the world in bringing into popular educational form the new scientific thought which has been so rapidly developed in the world during the last half century. He has done as much as any other living man to give activity, life and large status to farming. His claim that he had some influence in building up the work of the Department of Agriculture through "choosing the men who have done this work" is both modest and true. He has sought out men who, he had reason to believe, could conduct the various lines of the Department's work. He has given them his faith, has secured for them the needed funds, has backed them up, has waited in patience for results, and he has demanded only in the end that the results be forthcoming. Doubtless the largest and wisest of his policies has been that under which he gave men opportunity and held them to account primarily for results.

Not in features of face or form, but in homeliness and quaintness of expression, in far-seeing vision, in wide generalization, in long suffering under fire, in ability to turn many serious conferences into an outcome of good will through the telling of aptly humorous stories, in hard every-day common sense and in interest in the common people, Secretary Wilson has been sometimes compared with President Lincoln.
A STATE EXTENSION PROGRAM

By L. H. Bailey

Delivered Before the Students’ Association During Farmers’ Week

THERE has been relatively little over-lapping and misdirection of agricultural work in this country because the work is new and it has not been extensive till recently. The movements have grown up, often without much plan. Most of them are extending rapidly and they are beginning to conflict.

There are three ways of keeping all the kinds of work in harmony in any State: by the parties agreeing to work together in consultation and good fellowship,—this has been accomplished remarkably in New York State, but it is not to be expected that it will continue to be sufficient; by providing an advisory board or clearing-house agency wherein all the institutions can come together,—such a board is established in New York and is working well, but it cannot overcome any difficulties arising from the constitution of the institutions themselves; by defining by law the provinces of the institutions and agencies,—when this is accomplished then the other two methods can operate completely.

I think that we need clear definitions in this state not because there has been any special difficulty but to avoid such difficulty. We need definitions of state policy, and also of the spheres of action of institutions. The institutions for agriculture are broadly of two kinds: those for the enforcement of law,—police or executive agencies; and those for education, including research.

Most of the regular organized agencies have learned by experience to work together harmoniously and without serious duplication. But it is in the field of outlying or external work that the conflict will mostly come. This is the great and growing undefined field of extension.

Extension enterprises are of many kinds,—of any kind whereby a department or institution or organization may extend and apply itself to its constituency. Some of the extension methods in agriculture are itinerant lectures, institutes, extension schools, reading-courses, traveling-libraries, publication farm trains, tests on farms and in gardens, follow-up work of many kinds, demonstration farms, farm bureaus, organized correspondence.

Extension work is now becoming common in every state. It is proper that every public institution that is doing good work at home should extend itself to the people, but it is well to bear in mind that it should not begin the process until it has something to extend. The widespread extension effort is one of the most hopeful applications of the time. It may also be one of the most inefficient, depending on how it is done and particularly on the motive that propels it. We have now passed the early experimental stages in extension work. To be most useful, it must be well organized,—as well organized as any work at the institution itself.

The temptation is to use extension work merely as a means of publicity of the institution. This will fail in the end, and it will react unfavorably on the institution itself. The whole motive must be sincerely to help the people, not to push or advertise the institution, nor to make publicity for any person.

While extension work should be organized, the organization should not be of the dictator kind. The spirit of free personality in work is absolutely essential. All domineering and institutional selfishness must be eliminated. The autocratic type of organization cannot do effective extension work. Everything depends in the end on the spirit of the place.

Coming to New York State, the extension work of the different agencies has been harmonious. Now that so much of it is developing, a plan or program, in the name of the state, should be perfected so that there may be the greatest economy of energy and funds.
Extension work is one form of educational work. The program should headquarter at an educational institution, and it should organize all public extension work in the State, making it all coordinate and so far as possible cooperative, and allowing each institution or agency the opportunity to do its own kind of work.

The State College of Agriculture is naturally the extension center because by law extension work is part of its duty and because it has a large background staff. When the Extension Bill (or other similar bill) passes Congress—as it will in the near future—extension departments will be established regularly in all the Land-grant colleges. The extension work of the national Department of Agriculture now operates in the states through these colleges as far as possible. The national farm-bureau work in this state will have headquarters at the State College of Agriculture by the establishing there of a supervisor of the federal work.

I would have a state law passed in due time defining extension work for agriculture and outlining a program, so that the people will know what is involved. The agency would be the State College of Agriculture; but the work should belong to the state and not to the college. Every state institution that desires to use the agency should have the right to do so; and every institution so using it should be represented in an advisory board to direct and regulate the work. Every institution should have the legal right to a voice in the enterprise, and without prejudice to extension work that it might wish to do on its own account. I am convinced that a plan of co-action can be devised that will expend the energies of the state more effectively than it is possible to expend them under the present unrelated methods.

I hope it is unnecessary for me to say that I am not making this suggestion with the thought of enlarging the importance or the name of the State College of Agriculture. Extension work is by law already a part of the institution. My suggestion adds little or nothing to that: it looks toward a regular and rational state procedure, making the College of Agriculture responsible with all the rest for a large public work on a basis of coordination.

THE MODERN FARM HOME

By Mrs. H. B. Young
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American homes are more scientifically planned than those of any other country. This condition is partly the result of woman's guidance in home-building. Since the house is in reality the stage on which woman's work is performed, efficient planning becomes the very core of home economy. Many conveniences may be installed to lighten housework in general—yet if needless miles are still traveled on a wasteful plan, the fundamental source of economy has not yet been utilized.

The modern house-plan is the product of many influences. The domestic help problem, the high cost of living, the high cost of building, the demand for increased comforts, each with their variations, have all
molded home-making in the direction of intensive housekeeping. For this intensive housekeeping a compact, well organized plan is necessary. In order to organize, it is first necessary to analyze the plan.

An ordinary dwelling provides for three needs, living, working and sleeping. The living portion should be spacious and restful; the working portion (kitchen, pantry, hall and stairs), should be compact in area and centrally placed; the sleeping portion should be private, light and airy. Such a plan is seen in Fig. 1.

Too much emphasis cannot be laid on the wisdom and economy of planning. Fifty years ago rural houses were not planned; they were merely built. A shell was constructed, roofed over, then the inside was parceled off more or less inconveniently into rooms, the kitchen usually being tacked on wherever it could go. If the house became too small, more was added to fit the growing needs of the family. The habit of adding without plan now and then a wing, planting a tree, introducing a driveway, constructing another outbuilding has given a hap-hazard appearance to the entire place. Time spent in making a lay-out for the house and yard will work toward permanent economy and beauty. A farmer should have an idea of what he would like his farm to do and be. As soon as practicable, this plan should be worked out on paper, definitely and in detail, so that every improvement, large and small, will work toward a permanent scheme. The position of all buildings, yard, garden and walks should be arranged into one simple, workable system instead of being decided in a hit and miss way every time occasion arises. Poor planning means a continuous process of tearing down, reconstructing and makeshift. Moreover, the time has come when a good plan has market value. One cannot plan wisely in a hurry. It requires study, patience, knowledge, imagination, and ingenuity. Above all, it requires time. It is not too soon to begin now to plan for the house which will be built two, three or five years hence, or to consider carefully the remodelling which is to be done next year. A building book is invaluable in which to write down or draw out good ideas as they come to mind. Hazy notions never build well.

The farmhouse is the domestic workshop in which more kinds of work are conducted than in any other class of dwellings. The work of the city house is supplemented by the public bakery, laundry, hospital and market. The farm house must be office, market and home in one. For this reason it is the most difficult dwelling to arrange. However compactly we may plan, the floor area is necessarily larger than that of a city house for the same family. Yet, in spite of all this, modern rural houses must be developed away from old types, so wasteful of human energy. However picturesque they may be, rambling houses either enslave the women who work in them, or degenerate into a small lived-in portion, and a closed-up portion which is useless and unhealthy.

Interiors in the modern farm house are doubtless to be simpler than in the old farm house. Rooms are fewer in number and more conveniently arranged. To do the most work with the least outlay of time and energy, the areas most traveled over must be condensed; similar kinds of work must be concentrated and waste space eliminated. Learn to think of floor space as one thinks of a dollar, to be spent wisely. Make every foot of area work. This does not mean, however, that we must have squeezed-up rooms. On the contrary modern plans seem more spacious than old time plans, because since the house may be uniformly heated, we may open up vistas from room to room by the use of wide doorways, and secure views of orchards and fields by means of generous well-placed windows.

The farm house must have plenty of storerooms. The farmer moves less often than the urban dweller, accumulates more things and besides needs more things to work with. He lays up a larger supply for winter, and all this
has to be cared for by the housekeeper. Clearly, produce should go to the cellar by an outside door and not be brought through the kitchen. Neither should the worker have to compass in her constant duties all the space needed for the possible clutter or accumulation of years. This belongs in a storeroom somewhere in the house, remote from daily activities, to leave the decks free for action and daily routine.

Naturally, everything centers about the mother of the household, but her work would be more easily accomplished if the kitchen were not used for the men and children to dry their out-of-door garments, nor for the hired man to get ready for dinner, nor as the visiting place with neighbors. Clearly, there should be a wash room where the men may prepare for their work or for their meals. This should be warm, contain running water and be easily kept clean. If there are small children in the house the mother must watch over them while she does her work. A room adjoining the kitchen to be used for a play room where only things may be placed which will stand wear and tear will be a joy to the little folks and a relief to the busy mother. The mother, too, needs a room not too far from her work where she may retire for relaxation.

It is the habit in the country for visitors to drive or walk to the back door. The unused front door remote from the work and life of the house looks inhospitable from the road. Blinds are often closed or shades drawn because the members of the family are busy in the back of the house. The entrance should be an indication of the hospitality of the family. Most kitchen doors are not what the housewife would like, to express her cordiality to visitors. It is possible to have a side entrance near the kitchen and dining room which will express neatness and hospitality. Some day we shall have as attractive back yards as front yards. Unsightly places will be covered with lattice or vines and a neat, homey appearance given to the rear of the house in contrast to the more formal front entrance. If the farmer and his family do not like to sit on the front veranda, there should be a more retired one where they will be out of doors, whenever practicable. This may be made into a sleeping veranda, or it may serve as a dining room in the summer time.

A fire-place adds comfort and cheer to a home as well as being an excellent means of ventilating. It should be carefully constructed to avoid the smoking habit and of material plain and dignified. In many old farm houses it remains only to open the long-closed fire-place and again put it into commission.

A word picture of the modern rural house, whether new or remodeled, will serve to show in how many respects it differs from the old-time arrangements. A living room now combines the seldom used parlor and the over-used sitting room into a large room for general family use; an office where business is transacted, is provided for in a place convenient to roadways and barn, and outside the path of daily housework travel; the downstairs bed room or bed rooms (where these still occur) open, not from another room, but from
a hall, thus securing quiet and privacy; a bath room is provided either on the first or second floor, according to the water pressure, and, if possible, all bed rooms are provided with windows on two sides for cross-ventilation; a generous porch or uncovered terrace with cement floor is placed either where it commands the best view, or is most useful during the day; the family hearth has literally returned in the living room fire-place and the whole plan is so arranged that the rooms most lived in are sunniest.

Such a house as this we find illustrated in Fig. 2. Carefully studied and compactly arranged with not a foot of waste room, it represents a type of farm house which is economical to build, to heat and to work; the stairs for the whole house are arranged in one vertical shaft; the hall is reduced to its smallest terms; office placed near roadway and away from the wife’s work which is arranged in a dining room and kitchen combination; man’s room separated from the family; wash room on the line of travel between back porch and dining room; good cross-ventilation everywhere, spacious living room with fire-place and many windows; stairs landing centrally on second floor, with a square hall giving direct entrance to every bed room, each of which has windows on two sides and a good closet; bath room placed where it is accessible to all rooms. One feels that in this house the welfare of both the man and woman have been equally considered, and that a family could live a well-ordered, thrifty life with enough time and energy left to enjoy books, fireside and friends.

The most radical changes in plan are concerned with the kitchen. The day of the big kitchen is past. From the modern viewpoint, a kitchen is a scrupulously clean room intended for the handling and preparation of food-stuffs and for this purpose only. Formerly, besides cooking and washing utensils, the large kitchen has been used for eating, for washing and ironing clothes, for washing hands, combing hair, shaving, removing boots and overalls, and as a passage from the back door to the front. In other words, while preparing meals, the housewife has had to travel over an area which included dining room, laundry and hall as well as kitchen. Not only did many of the above mentioned jobs fail to pertain to food, but they were actually unsanitary kinds of work to be going on where food was being prepared. So by excluding from the kitchen all work unrelated to foods we can have a smaller, better arranged kitchen, where work can be brisk and uninterrupted because one can reach instead of stepping for things. This, with separate wash room, dining room and a generous pantry will furnish a cleaner, more systematic and more economic combination than the old arrangement. It will probably take up no more room than formerly, but the woman is not working over all of the space all of the time.

If dining room and kitchen are combined into one, the most workable and most sightly arrangement, is to condense all kitchen conveniences, sink, range, table, cupboards, etc., in one end and dining room things in the other end. It is often possible to rearrange a large kitchen in this way. The first-floor plan of Fig. 2 shows this plan worked out in a new farm house. Here one person could manage the kitchen work alone, without exhaustion or interruption.

In planning a kitchen, whether old or new, it is better not to have doors on all four walls; and to keep doors near together on one or two walls as nearly as possible, so that all the working conveniences have uninterrupted wall space with high windows over. For ease of care, the walls, ceiling and floor of kitchen, pantry, and bath should have a slick, hard surface which can be wiped off. A hard plaster wall painted a light color with varnish in the last coat makes an excellent finish for walls, ceiling and woodwork. As little and as plain woodwork as possible should be used, without grooves or moldings. Wooden wainscoating is to be avoided in a new kitchen or bath and it may
be painted light rather than revarnished if in an old one. A buff, tan, or cream-colored painted kitchen requires no more care than a dull, gloomy one, and is much more attractive. Instead of paint for walls, a varnished tile paper or oilcloth is clean and satisfactory if a simple, inoffensive pattern can be found. Plain walls are less confusing.

The country is supposed to be the healthiest place in which to live. This depends on how one lives. An unventilated bed room in the country is no healthier than an unventilated bed room anywhere else. One bath a week in the country is no cleaner than one bath a week in town. In any locality the human body requires sun, air and cleanliness in order to thrive. People are healthier whose houses are provided with porches, bath rooms, furnaces and other conveniences which contribute to physical well being. Not many of us would insist upon open windows at night if the bed room was already cold, nor be particular about the daily bath if we had first to pump the water and then heat it by kettle. The modern country house must provide conveniences which will make it easy for the farmer’s family to live healthfully. This means that rural houses must be evenly warmed, must contain running water, a good lighting system, and, where help is scarce or uncertain, mechanical power of some kind to take the place of many hands and to lighten drudgery.

Women on farms have been slow to demand conditions which would make work easier. They have aided through long years to obtain more acres, larger barns, better machinery in order first of all to establish the farm on a business basis. This has been necessary. Later has come the effort to educate the children. Thus too often the family has lost its perspective and has regarded this form of economy as the end rather than the means. It remains for the farmer who has a nearer acquaintance with machinery and whose knowledge of business makes him recognize the economic value of equipment, to put the house which is the scene of consumption upon the same business basis as the barns, which are the centers of production.

THE FIFTH NATIONAL CORN EXPOSITION

By Royal Gilkey
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The question always arises in connection with the National Corn Exposition as to whether the exposition is confined entirely to this cereal. As originally planned, the Exposition was almost entirely confined to the exhibition of corn, but now it includes all subjects of agricultural and country life interest. While fine samples of corn were shown, this formed only a small part of the whole exposition. The state of Indiana succeeded in winning the sweepstakes prize for the best sample of corn, an honor which this state has obtained for four consecutive years.

The National Corn Exposition is conducted on a different basis than the county or state fair. The two chief features of the fair—the distribution of prizes and the amusements or “attractions” are not emphasized at the Corn Exposition. The interest is centered almost entirely on educational exhibits. These exhibits are sent principally by the State Experiment Stations and the United States Department of Agriculture. This year twenty-four states were represented and the United States Department of Agriculture, acting under special authorization from Congress, sent at a cost of $10,000, the
largest and best exhibit it had ever placed at any exposition. It is easily seen that any attempt to inject amusement features would detract from rather than add to the real value of the Exposition, which lies in the exhibits. Conducted in such an unique basis, the National Corn Exposition has special significance because of the new idea in demonstration and exhibition methods for which it stands.

The National Corn Exposition presents a broad view of agricultural progress and development throughout the United States and perhaps here lay its chief interest to the large crowds which attended, many of whom were, of course, casual observers. Under the same roof were found exhibits of experimental work with sugar-cane and with Irish potatoes, with cotton and with timothy hay, and with other crops from widely separated parts of the country. It is interesting for the northern visitor to learn of the advance of the cotton boll weevil and the attempts that are made to control it even though his arch enemy may be San José scale. Many of the southern farmers who visited the New York booth were interested in the timothy hay exhibit because they purchased this hay from Michigan and New York, and others were interested in the potato exhibit because they bought northern seed to enable them to raise early potatoes. Often times interests are inter-related more than we realize. To the careful student, however, the interest lies deeper. He notices the methods pursued in experimental or research work in many parts of the country, and the results that are being achieved. The exhibits being carefully labeled and attended by experts allow an opportunity for detailed study. Many of the visitors expressed a desire to stay a day or more in studying some of the exhibits.

It is now generally recognized that a mere statement of experimental methods and results is not sufficient to interest a large crowd. The information must be applied to practical problems in a graphic way. Each state aimed to present an attractive and striking exhibit, as well as an educational one. These two ideas were often combined most successfully. For example, North Carolina to teach the necessity of the burial of hogs which had died of cholera, had mounted specimens of buzzards feeding on a carcase. The United States Department of Agriculture exhibited two bulls, a small one three years old which had been stunted in its growth by cattle ticks and a bull twice as large at two years of age which had not had this handicap. Anyone who sees such exhibits cannot fail to understand the lessons which they teach. At stated times cattle were dipped in the dipping vat and this demonstration never failed to attract a large crowd. When it is remembered that the cattle industry in the south is held in check by the fever tick, which is easily eradicated by dipping, the value of such a demonstration is apparent. There were enough graphic illustrations and demonstrations, which applied scientific knowledge to every day farming, to hold the interest of the farmers in attendance.

The Exposition was held at Columbia, South Carolina, January 27th to February 14th. It was originally planned to hold the Exposition from January 27th to February 8th, but the interest was so great that the managers were asked to keep the Exposition open for nearly an additional week. This request was presented by the State Legislature of South Carolina, by Senator Tillman of that state, and by many individuals and was supported by the press. This may be taken as an indication of success.

The Exposition was housed in a large steel structure, formerly one of the Jamestown Exposition buildings. The floor space amounted to about 67,000 square feet. In the center of this building, the exhibits from the United States Department of Agriculture were installed, occupying about 8,000 square feet. Nine departments were represented as follows: Soils, Plant Industry, Chemistry, Animal Industry, Forestry, Horticulture, Entomology, Public Roads, and the Weather Bureau.
These exhibits showed in a striking way the scope of agricultural interests. Many were particularly appropriate to southern conditions. For example, the possibility of improvements in sanitary milk production was illustrated by a typical southern stable placed beside a similar stable with white-washed walls, concrete floors, milk house and well house. In the south where great damage is done by torrential rains, the exhibit of the Forestry Department proved of great interest. It contained a model consisting of two miniature hills made of soil, one protected by a forest cover and the other unprotected. Over these were sprinkling attachments and when the water was admitted, gullies were formed on the unprotected hill side and the protected hill side suffered no damage.

About the walls of the great building were arranged exhibits from twenty-four states, ranging from Rhode Island to Washington State and from New York to Texas. In brief some of the subjects treated by these exhibits were as follows: Rhode Island, fertilizers and Rhode Island Red poultry; New York, plant breeding and a model of a rural community center; Pennsylvania, a model of a calorimeter—a room used for determining the way in which food is used by the animal body; Virginia, apples; North Carolina, trucking; South Carolina, cotton; Georgia, seed selections of prolific varieties of corn; Alabama, pecans and citrus fruits; Kentucky, soy beans, hemp and tobacco; Illinois, legumes; Ohio, soil fertility, and a wool exhibit, which is probably the best exhibit of wool in the United States; Iowa, farmers' elevators; South Dakota, grains, grasses and flax; Missouri, alfalfa; Louisiana, rice sugar cane; Kansas, grain sorghum and and sasharine sorghum; Minnesota, corn cultivation; Indiana, corn and horses, Nebraska, experimental work on determination of moisture necessary to grow corn. A commendable feature of the state exhibits was that not one tried to demonstrate that one state was superior to others even in particular products. In other words the exhibits were not made with a view to exploiting a state, but as an unselfish contribution to agricultural advancement.

During the first week, the Exposition was visited by the prize winners of the Boys' Corn Clubs and Girls' Tomato Clubs of the southern states. These clubs are conducted by agents of the
United States Department of Agriculture in many southern counties. The prize winning corn and tomatoes were on exhibition. The corn is grown by boys on acre plats and the tomatoes are raised by girls on tenth acre plats and then preserved. South Carolina and Alabama each sent about 100 boys and girls to the Exposition. Other states were well represented. During the week a school was in progress with lectures every day. Each county having corn and tomato clubs was eligible to two scholarships of this school. The enthusiasm of the boys and girls was noticeable and the results of their work surprising. Doubtless this work will have a valuable influence in the south.

The New York exhibit, in charge of Professors A. W. Gilbert, E. G. Montgomery, A. R. Mann, and the writer, showed the results of Plant Breeding at this station and contained a model of a rural community center. The results of the Plant Breeding work with timothy, corn, wheat and oats were shown and the principles of potato breeding illustrated. After obtaining timothy seed from all parts of the country, 1600 timothy plants were tested to obtain 15 different varieties. The comparative yields of these varieties were shown by miniature bales, the production in some instances being nearly double the yield obtained from ordinary timothy seed, under the same conditions.

The most unique feature of the Cornell exhibit was the model of a rural community center, 12x15 feet, placed in front of a painting of a New York landscape. Twelve buildings were shown including a community hall, consolidated rural school house and the usual country fair buildings. In addition to these the model showed school gardens, demonstration plats, athletic grounds, picnic grove, race track, etc. The buildings possessed the same general type of architecture and were conveniently arranged. Pleasing landscape effects resulted from the layout of buildings, roads and the use of trees and shrubs. (See frontispiece.) The model represented a plan for a community center or commons, such as might be developed in the open country. It was a modification of the country fair, retaining most of the desirable features, eliminating undesirable ones, and presenting a number of new elements that will cause the grounds to be utilized much more frequently than are the average fair grounds. The model suggested the use of the grounds, buildings, and equipments the year round, doing away with, the great economic waste now sustained in utilizing fair grounds only one week each year.

A Portion of the Exhibit of the United States Department of Agriculture.
THE OUTLOOK FOR FARM DRAINAGE IN NEW YORK STATE

By I. C. H. Cook

President of New York Drainage Association, South Byron, N. Y.

THRU the efforts of the State Department of Agriculture, the State College of Agriculture, the press, and our own organization, the farmers are gradually awakening to a realization of the importance of good drainage as never before. This is evidenced first by the increased sale of drain tile reported by our tile manufacturers.

According to our recent census, we are informed that the value of drain tile manufactured in the 10 year period just closed has increased 165%. Such a rapid growth in the output suggests at once the growth also of the appreciation of the value of tile drainage, for the American farmer, however progressive he may be in the adoption of new labor-saving machinery, is usually very conservative in matters relating to the soil. Before he will consent to "bury" a large sum of money in the soil that is initially unproductive, he must be convinced that it will be more than merely a good business proposition, it must appear to be a bonanza.

The increased appreciation of the benefits of drainage is evidenced secondly by the inquiries received and answered by our farm papers on drainage questions and by the number taking up this line of work here at Cornell, in their preparation to become good farmers. Our own observation as we travel thru our state shows us the actual work in progress on many of our farms. The interest manifested here at our convention, where we gather to receive instruction from each other's experiences, is proof that the farmers are realizing that good thoro drainage systems are fundamental, and that success in the highest degree cannot be attained until such conditions exist or are created.

Of course, there are a few skeptical ones still scattered here and there, who thru ignorance or prejudice, cannot or will not look favorably upon the prac-
tice of drainage. However, they are being rapidly converted and the obstinate will soon all be gathered in, for seeing is believing with most people, and the examples of successful drainage systems must accomplish the desired result with even the most stubborn eventually. And so I say the outlook is encouraging, for with the added interest shown in the various ways mentioned, and the increasing amount of work done, the proper appreciation of the benefits to be derived from thoro and systematic farm drainage is bound to be extended to all parts of our state.

It may be of interest to those present to learn that the largest undertaking along the line of reclaiming extensive areas, by means of drainage, in New York State, and one of the largest in the United States, is about to be carried out in what is known as the Oak Orchard Swamp, which lies in northern Genesee and southern Orleans counties.

This swamp is quite an extensive area of waste land, of which there are several in New York State, the largest among them being the famous Montezuma Marshes. This Oak Orchard Swamp to which I have referred is in the area drained by Oak Orchard Creek, which rises about three miles north of the village of Batavia, Genesee County, and flows in a general northerly direction, finally emptying into Lake Ontario. This tract comprises about 85,000 acres of land, of which about 25,000 acres is strictly swamp land, mostly very valuable muck, ranging from a few inches to 18 feet or more in depth. In fact, I am told that the bottom has not been reached at 18 feet in some places.

We are informed that this section was at some time a lake, possibly the waters of Lake Ontario, now about 15 miles to the north covered.
this swamp. At any rate, it is a comparatively level area about 18 miles long, and of varying widths. There are a few highways crossing this tract on some of the firmer higher portions, with now and then a slight elevation, which has been cleared and tilled, but here are several thousand acres of valuable land of inexhaustible fertility, if it could once be reclaimed.

Several different men in years past have seen visions of what might be realized by any one who could and would accomplish this result, but to finance an undertaking of that extent would require a fortune few men possess. At last, the idea crystallized in the formation of a corporation known as the Western New York Farms Company, with headquarters in New York City, and one David B. Corse the leading financier.

This area was surveyed and mapped and it was found that in the 18 miles of length, this swamp land or section had a fall of 29 feet, or about 1½ feet per mile. Not much fall you remark, but a fall nevertheless, and water will run down hill, and if given an unobstructed opportunity it will flow quite perceptibly with a foot and a half per mile. I think the Erie Canal has a fall of one foot per mile.

So this Company has gone on and purchased about 15,000 acres of the land at this time, and is still acquiring more, and is going to show what money and engineering skill can do with this difficult proposition, for a large portion of this swamp is covered with timber and brush, on much of it the water stands all the year around, in places the rushes or cat-tails extend uninterrupted as far as the eye can reach. It looks like a big undertaking and it is, but 18 feet of muck is a strong incentive to undertake big things, and money will accomplish almost anything these days.

The plan as now laid out is to follow the general direction of the Oak Orchard Creek, which a large part of the way has no well defined water course, with a main ditch or canal, 25 feet wide at the bottom. This as above indicated will be about 18 miles long. And then from this to extend laterals or feeders from 4½ to 12 feet wide at the bottom, five of these to the mile or each 1056 feet apart. All these to be open ditches of course, and these in turn will provide outlets for the ditches which may be laid as closely as seem necessary.

According to the engineers' estimate the total amount of dirt to be excavated for the main, sub-mains or laterals is 951,000 cubic yards. Bids for this work have been opened and the lowest were at the rate of 10, 12 and 20 cents a cubic yard for the different classes of work, or a grand total of $140,680.00. A big undertaking you say? Yes, but there is a big inducement ahead, and I shall watch their progress with a great deal of interest.

It is the purpose of this company to develop this land themselves and Mr. Theodore E. Knowlton of Watertown, a practical agriculturist and engineer, has been engaged to take charge of the company's land and the operations on it; his head-quarters will be in Elba.

Special machinery has been ordered for the clearing of the swamp land on a large scale. By means of drums and cables, 40 acres will be cleared at each setting up of the machinery. Tractors and traction plows will be installed, which will plow from 20 to 30 acres of land a day.

Of course, this undertaking I have attempted to describe can hardly be classed along with farm drainage, as the term would be strictly applied, yet it is for farming purposes, and its influence, if successful, as it will undoubtedly prove, will have a great benefit upon farmers in general who observe the results obtained, for it is by such object lessons that we can most easily convince men who fail to appreciate what drainage can do for them.

Another comparatively new departure in this state, altho it is very commonly practiced in our more enterprising states to the west of us, is one which was advocated here in our convention last year, and to my own knowledge has been adopted in at least one instance. I refer to the taking up
of drainage work as a business venture, with a view to doing contract work in one's immediate locality. This of course to be done with a ditching machine, either traction or with horse-power. These machines go about in a manner similar to our threshing outfits and complete an extensive system for a farmer in a few days' time.

When this suggestion was advanced here at our last meeting, I remember that among some others I expressed myself as of the opinion that the use of these large expensive ditching machines was hardly practicable for the average farmer, and that probably 95% of our farm drainage would be done by hand with the good old pick and spade for many years to come, with the assistance of one of the various ditching plows.

But I have since then been converted, and have myself purchased a machine for this line of work, and firmly believe that there is a splendid opportunity for many such machines all thru our state, as has already been proven in Ohio, Indiana, Illinois, Michigan and other states. Already many thousand rods have been spoken for as soon as soil and weather conditions will permit the use of the machine.

Of course, there are those who are incredulous, who tell me that I shall yet go back to the good old spade previously referred to after a few experiences with stony ground, that I'll soon get tired of taking that "White Elephant" around the country. This reminds me of the story of the man who wanted to buy a clock. He looked over a jeweler's stock, and finally selected a large "grandfather's" clock, and bought it. He wanted the dealer to deliver it to his home, but the jeweler said he ran no delivery wagon, so the man decided to carry it home himself and started off down the street puffing under the load of his purchase. On his way he met a man, a stranger with a little more booze than he could conveniently carry. The stranger stopped in front of the man toiling along with his burden and said "You must excuse me Missthur, fur I know its none of my bizziness, but I justs want to—hic—ask you one questhion, why in—hic—'ell don't you carry a watch?"

And so, I imagine, some will ask me why I don't take a spade if I want to do business, but I am firmly of the opinion that the traction ditcher is just as practical a machine as compared with hand labor, as the self-binder is as compared with the old method of harvesting, and with this rapid method of completing a drainage system, we have one of the greatest obstacles removed, for we who have done much of it know that the digging of a large system of drainage is a slow, tedious operation.

So we would again recommend that those who are interested in this line of work, and are situated so they can take it up, enter this field which is so large, and where there is as yet practically no competition in our state, for it seems to promise a good income without a very large investment, and would not only be profitable to the investor, but would promote the practice of farm drainage.
THE FOURTH ANNUAL EASTMAN STAGE IN
PUBLIC SPEAKING

H. M. Stanley, '15

CONTESTANTS IN THE EASTMAN STAGE.


THE Fourth Annual Eastman Stage in Public Speaking was held Friday evening, February 14, 1913. The Farmer's Week guests formed a considerable part of the audience which filled Sibley Dome.

The Alma Mater was the first number on the program, followed by a selection by the Agricultural Glee Club. The presiding officer, Director L. H. Bailey, explained the establishment and conditions of the Eastman Stage. With the object of developing qualities of personal leadership in rural affairs, Mr. A. R. Eastman of Waterville, N. Y., formerly a trustee of Cornell University, a farmer and a business man, has established in the College of Agriculture an annual prize of $100 for Public Speaking on country life subjects. The competition is open to any regular or special student. The contestants work out their own ideas of subjects and presentation under the general charge of the Extension Department of the College of Agriculture and the Oratory Department of Cornell.

The speakers and the topics of the evening were as follows: F. E. Geldenhuys, 1913, of South Africa had for his topic “An International Agricultural Movement” in which he pointed out the growth of agriculture and how with the inhabitants of the world becoming neighbors we, at Cornell, may assist in the strengthening of this international movement.

J. H. Munn, 1913, spoke of “Market Investigation—The New Duty of Experiment Stations and Colleges” making special references to prices and the high cost of selling. He outlined some remedies for existing conditions with their possibilities and impossibilities, leaving with us the thought that we could make a very thorough study and investigation of the existing con-
COöPERATION IN RELIGION

C. W. Whitney, ’13

The Cornell Countryman 183
tions through our Experiment Sta-
tions and Colleges.

P. R. Guldin, 1913, in speaking on
the subject "Why not Combine Theory
with Practice?" showed very con-
vincingly how absolutely essential the
man of theory and the man of practice
are to our advanced and improved
methods of agriculture.

W. H. Bronson, 1913, chose for his
subject "The Farmers' Credit." In his
speech Mr. Bronson recommended a
system of cooperative credit through
which a farmer could borrow money
for long time periods in order to carry
out improved methods of farming.

W. A. Gonzalez, Special, gave a
vivid speech on "The Philippino Far-
ners' Plea for the Independence of
the Philippines." In making his points
clear Mr. Gonzalez referred to the
Constitution of the United States, the
Monroe Doctrine and to the present
oppression of the Philippino farmers
by the American Trusts.

The last speaker of the even-
ing, C. W. Whitney, 1913, had for his
subject "Coöperation in Religion." He
brought out many fine points all of
which needed no more proof than for
us to look about us and see the existing
conditions of our country churches.

While the Judges convened to decide
the winner of the prize, Director Bailey
said: "If I were to award the prize I
should give it to each one." This ex-
pressed the sentiments of all present, as
the speeches were all excellent both in
ideas advanced and presentation. The
subjects taken show the great
variety and range of country life
problems.

The Director continued in saying,"This year Farmers' Week has been
more successful than ever before.
With an increase of 700 more visitors
than last year, the total attendance of
3,200 guests were cared for by the use
of the new buildings and the conges-
tion was not so great as heretofore.

"We have the new Poultry and
Home Economic Buildings which are
practically completed and by next
Farmers' Week the new Auditorium
with a seating capacity of 2500 to 2800
and the new Animal Husbandry build-
ing will probably be completed, thus
giving facilities for one of the greatest
gatherings of its kind.

After a violin solo by E. E. Hand,
1915, and a selection by the Glee Club,
the judges announced their decision
which placed C. W. Whitney first and
M. A. Gonzalez second.

THE fundamental cause of the
growth of religion was man's
realization of his own insignificance in
the great scheme of the universe.
With this realization grew the desire to
find a Supreme Being in whom he
could confide.

To satisfy this desire, many religions
have grown up. To enumerate a few
of the greatest of these we find the
great Chinese religion of Confucious,
which contains some of the oldest pro-
ductions of the human mind, and
which lays stress on society, the past,
and conservatism; the religion of
ancient Greece emphasizing man,
beauty, and development; the great
eastern religions—Brahaminism (which
teaches of spirit, substance and unity)
and Buddhism, called the Protestant-
tism of the East which emphasizes the
individual, nature as law, and progress;
and the Jewish religion, consecrated to
the worship of a most high God, who
stands alone, unaccompanied by
secondary deities. These are only a
few of the greatest religions which have
flourished, and some of which do
flourish, upon the earth.

So we reach the religion which we
are to consider tonight, Christianity,
which is generally accepted as teaching
the worship of a Supreme Being, manifested in the triad known as the Father, the Son, and the Holy Ghost.

I say generally accepted, because Christianity has become split up into so many different sects and creeds that a careful, and impartial student of theology could point out more differences (numerically) between two sects of Christianity, than could be found existing between two different ancient religions.

True, these differences between sects are mostly of minor importance. They do not affect the fundamental beliefs of the religion, yet they introduce a harmful spirit into Christianity which is detrimental to its effectiveness.

The presence of these sects is pointed out to be the result of different views taken by different men. The petty differences and squabbles among the lesser divisions of religion are often excused on the ground that no two men can be of the same belief in everything. But this implies the absurdity that each man must have his own religion,—a church of his own, for, unless he has, we reach the natural conclusion that he lacks either the brain power or the interest to think it out.

The first fourteen years of my life were spent in the small towns in which my father was Methodist minister. During those years I received many vivid impressions. Those impressions, together with things which I have learned since then, have caused me to become a firm believer in the idea that this division into sects is especially harmful in the small towns and the country districts. In a large city, the various churches generally have sufficient wealth and membership to carry them on successfully. But in the small town and the country, the case is different. Consider the case of almost any village. We will find four or five (or more) churches, each struggling along under the triple handicap of a small membership, an under-paid preacher, and an unimpressive building.

Happen in at one of their Sunday services, and you will be in doubt as to whether the preacher is addressing a committee meeting or a congregation. Probably the entire enrollment of the church is not over 200 or 250, and 100 people at a service is considered a crowd. The sum total of the membership of all the churches in the town would make one good sized congregation.

As for the under-paid preacher, is it any wonder that the enrollment in the Theological Seminaries is dwindling, when they train men for a profession which does not pay enough for a decent living? That, too, in an age and in a country in which the Dollar is worshipped as never before in the world's history. Be he preacher or be he clerk, "a man's a man for a' that," and he will have ambitions. Is it any wonder that the material for the ministry of the future is deteriorating, not only in numbers but also in quality, when that calling generally pays only enough for the bare necessities of life?

A proposition frequently brought out here during the last Farmer's Week was that the preacher should be a leader in the community. But you will find that the leaders o men are found more and more in other and better paid professions. They realize what a peculiar ingenuity it requires to meet annual bills aggregating $800 with a salary of $400. Investigation has shown that such a preponderance of outgo over income can be dealt with successfully only by a certain type of Congressman or New York policeman. So the average man decides in favor of the plumber's trade or some other remunerative calling.

As for the church building in the small town, it is generally a barnlike structure of stiff and gloomy aspect, both inside and out. It has little of real beauty or comfort. It is a place which is aired out and heated on Sunday, and again for the mid-week prayer meeting, with perhaps an occasional perfunctory social to enliven its dreary existence. Then for six-sevenths of
the week it stands dark and silent. The dust settles on the Bible and the altar. The air is permeated with the musty smell of disuse. The very sunshine is filtered of its brightness, and sheds but a somber light as it streams thru the colored window panes.

In a man's own home "Be it ever so humble," there will surely be somewhat of light and cheer. But he erects this building; gloomy, uninspiring, melancholy, and calls it God's house, a place to which he can go on Sunday, drop his contribution in the plate, and thus conclude his religious duties for the week.

Not only are the memberships and the buildings small, their inefficiency is increased by the spirit of rivalry and antagonism which exists and which prejudices thinking people against joining any church.

Economists say that, during the past decade, the Protestant country churches of Christianity have been losing ground, and that today those churches face a great crisis. The leaders of the cause of the rural church are sometimes loath to admit that the danger exists, but of late they have been asking more or less guardedly, "What must the church do to be saved?" And the answer comes as it did in the crisis of the American Colonies, "Unite or die." Let us not attach any narrow technical meaning to the word "unite" as used in this phrase. But it matters but little for the present, whether we advocate that the churches be Federated or Consolidated. So long as they are drawn together, the spirit of unity will lie beneath it all. So let us urge these various sects to get together in support of the church for the worship of the Father, the Son and the Holy Ghost, rather than to squabble among themselves over petty differences of opinion. Let them unite those separate Sunday committee meetings into one gathering worthy of the name of a congregation.

This done, they could have great preaching, because their combined wealth, would make it possible to pay a salary which would obtain a more efficient man, and because an audience of 1000 or 1200 would be some inspiration to the pastor.

They could install a good organ, hire an able organist and have him train a chorus choir. Then organ recitals and musicals would make the church building of less continuous melancholy, and would help people to find their way into it more frequently.

But to accommodate these improvements we must erect a suitable building. Surely the money represented in materials and labor necessary to erect three or four insignificant structures would enable a community to erect a building which would be a credit not only to the township, but to the state and nation. It should contain not only a large chapel for Sunday worship, but also a library and reading room, a gymnasium, and rooms for entertainments. By means of these the people may overcome their aversion for going to church. Teach them to find enjoyment in the building. Let this great structure be the center of the communities' social life. It should be intimately connected with the people's week day enjoyments, as well as their Sunday worship. It should be the pride of all the people. Thus it would promote a community spirit, a spirit of tolerance, cooperation and of brotherhood. It would bring us back to the real spirit of Christianity, so long hidden from view by the smoke from the battlefields on which the different sects have tried to exterminate one another. It would be truly God's house.

But is this idea practical? Can we overcome the prejudices of creed which have flourished for centuries? I answer most emphatically—yes!

In the first place because these prejudices are 99% founded on thoughtlessness. And in the second place because the average man belongs to a certain church (if, indeed he belongs at all) because his parents did, and because he was brought up in it, not because he has studied all the different religions and creeds, and finally selected the one best fitting his beliefs.
We must realize, however, that to overcome these prejudices of creed will be a Herculean task. It will not be accomplished in a day, a year, or a generation. We cannot at once tear down all sectarian barriers, all old established customs and beliefs. We cannot at once demolish all the superfluous buildings in which these are housed; erect one new building, and expect all the sects to readily unite there for work and worship. These changes will come only as the result of a corresponding change in public opinion. This can best be brought about by a general campaign of education treating this problem of the rural church. Whether it come from the leaders in the church, from the Agricultural Colleges, from the public press, or other sources, so long as the idea is spread abroad that cooperation and some degree of unity are means which offer a possibility of better conditions, the ultimate purpose will be served; for this discussion will set the people thinking, and when the people think on this subject, the rural church problem will be as good as solved.

Indeed, we are witnessing great changes even now. Only lately in Canada, the Methodists, Presbyterians and Congregationalists have taken a long step toward unity of organization. In far off Australia, the Methodists, Congregationalists, and Baptists are engaged in friendly negotiations. In America the same idea is gaining ground, as is shown by the organization of the Federal Council of America, which aims "to utilize the spirit of religion for the elimination of waste, by bringing together existing denominations on a basis of service in practical work." The growth of the cooperative spirit is shown in the small towns where Union Meetings are held every few weeks. In these meetings the people of different denominations gather together for worship. Great changes are manifest in the very sermons which are preached today as contrasted with those which were delivered in the early days of this country's history. The old-time preacher talked four or five hours at a stretch, and rejoiced in causing hell-fire to burn brightly in the vision of his hearers. His accusing, threatening sentences wafted occasional whiffs of brimstone to the nostrils of the sinners before him. But today, the half hour sermon is the rule, and the greatest preachers are those who appeal to intellect rather than to fear; who apply texts to current topics, and who find religious significance in common occurrences.

Further evidence of a quickened sense of the need of cooperation in the country church is found in the town of Proctor, Vt., where a Union church, composed of all the Protestant sects in the township, has been in successful operation since 1890. They have adopted a common platform of belief, and have built a fine church. Another instance is found in the Federated church in the town of Castleton, Vt. Here the sects still retain their denominational identity, but unite for work and worship.

But very few communities are ready at present, to establish either a Union or a Federated church, for public opinion is opposed to the idea, and public opinion is the most powerful of human influences in a case such as this.

So it should be our aim, for the present, to do our part to mould public opinion to a belief in the possibilities of the rejuvenation of the country church by means of cooperation and a greater degree of unity among the different sects. Let us resolve that four or five churches shall not exist where one would be far better; that gross inefficiency will not be tolerated in the church any more than in the business world. Let us resolve that we will do our part to set people thinking on this most vital subject. And above all, let us resolve that no one of us shall become so much of a Baptist, so much of a Methodist, or so much of a Whatnot, that he forgets to be a Christian.

All this let us resolve, all this let us do, in the name of Him Who taught us to pray saying, not, "My Father," but "Our Father."
FARMERS’ WEEK EXHIBITIONS

Animal Husbandry Department

By J. S. Clark, ’13

This year the students of the Round-Up Club held a competitive live-stock exhibition with representatives of the college herds and flocks exclusively. Classes of horses, cattle and sheep were exhibited by the students. The contestants selected their animals for the various classes by lot. For three weeks previous to the show and under the direction of the Departmental Staff and breeders engaged by the Department, the students were given practical instruction in the training, grooming and fitting of animals for the show ring. The object of this live stock show was to create interest in the breeding and exhibition of pure-bred live stock, both to the students and to the visitors. The horses and cattle were judged by Prof. H. Hayward of Delaware, in regard to their condition of grooming and their attitude in the ring, rather than with respect to their individual merits. The sheep were judged by Mr. G. D. Townsend, a well known breeder.

The following men were winners of the gold medals given for first place in each class:

Horses—E. S. Ham, pure bred yearlings, draft; F. G. Marshall, grade yearlings, general purpose; B. C. Conley, pure bred colts, draft; R. W. Jones, grade colts, general purpose.

Cows—V. I. C. Bichterman, Ayrshires; H. L. Page, grades; J. G. Wilken, Holsteins under 3; G. L. Wight, Holsteins over 3; M. C. Wilson, Jerseys; H. M. Harrington Shorthorns.

Sheep—T. A. Baker, Shropshire ewes; R. B. Titus, Shropshire lambs; E. R. Zimmer, Rambouillet lambs; M. C. Wilson, grade lambs.

Because of lack of facilities and room it has previously been impossible for the Animal Husbandry Department to give a practical course in Horse Training. Two years ago Prof. Harper started such a course, although at that time only two colts were available.

When the new horse barn was erected, accommodations for 69 horses were provided. Last fall fifteen two and three year old grade unbroken percheron colts, quite uniform in type, were purchased from farmers in Ithaca, and the immediate vicinity. These colts were mostly out of ordinary farm mares and sired by a grade or pure bred stallion.

The colts were matched up into teams and each student in the course was assigned a team to break and train for farm work. These teams were shown before three judges who were all well known horsemen, and who judged each team for its condition of grooming and training. The competition in training and showing was won by R. W. Jones, ’13, and J. S. Clark, ’13, second. The trainer of the team of colts “topping” the sales when the colts were sold at auction also received a medal. F. L. Davis was the winner in this competition. This practical course and competition in the breaking and training of colts is the first of its kind to be given in any University and is one of the most practical courses given in the college.

A parade of the 25 farm teams, including the three stallions, on Thursday caused much favorable comment from the visiting farmers. The line of horses and carriages of the college extended from the Horse Barns to the Poultry Building. This did not include any of the yearling colts. These horses were later on exhibition in the barns where they could be inspected by any of the visitors.

Another feature of the activities that proved of much interest was the seven day cow demonstration test. Twelve individuals were selected, two each of registered Ayrshires, Jerseys, Guernseys, Holsteins, Shorthorns and also two grade Holsteins. The purpose of the test was not to determine comparative merits of the different dairy breeds, but to emphasize the import-
ance of keeping records. Accurate
records of hay, grain, silage and roots
given each animal were posted together
with the returns of that individual in
milk and butter fat. This test was
merely a demonstration test and not an
A. R. O. record.

In past years there has been held in
the Animal Husbandry Pavilion a cow
judging contest open only to men who
have not attended Cornell. Farmers
have entered this competition with
much interest and have derived from
the contest enjoyment as well as
knowledge. Ten cows were placed in
a ring and were judged by the con-
testants in the order of capacity of
milk. The standard measure is the
yearly record of each cow. The con-
testants grade is calculated and re-
turned so that all know just how they
succeeded. Gold medals are given the
winners. From 50 to 100 persons have
entered the contest each year.

On Friday afternoon of Farmers’
Week there was held an auction sale
of surplus cattle, horses, and hogs at
the agricultural barns. In all 15
three-year old colts were sold and the
amount taken in for them was $2,760.
For 12 young bulls, $577.50 was paid
and 16 head of swine brought $366.
The grand total of the sales amounted
to $3,673.50.

Poultry Husbandry Department
By E. C. Heinsohn, ’15

Heretofore, owing to the lack of
suitable accommodations, the Poul-
try Department has been unable
to contribute to the Farmers’ Week
programme as much as they have
desired. But this year in their new
building, they were not handicapped
by lack of space, and consequently
took advantage of their good sur-
roundings. Thru the uniring efforts of both
faculty and students, the week proved
very successful. The work was divided
into lectures, shows, contests, and
laboratory practice.

Wednesday of Farmers’ Week will
long be remembered by the members of
the Department, for on that day the
Dedication Exercises of the New
Building took place. Dean Bailey
addressed the meeting on the subject,
“Poultry Husbandry in the Agricul-
tural College and Experiment Station.”
This was followed by five to eight
minute talks on different phases of the
contribution of poultry husbandry to
world progress and humanity thru the
sciences, arts, trades, occupations, pro-
fessions, organizations, and the home.
The idea pervading all the speeches
was the importance of poultry hus-
bandry. As never before, perhaps,
the listeners were impressed with what
poultry husbandry is doing for
humanity; it renders such services
as furnishing many men and women
a healthful occupation, giving the
home a source of excellent food,
affording the scientist a field for his
investigations, etc. These talks, very
unique in character, proved of great
interest to the hearers.

The lectures given during the week
were of great practical use to the
farmers. Given by men, experts in
their respective lines, they at least,
touched upon all phases of the poultry
industry. The interest of the audience
was amply proven by the fact that
many took notes.

The various shows, in charge of
students, attracted much attention.
Considering this to be the first at-
tempt of the department, and that the
prizes offered were necessarily small,
being ribbons and certificates, all the
shows were very successful. A visitor
could go to almost any part of the
building and find some sort of a show.
With over 150 fowls on exhibit, many
of which were blue ribbon birds, a duck
tank and a coop of pheasants to add to
the novelty, the poultry show deserves
commendation. The Egg Room,
where eggs from all parts of New York
State, and egg packages were dis-
played, drew many visitors. White
eggs with dark brown paper as a back-
ground and brown eggs with a blue
background, combinations which show
to best advantage the color of the eggs,
were arranged artistically. Egg car-
tons, parcel post and express packages were the center of much discussion. On the third floor the exhibit of labor saving devices, charts, etc., proved to be of much educational value.

Contests open to all, were conducted four days of the week by members of the faculty. These included killing and picking, judging for constitutional vigor, judging eggs and dressed poultry, and judging live poultry for exhibition. Ribbons were awarded to the winners.

Two hours each day were given to actual laboratory practice in killing, picking, drawing and packing poultry; testing, grading, judging and packing eggs; dissecting and studying the structure of poultry; and the study of the structure of the egg. A fee of twenty-five cents was charged for each laboratory practice in order to attract only those who were interested for the benefits to be derived rather than the curious.

The success of this, the first attempt of anything of the kind by the Department, speaks well for the result of next year’s plans and if the students work as hard and consistently as they did this year, success is assured.

The Entomology Exhibit
S. C. Bishop, '13

The Farmers’ Week exhibit of the Department of Entomology proved to be particularly instructive and interesting, comprising as it did, many phases of the subject. The economic side was perhaps of most interest to the visitors in general and a large and well displayed collection of the common pests, arranged to show their life histories, the injuries caused by them, together with suggested methods of control, attracted considerable attention. Charts and diagrams illustrating development of insects, showing when to spray and depicting pests actually at work were also used in the display.

A large collection of exotic and native butterflies and moths were attractively arranged for the exhibit by the department of Systematic Entomology under the direction of Dr. J. C. Bradley. Many of these specimens were prepared and kindly loaned by Mr. C. A. Jig, curator of the Entomological Museum. The collection represented specimens from all parts of the world, many showing wonderful coloration and markings. Some of the most remarkable insects were those which, by adaptive coloration marvelously exemplified the phenomena of protective resemblance. Butterflies were shown that when on the wing are conspicuous for their wonderful coloration, but, when at rest, so resemble a dry leaf that they are with great difficulty found and “stick insects” that counterfeit dead twigs to perfection.

The collection of parasites of both man and the lower animals consisted of insects, their near relatives, and representatives of many other orders. With these were displayed charts to show their economic relation to man, methods of combating them, and suggested means to control many diseases which are directly or indirectly caused by them.

The part of the exhibit designed to show how a collection of insects is made and cared for, was particularly interesting and all stages of the work, from the capture of the insect to its final disposition in the museum cabinet were shown.

The Cornell Potato Show
By E. D. Vosbury, '14

One of the most interesting and instructive of the numerous exhibits of Farmers’ Week was the competitive Potato Show conducted by the Department of Farm Crops. The Potato Show was held in recognition of the great importance of this crop in New York, which now leads all the states of the Union with an annual product of more than $21,000,000 worth of potatoes. Despite the fact that the potato ranks as one of our foremost agricultural products, very little has been hitherto accomplished
in the improvement of the growers' interests thru organization and co-operation.

In planning the exhibit, it was one of the chief aims of the College of Agriculture to bring the growers together so that some definite step could be taken towards the formation of an association for promoting the industry by educational means. In addition to this object, the show was planned to illustrate to the growers in a concrete way, the ideal types of market potatoes. Then too, it was felt that some award and encouragement should be made those progressive growers who are doing the most good in the advancement of the industry thru the production of fine grades of potatoes.

To arouse interest in the exhibit, some valuable prizes were offered by leading manufacturers of potato machinery. Many fine modern potato diggers, planters, cultivators, sprayers, plows and other prizes were on exhibition in the show room.

The response from the growers was most hearty and at the opening of the show, more than one hundred and sixty individual exhibits were on display. These were arranged in lots of three pounds or more and were shown on separate plates. The competition was in six classes with five prize ribbons in each, besides the fifteen pieces of agricultural machinery offered as special awards. In addition to these six classes, a Grand Sweepstakes Prize was offered for the best single plate in the entire show.

Many of the prize winners were found among the Rural New Yorker type of tubers. On the whole, the show was of very high merit altho it was evident that some of the growers were rather vague in their conception of the types of potatoes which correspond most closely to the ideal of perfection. To these exhibitors, a careful inspection of the marks on the score cards could not but have been a most valuable lesson. Doubtless, many of the unsuccessful growers left the show with a much clearer idea of the types for which they should work and with a firm determination next year to produce some potatoes that would "clean up" the other fellows.

Thursday of Farmers' Week was Potato Day. A special program was arranged with many interesting addresses both from successful potato men and members of the faculty. At the close of the addresses, a grand get-together meeting was held.

As a result of this meeting a permanent committee was appointed and commissioned to make a careful study of the situation and to formulate plans for a definite and permanent organization to aid the potato growers of the state. Twenty-five exhibitors contributed a dollar each towards the expenses of this commission.

The scoring of the exhibit was under the direction of Mr. C. E. Hunn, a well known authority on potato judging. The winners of the five prizes in each class are as follows:


The Grand Sweepstakes Prize for the best exhibit in any class was won by Forest C. Gibbs of Filmore, N. Y.
OBSERVATIONS ON THE DISTRIBUTION OF DAILY EGG PRODUCTION

By James E. Rice
Professor of Poultry Husbandry, Cornell University

(Continued from February Number)

What constitutes high, medium, or low productiveness?

ONE of the most difficult problems for a scientific breeder to solve is how to select his breeding flock. This is particularly true where one desires to make his matings on a basis of high performance, with the view to increasing fecundity. How difficult the problem really is will be apparent when one studies the individual records of large numbers of hens. If one should undertake to select three breeding flocks from among the thirty-eight hens whose records are known for three years (flock B, table I), it would be necessary, first, to decide upon a method of determining a hen's laying powers; that is, her capacity to produce eggs. To do this he must decide upon a standard of measurement as to the number of eggs that are produced in a given time. In other words, we have two factors to consider: First, the number of eggs; second, the time in which a record may be made. Table IV shows eight methods, as regards time of measuring a hen's laying power. If we compare these methods by assuming, for example, the number of eggs that pullets lay in the first ten months from the day they are hatched, and compare these as a standard of measurement of the productive value of the same hens when measured in terms of their production: (1) to March 1st; (2) the first year; (3) the second year; (4) the first and second years combined; (5) the third year; (6) the three years combined; we will find that it will be the exception rather than the rule if the hens are given the same rating by any two or three of the methods. This is shown, for example, if we select three flocks of six hens each, table I (flock B, thirty-eight hens), showing, according to their egg records the first ten months from the time of hatching, the six highest, the six lowest, and the six medium producers (table IV).

A clearer idea of how our estimate of a hen's value as a layer changes, depending upon which standard of measurement we apply, is shown by giving each hen a "rating", as shown in tables I and V. In these tables each hen is given a "rating," based on her egg yield compared to that of the other hens in the same flock (flock B, thirty-eight hens). If, for example, a hen lays the most eggs by any given method of determining her laying value, she will be rated "1." If she lays less eggs than any other hen in the flock, she would be rated "38." Thus, in table V, hen No. 3511, when rated according to the eight methods of determining her productive power, as shown in the eight columns reading from left to right, is given ratings as follows: 18, 6, 8, 8, 30, 13, 24 and 17 respectively.

A careful study of table I, from which the records of the eighteen fowls shown in tables IV and V are taken, will reveal even greater contrasts in ratings, from which we are justified in assuming that no clear line of demarcation or cleavage exists in the laying qualities of hens that will enable us to arbitrarily class them as high, medium, or low producers, without finding that hens, which by one method of determining their productive value, are rated as high producers, and by another as medium, and by other methods as low producers. For example, study the records in table I of hens whose leg-band numbers are 3299, 2806, 3695, 6087, 3079, and others.
EGG PRODUCTION OF SIX HIGHEST, SIX MEDIUM AND SIX LOWEST PRODUCING FOWLS FOR THREE YEARS

Table IV

Based upon the first 10 months production from date of hatching (Flock B. 38 hens)

<table>
<thead>
<tr>
<th>Six Highest Producers</th>
<th>Age laid</th>
<th>First 10 months</th>
<th>To Mar. 1st.</th>
<th>1st year.</th>
<th>2nd year.</th>
<th>1st and 2nd yrs.</th>
<th>3rd year.</th>
<th>1st, 2nd &amp; 3rd yrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3352</td>
<td>180</td>
<td>92</td>
<td>69</td>
<td>230</td>
<td>146</td>
<td>376</td>
<td>163</td>
<td>539</td>
</tr>
<tr>
<td>3211</td>
<td>202</td>
<td>71</td>
<td>50</td>
<td>248</td>
<td>200</td>
<td>448</td>
<td>201</td>
<td>649</td>
</tr>
<tr>
<td>3418</td>
<td>206</td>
<td>64</td>
<td>59</td>
<td>222</td>
<td>219</td>
<td>441</td>
<td>220</td>
<td>661</td>
</tr>
<tr>
<td>3687</td>
<td>199</td>
<td>58</td>
<td>46</td>
<td>202</td>
<td>146</td>
<td>348</td>
<td>121</td>
<td>469</td>
</tr>
<tr>
<td>3113</td>
<td>220</td>
<td>57</td>
<td>42</td>
<td>200</td>
<td>167</td>
<td>357</td>
<td>162</td>
<td>529</td>
</tr>
<tr>
<td>3511</td>
<td>213</td>
<td>54</td>
<td>40</td>
<td>179</td>
<td>96</td>
<td>275</td>
<td>97</td>
<td>372</td>
</tr>
</tbody>
</table>

Six medium Producers

| 3097                  | 210       | 33              | 35          | 147       | 96        | 243              | 73        | 316               |
| 3097                  | 207       | 32              | 32          | 169       | 168       | 337              | 112       | 449               |
| 3336                  | 188       | 31              | 15          | 143       | 117       | 260              | 104       | 364               |
| 3075                  | 209       | 29              | 31          | 144       | 117       | 261              | 103       | 364               |
| 3189                  | 240       | 28              | 15          | 126       | 147       | 273              | 130       | 403               |
| 3477                  | 254       | 26              | 15          | 148       | 161       | 309              | 144       | 453               |

Six lowest Producers

| 3276                  | 258       | 12              | 6           | 106       | 126       | 232              | 145       | 377               |
| 3072                  | 208       | 11              | 14          | 126       | 137       | 263              | 140       | 403               |
| 3332                  | 296       | 6               | 0           | 53        | 60        | 113              | 41        | 154               |
| 2976                  | 292       | 3               | 3           | 113       | 105       | 218              | 111       | 319               |
| 6087                  | 292       | 1               | 0           | 89        | 156       | 245              | 140       | 385               |
| 3695                  | 313       | 0               | 0           | 66        | 154       | 220              | 129       | 349               |

Table V

"Rating" based upon Egg Production of Six Highest, Six Medium and Six Lowest Producing Hens (in Flock B. 38 hens)

<table>
<thead>
<tr>
<th>Six Highest Producers</th>
<th>1</th>
<th>1</th>
<th>1</th>
<th>2</th>
<th>10</th>
<th>3</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3352</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3211</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3418</td>
<td>12</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3687</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>11</td>
<td>5</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>3113</td>
<td>23</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>3511</td>
<td>18</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>30</td>
<td>13</td>
<td>24</td>
<td>17</td>
</tr>
</tbody>
</table>

Six medium producers

<table>
<thead>
<tr>
<th>3097</th>
<th>17</th>
<th>17</th>
<th>11</th>
<th>15</th>
<th>31</th>
<th>23</th>
<th>34</th>
<th>28</th>
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</thead>
<tbody>
<tr>
<td>3079</td>
<td>14</td>
<td>18</td>
<td>14</td>
<td>10</td>
<td>3</td>
<td>7</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>3336</td>
<td>5</td>
<td>19</td>
<td>23</td>
<td>20</td>
<td>23</td>
<td>19</td>
<td>21</td>
<td>19</td>
</tr>
<tr>
<td>3075</td>
<td>16</td>
<td>20</td>
<td>15</td>
<td>18</td>
<td>24</td>
<td>18</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>3189</td>
<td>28</td>
<td>21</td>
<td>24</td>
<td>23</td>
<td>9</td>
<td>14</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>3477</td>
<td>30</td>
<td>22</td>
<td>25</td>
<td>13</td>
<td>5</td>
<td>9</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Six lowest Producers

<table>
<thead>
<tr>
<th>3276</th>
<th>31</th>
<th>33</th>
<th>32</th>
<th>32</th>
<th>16</th>
<th>27</th>
<th>5</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>3072</td>
<td>15</td>
<td>34</td>
<td>28</td>
<td>24</td>
<td>13</td>
<td>17</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>3332</td>
<td>37</td>
<td>35</td>
<td>36</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>37</td>
<td>38</td>
</tr>
<tr>
<td>2976</td>
<td>39</td>
<td>36</td>
<td>33</td>
<td>28</td>
<td>26</td>
<td>30</td>
<td>18</td>
<td>27</td>
</tr>
<tr>
<td>6087</td>
<td>35</td>
<td>37</td>
<td>37</td>
<td>35</td>
<td>6</td>
<td>22</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>3695</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>36</td>
<td>7</td>
<td>28</td>
<td>10</td>
<td>21</td>
</tr>
</tbody>
</table>
It will be seen, from table IV, that of the six best layers, based upon the first ten months’ production, five are also the best layers for the first year, three for the second year, five for the first and second years combined, four for the third year, and five for three years combined. Only three hens appear among the six highest producers in all three years. Of the six medium producers (rating 17th to 22d) the first ten months, only two are medium producers the first year; none the second year; two in the first and second years combined; three the third year; and two the three years combined. No hen is found in the medium group in all the three years.

Of the six poorest layers during the first ten months, three are in the first year, one in the second year, one in the first and second years combined, one in the third year, one in the three years combined. Only one hen appears in all three years. From this, it is clear that there is no certainty that hens that make their best, medium or lowest production the first ten months of their lives will do the same in any given year, or combination of years. The same appears to be true also, regarding any part of the year which may be taken as a means of determining the highest, medium or lowest producers.

From these comparisons we see that although two hens may have the same record or have greater or less records than another in our breeding flock, there is no certainty that the same relation will be maintained in succeeding years. It appears to be true in many instances, however, that if a hen’s record is higher or lower in the first year than is the record of another hen that their records are quite likely to continue either higher or lower, as the case may be, although each year thereafter the difference in production may vary greatly.

In Tables IV and V showing the highest, medium, and lowest production, the column based on the egg yield to March 1st, the “rating” appears to be about the same as the rating based on the first ten months’ egg yield.

The Best Producers Lay more Frequently, more Regularly and more Persistently than do the Poor Layers.

The daily and yearly production shows the individual characteristic of each hen in regard to her laying habit; that is to say, the way she “functions.” A striking fact is the regularity with which some of the best hens lay. Take, for example, Nos. 3211 (Lady Cornell), 9363 (Madam Cornell), 1643, (Cornell Surprise), 3418 (Cornell Supreme); Table I and Color Plate Nos. 1453, 1101, 2124, 2233, 2200. All of these show most remarkable ability to sustain continuous production for long periods of time, laying from six to ten eggs or more in succession and not skipping more than six to eight days in a month. Poor layers show erratic production, missing production frequently and for long periods. This is especially true at the beginning or the close of the cycle of any hen’s production. It would seem that the larger the laying capacity of a hen, the more regular will be her production.

The Best Layers Usually Commence to Lay Earlier than Poor Layers.

A careful examination of the days when each fowl laid her first egg, the daily laying record and the total production for each year, as shown in the color plate and tables I, IV and V, columns headed “age to lay first egg,” reveals the fact that, as a rule, the better laying hens began to lay at a younger age than did the poorer layers. This is more accurately brought out in table VI, which shows that comparing hens that began to lay when they averaged 222 days (about 7 1/4 months), 255 days (about 8 3/4 months), and 297 days (about 10 months), the difference in egg yield was in favor of the hens that began to lay earlier. The first year there was a difference of 62 eggs in the production of the pullets that were earliest to lay, as compared to those that began to lay latest.
The second year's production for 38 hens (flock B) showed that those that began to lay when about seven months of age laid, the first year, 34 more eggs than those that began to lay when about eight and one-half months old, a difference of only one and one-half months in the age when they began to lay. The three year records showed the same general differences in production in favor of early producers, making a gross difference of 99 eggs for three years, or an average of 33 eggs more each year from those that began to lay when about seven months of age as compared to the hens that began to lay when ten months of age.

Essentially the same, or greater, general difference in egg yield in favor of earliness in commencing to lay as an indication of high productiveness, is shown in flock A. In round numbers, the data justifies the conclusion that a difference of about one month in the age when pullets normally commence to lay is likely to result in a yearly egg production of three or four dozen eggs per hen more the first year and one dozen eggs more the second and third years. Apparently the greater the difference in the age of pullets when they commence to lay, assuming that food and environmental conditions are similar and the variety of fowls is the same, the greater will be the difference in the productive power of the individuals.

EARLY EGG PRODUCTION AS AN INDICATION OF PROLIFICACY
Flock A. Table VI
Three Calendar Year Record of 33 S. C. White Leghorn Fowls at Cornell University

Group 1, 17 hens began to lay when 240 days old or less or 60.6 per cent.

<table>
<thead>
<tr>
<th>Age in days</th>
<th>1st year</th>
<th>2d year</th>
<th>3d year</th>
<th>Total 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>222.6</td>
<td>175.5</td>
<td>142.0</td>
<td>126.3</td>
</tr>
</tbody>
</table>

Group 2, 9 hens began to lay when 242 to 270 days old or 21 per cent.

<table>
<thead>
<tr>
<th>Age in days</th>
<th>1st year</th>
<th>2d year</th>
<th>3d year</th>
<th>Total 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>255.0</td>
<td>130.0</td>
<td>139.0</td>
<td>136.2</td>
</tr>
</tbody>
</table>

Group 3, 6 hens began to lay when 270 to 358 days old or 18.2 per cent.

<table>
<thead>
<tr>
<th>Age in days</th>
<th>1st year</th>
<th>2d year</th>
<th>3d year</th>
<th>Total 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>297.5</td>
<td>113.2</td>
<td>108.5</td>
<td>111.7</td>
</tr>
</tbody>
</table>

Flock B
Three Calendar Year Records of 38 S. C. White Leghorn Fowls at Cornell University

Group 1, 27 hens began to lay when 240 days old or less or 71 per cent.

<table>
<thead>
<tr>
<th>Age in days</th>
<th>1st year</th>
<th>2d year</th>
<th>3d year</th>
<th>Total 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>208.6</td>
<td>156.3</td>
<td>123.7</td>
<td>108.5</td>
</tr>
</tbody>
</table>

Group II, 6 hens began to lay when 242 to 270 days old or 15.8 per cent.

<table>
<thead>
<tr>
<th>Age in days</th>
<th>1st year</th>
<th>2d year</th>
<th>3d year</th>
<th>Total 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>255</td>
<td>122.1</td>
<td>129.1</td>
<td>123</td>
</tr>
</tbody>
</table>

Group III, 5 hens began to lay when 270 to 358 days old or 13.2 per cent.

<table>
<thead>
<tr>
<th>Age in days</th>
<th>1st year</th>
<th>2d year</th>
<th>3d year</th>
<th>Total 3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>296.5</td>
<td>82.4</td>
<td>113.6</td>
<td>94.4</td>
</tr>
</tbody>
</table>
The Color-Plate shows graphically the daily egg production of forty-five Single White Comb Leghorn hens for three years. Each colored space indicates the day on which an egg was laid. Each uncolored space represents the day when a hen did not lay. To make the egg chart more intelligible, the following color scheme is adopted: The years in which hens make their highest, medium and lowest production are indicated as follows: the highest production is represented by blue; the medium by red; and the lowest, by brown. The single diagonal lines in the spaces represent the daily egg production of hens that died before the completion of the third year of laying. The horizontal lines mark the days when hens were broody.

Long Life and High Egg Production are Possible

As proof of this statement, attention is called to the laying records of four quite remarkable hens. They are the highest sustained egg yields for three years so far as the writer knows that have been reported. They point out the way to possibilities in breeding that may become and should become realities. They are important because they prove that hens can sustain abnormally high production for at least three years, and remain, apparently, in perfect health. The demand upon the body to carry on the digestive and reproductive processes required for example of "Cornell Supreme" in laying 660 eggs, weighing 86.19 pounds in three years, is beyond what would ordinarily be considered the range of possibilities. In doing this she laid 25.82 times her own weight in eggs. The record of "Cornell Surprise," although not so large a performance, is surprising from the fact that she laid more eggs each year for three years, eg., 180, 186, 196 in her first, second and third year, respectively, a total in three years of 562 eggs. Such feats in egg production warrant the hope and perhaps the expectation that by proper methods of selection and mating, the character "longevity" may be emphasized in the development of a longer lived race of fowls than now exists. This would be the greatest boon to modern Poultry Husbandry. It would vastly strengthen the weakest link in the chain of success in Poultry farming; namely, the short normal life of the domestic fowl, necessitating the renewal each year of one-half or more of the entire flock, thus entailing the greatest risk and largest item of expense. Moreover, it is reasonable to assume that fowls inheriting the tendency of long life will be more hardy; hence, more easily reared and handled which would reduce mortality and make for efficiency.

"CORNELL SUPREME" (3418)
Wt., 3.48
Eggs Laid
1st year, 242; 2d year, 198; 3d year, 220
Total 3 years, 660

"LADY CORNELL" (3211)
Wt. 5.58
Eggs laid
1st year, 257; 2d year, 200; 3d year, 191
Total 3 years, 648

"MADAM CORNELL" (9363)
Wt. 4.16
Eggs laid
1st year, 245; 2d year, 131; 3d year, 193
Total 3 years, 539

(To be continued in the April issue)
The Cornell Countryman

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March, 1913

Office
Chat

We sincerely regret
three thousand visitors present there
was no one but who felt well repaid
for this trip and left with new ideals
for a better and fuller country life.

We are sure that the

Entrance
Requirements

We are sure that the
sentiment of the stu-
dent body will ap-
prove of the policy
which the faculty has adopted in
regard to admission of freshmen who
have not fulfilled the entrance require-
ments. Of forty freshmen who entered
the College of Agriculture last fall
with entrance shortages with the dis-
tinct understanding that such condi-
tions be removed before the beginning
of the second term, fifty per cent.
failed to clear. Furthermore some of
those who did clear failed to do
satisfactory University work. This
clearly indicates that it is impossible
for the average student to remove
entrance conditions and at the same
time carry on his college work. In
view of this fact, the Faculty of the
College of Agriculture, in order to
reduce, as far as possible, the hardship
and disappointment on the part of the
student occasioned by dismissal, has
unanimously adopted the resolution
"that in the admission of regular stu-
dents the Committee on Petitions be
instructed to hold rigidly to fifteen
units of entrance credits." This does
not mean that no one will be admitted
to the College of Agriculture in the
future with entrance conditions but
applies to a shortage of the fifteen unit
requirement. A student may be given
an opportunity to pass off a condition
in a subject required for entrance
provided he has a mark of at least 40
in the subject or provided he has at
least fifteen additional entrance
units.

Throughout his
two years' connection
with the COUNTRYMAN, Mr. Stephen-
son has shown himself to be a hard
and consistent worker and his loss will
greatly handicap the board during the
remainder of the year.

We are making the March issue
the annual Farmers' Week number
instead of the April issue as has been
the case in former years. In doing
this it was impossible to publish the
issue promptly on the first of the
month. We trust our readers will
pardon the delay.

The Fifth Annual Farmers' Week
this year was without question the
most successful meeting of its kind in
the history of this institution. Of the

Office Chat
The Agricultural Association

We would call special attention of all students to the proposed amendment to the constitution of the Agricultural Association providing that all routine business of the Association be carried on by an Executive Committee and that the meetings of the Association be of more general interest. Not enough students attend the meetings of the Agricultural Association to adequately represent the true sentiment of the student body. It is hoped that the proposed amendment, if carried, will make it possible to hold each term two or three well attended mass meetings at which some speaker of prominence may be heard.

The proposed changes should receive the thoughtful consideration of every undergraduate in the College of Agriculture, and every student should be present to vote “yes” or “no” when the amendment is presented at the next meeting of the Agricultural Association. In order that all may be familiar with the amendment, we print it in full as submitted.

“AMENDMENT TO ARTICLE III—OFFICERS

“SECTION 1. The Executive Committee shall consist of the officers of this association, one delegate from each of the four classes, one from each of the Senior Societies, one from the Musical Clubs, one from the CORNELL COUNTRYMAN Board, one from the Athletic Council, one from the Girls’ Club, one from each of the Departmental Clubs, and one from the Winter Course. The members of the Executive Committee, except the Winter Course member, must be paid-up members of the Association.

“IN case any delegate is not elected, the committee shall be considered complete without the representation from that body.

“AMENDMENT TO ARTICLE IV—DUTIES OF OFFICERS

“Sec. 3. Executive Committee. It shall be the duty of the Executive Committee to transact all routine business and all other business which in their judgment need not be discussed and acted upon by the general student body.

“It shall also be the duty of the Executive Committee at each meeting, to hear the reports of the chairman of all committees appointed by the President until the work of such committees has been completed.

“The Executive Committee shall meet at least once each month and at any other time deemed advisable by the President.

“AMENDMENT TO THE BY-LAWS, ARTICLE I—MEETINGS

“SECTION 1. Meetings of the Association shall be held at least twice each term, these meetings to include a programme of interest to the general student body.”

In Dean Bailey’s address during Farmers’ Week before the Country Bond on “The Next Step in the Country Life Movement,” he discussed the place of the rural town in country-life progress. He suggests that in the past the small towns have been looked upon from the wrong point of view, the metropolitan rather than the rural. Director Bailey contends, and in this contention he will have the support of those who have thought clearly of the matter, that the next step is to make the country town a real part of country life.
CAMPUS NOTES

The New York State Drainage Association during Farmers' Week gave special attention to the study of the use of dynamite in drainage work. It was clearly pointed out that dynamite as a direct means is only effective in certain cases. It is, however, proving itself very useful in constructing open ditches. All phases of practical drainage received attention and the discussion showed clearly the increased interest which the drainage problem is receiving throughout the state.

* * *

The problem of the country church was a much discussed subject before the country church conference. Rev. S. E. Persons of Cazenovia and Rev. C. S. Hayt of Auburn were the principle speakers. Many important facts were brought out. It was shown that the gospel, the school and the country fairs are closely related. The church has always been a helpful influence in the country life of America, but for the church to be made of the greatest educational value of today it must organize and train its forces to meet the needs of the community, promote better schools, better farming and more love for the country life. When the energy and wisdom of modern agriculture find their counter-part in religion, when the new farmers shall unite for the new church, then light of religion shall quicken and glorify our country life.

* * *

At the meeting of the Cornell Dairy Students' Association the dairy conditions of New York State were discussed. It was shown that formerly more milk was used for making butter and cheese than for shipping purposes but now the state is fast becoming a milk shipping state. The inspection department has had many changes for the better but it seems that if the State Department of Agriculture would inspect in the country the city would look after its part itself. Two other important facts were brought out, that cleaner milk and more careful handling should be required, and that cow testing associations are important factors in improvement of dairy conditions.

* * *

A very interesting and practical exercise in computing rations was conducted during Farmers' Week by Professor Savage. Special attention was given to the relative values of certain proprietary foods and the recognized standard feeds. Professor Savage pointed out the fact that compounded feeds have by analysis, less food value than the standards. This is explained by the fact that many proprietary foods are sold for the purpose of disposing of by-products that would not otherwise be marketable.

* * *

The principles of breeding farm animals, were discussed on Thursday by Professor H. H. Wing of the Department of Animal Husbandry. Heredity, he said, is the greatest natural force the farmer has at his command, for when we have two good, well-bred animals, we can be reasonably sure of good offspring. The degree of this
transmission depends upon the ancestors for several generations. The nearer these approach a common type, the greater the possibility of an individual with desirable characteristics. For this reason we use pure-bred stock, for with this class of animals we have a guarantee of purity of blood.

** At the annual session of the State Grange at Buffalo on February, 6, 7, 8, strong action in favor of licensing commission men was taken. Strong sentiment was shown in favor of the movement toward cooperative markets, and for a change in the bovine tuberculosis laws, a physical diagnosis. The annual appropriation for scholarships in the Winter Course in the College of Agriculture was made for six men. Among the seven delegates from Tompkins County were Professor and Mrs. Wing.

** Mr. A. E. Wilkinson of the Department of Horticulture, has been making out a very complete list of books of value to those interested in vegetables and flowers. Also books on herb raising for medicinal and culinary purposes, will be mentioned. This will be available the first part of this month.

** At the present time extension schools are very active. During March, the following places will be visited: East Bloomfield, Ontario County, and Ticonderoga, Essex County on the 3d; Holley, Orleans County, and Watertown, Jefferson County, the 10th; Johnstown, Fulton County, and Hannibal, Oswego County, the 17th; and Lincolndale, Westchester County, the 24th.

** Mr. Paul Work spoke at the annual meeting of the Society of Horticultural Science, held recently at Cleveland, Ohio. His subject was, "Teaching Vegetable Gardening." In his talk he discussed the plans and various courses given by our Horticultural Department.

** Professor A. C. Beal has been reappointed botanist of the Society of American Florists.

The Farm Course, under the personal supervision of Dr. Needham has been continued the second term. It is given only one hour a week, on Saturday afternoon, and limited to about twenty students.

** With the completion of the new Poultry Building and the Home Economics building there have been made several changes in the location of some of the departments. The Farm Management Department is now situated on the second floor of the Poultry Building. The Biology and Forestry Departments have their offices in the Home Economics Building.

** Farmers' Week introduced, among other innovations, a cafeteria, located in the basement of the Home Economics Building in which although professional cooks were employed, undergraduates served behind the counters. The cafeteria was closed for three weeks, after which it opened again as a permanent institution as its success was demonstrated by the fact that one thousand people ate there Thursday noon of Farmers' Week.

** Ag. continues to show up well in athletics for their basketball team, consisting of N. D. Steve, captain, R. S. Steve, N. Kopeloff, C. G. Crittenden, Leslie Brown, and J. S. Clark, manager.


** On Friday of Farmers' Week, Dean Bailey delivered the Country Bond lecture on "The next step in the country life movement." The Dean does not believe that rural communities need to be "uplifted" by the methods of urban reorganization. Education is what is necessary for the continuance of the present economic growth of the open country, and the movements that arise to improve con-
Conditions should not be forced on the community from the outside, but should be the product of a healthy, tho sometimes slow, natural growth from the inside, outward.

* * *

At the annual meeting of the Students' Association, held here during Farmers' Week, there was an excellent attendance. In his speech on "The Correlation of Different Lines of Agricultural Work," Dean Bailey announced that the college is ready to appoint a man who will divide his time between work with former students and farm bureaus.

* * *

Governor P. S. Goldsborough of Maryland accompanied by Adjutant General Macklin visited the College on February 15. The Governor is gathering information which he intends to use in bettering rural conditions in Maryland and in modernizing the Maryland College of Agriculture, as he realizes that agriculture is the basic industry of his state. He intends to place Maryland among the foremost states in agricultural movements.

* * *

At the Rural Credit Conference the problem of New York farmers' credit was studied. It was found that money is offered in the west on farm mortgages at five per cent, while in New York State, though there is money enough it is not in shape for the farmers to get. There does not seem to be confidence and does not appear to be a disposition of the banks or of the associations to enlist farmers in cooperative loans. A committee was appointed to request the government and state banking departments to look into the conditions.
After instructing for a week in the extension school at Poland, Dr. Meyers gave a lecture, Jan. 27th, before the Corn Growers' Association at Canton. From there he went to Chemung County where he lectured on timothy breeding, and the organization of timothy contents.

The library of the Department of Entomology has moved into the rooms in the Main Building formerly occupied by the Home Economics Department. In these larger quarters, the library can be much more conveniently arranged and it is expected that a regular librarian will be in attendance.

BOOK REVIEWS

Constructive Rural Sociology. By John M. Gillette, Professor of Sociology, University of North Dakota. Farmers' Practical Library Series. Published by Sturgis and Walton Co., New York City; 301 pages; price $1.60 net.

This work is a survey of the economic conditions in rural communities and effectually organizes information with a view to improving the conditions of rural welfare. The book treats of the lack of social attractions in the country and discusses the improvement of the business side of farmers, in farm management, marketing and organization.

Crops and Methods for Soil Improvement, by Alva Agee, M.S. Published by Macmillan Company, 66 Fifth Avenue, New York City; 250 pages; 30 illustrations; price $1.50 net.

In this work the author in a very clear and interesting manner treats his subject from the practical view point. This is not a scientific book, rather is it one which contains a world of practical information, and since it is written in a non-technical manner the various points can be understood by a novice. The book is copiously illustrated by full page photographs to accompany the extremely interesting reading matter. On account of the nature of this book it is one which any person desiring information on this subject might well have in his library.


There has not been published, within the last twenty-five years, a complete and up-to-date manual of strawberry growing. During this time all the modern methods have developed. Feeling the need of such a book, Mr. Wilkinson has written a manual that brings the whole subject up to date, giving full details as to varieties, planting, cultivation, soils, etc. This book is invaluable not only to the amateur but also the professional grower.

A Laboratory Manual of Agriculture, by L. E. Call and E. G. Schafer, of the Kansas State Agricultural College. Published by Macmillan Company, 66 Fifth Ave., New York City, 250 pages, 42 illustrations; price $.90.

This book is primarily for the laboratory study of Agriculture in secondary schools. The various exercises are arranged in order by months from September to June, enabling the instructor to know what material is needed and the time of using this material. There are, on the average, about two exercises a week for the entire year. This book is written in a very practical manner and will be of great value in secondary schools where it will fill a long felt want.
FORMER STUDENTS

'96, B.S.; M.S. in Agr., '97—Leroy Anderson who is connected with the University of California has a six months leave of absence which time he is going to use in managing a 4000 acre ranch at El Casco, Cal.

'99 G.—L. A. Clinton, who was in charge of the Field Experiments at Cornell under Professor I. P. Roberts, and who has been Director of Storrs Experiment Station for the last ten years, has entered the Bureau of Farm Management at Washington. He has been given supervision of New York State and New England.

'06, B.S.A.—John Barron has resigned from his position as County Farm Expert for Broome County, N. Y. Mr. Barron will engage in agriculture on his farm at Nunda, N. Y. and will in addition do work in connection with the State Farm Institutes.

'06, Sp.—L. B. Gable of Glen Gable Farms, Wyebrooke, Chester Co., Pa., visited on the campus during February.

'17, Ph.D.—J. Elliot Coit, Associate Professor of Pomology and Superintendent of the Citrus Experiment Station at Riverside, has been appointed Professor of Citiculture at the University of California, and has recently moved with his family from Riverside to Berkeley. The COUNTRYMAN would like to call attention to the fact that the note on Professor Coit in the February number was incorrect and should have been given as above. Professor Coit was the editor of the COUNTRYMAN in its third year of existence.

'07—'08, W. A.—D. B. Knight is now head of the farm department of the Industrial School at Canaan, N. Y.

'08, B.S.A.—A. W. McKay of the division of fruit storage and transportation of the Department of Agriculture, is in Miami, Fla., where he will devote the next six or eight months studying out some problems confronting the citrus growers there.

'08, B. S. A.—Professor Vaughan MacCaughey, of the College of Hawaii, is editor of a new educational periodi-
cal, the Hawaii Educational Review. This is a monthly journal issued by the Territorial Department of Public Instruction, and the Extension Department of the College of Hawaii. The Review has a large circulation thruout the Territory and on the mainland.

'08, W. D.—C. E. Brett has returned to the Rhode Island College of Agriculture at Kingston, R. I., where he will work for his B. S. degree. Mr. Brett has been managing a poultry farm at Thompson, Conn., since leaving Cornell.

'09, B. S. A.—G. C. Manrow has recently accepted a position as manager of a 240 acre farm near Albany, N. Y., belonging to Troop B, N. Y. State Cavalry.

'10, B. S.—Tracy Morrison who last year was engaged in soil survey work in New York State for the United States Department of Agriculture has been transferred to similar work in Florida.

'10, W. A.; '11, Sp.—Lester G. Barber is to manage a 160 acre farm at Newton, N. J., belonging to S. W. Ross.

'11, B. S. A.—E. W. Thurston is teaching Agriculture at Lowville, N. Y. The COUNTRYMAN reported Mr. Thurston in the January issue as W. A. and wish to call attention to the correction herewith.

'11, B. S. A.—F. E. Benedict is now advertising manager of Poultry Husbandry, published at Waterville, N. Y. This magazine has recently given to the Poultry Department a scholarship of $250 for the study of cooperative marketing of poultry products.

'11, B. S. A.—S. G. Judd formerly editor of THE COUNTRYMAN is now teaching Dairy Husbandry at the Linden Center Agricultural School, Linden Center, Vermont.

'12, B. S. A.—L. A. Polhemus is manager of a farm at Northfield Seminary, Northfield, Mass. Mr. Polhemus was married last February. We hear that he is planning to send his boy, who was born Dec. 30, 1912, to Cornell.
'12, B. S. A.—Miss Margaret Connor holds a position as scientific assistant to the head of the department of Pomology in the U. S. Department of Agriculture at Washington.

'12, B. S. A.—H. Grenier is employed by the Sharples Separator Company of Chicago, as chief expert in installing large plants.

'12, B. S.—E. V. Hardenburg is instructing in the Department of Farm Crops at this College.

'12, B. S.—E. T. Lewis is an assistant in the Department of Farm Crops at the College of Agriculture.

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'12, M. S. A.—Professor Alfred Atkinson has returned to his position as head of the Agronomy Department of the Montana Agricultural College.

'13, B. S.—Charles P. Alexander has been appointed special investigator of insects for the State of Maine during the coming summer. Mr. Alexander will leave for Orono the latter part of May and will spend about four months in the state. He will work on a catalogue of the crane-flies, a group of insects in which he has specialized.


**GENERAL AGRICULTURAL NEWS**

**ANNUAL MEETING OF THE NEW YORK STATE BREEDERS' ASSOCIATION**

The annual meeting of the New York State Breeders' Association was held in Utica on January 22 and 23. In his opening address, Commissioner C. J. Huson, head of the State Agricultural Department, brought out some very vital facts relative to present live stock conditions in this state.

The increase in farm animals in this state in the last ten years has been far less than the increase in consumption. The cow is the only animal which has shown any increase in number, horses, swine and sheep having actually decreased in number. The total pork produced in this state in a year would supply the demand for but one month while in less than a decade, our sheep have decreased from 1,745,000 to 930,000. In view of the accepted fact that most successful agriculture must be founded largely on animal husbandry and taking into consideration that in no section of the country, can better sheep, swine or cattle be produced than here in our own state, it is high time for our farmers to realize their opportunities and to extend and improve conditions in live stock production.

* * *

**RED SPIDERS**

Writers in 'Horticulture' have been discussing various methods of destroying the red spider. This little beast is one of the worst of green-house pests and no one seems to have discovered an adequate means of exterminating it.
without injuring the plant. High water pressure in a hose is the best thing in use now. One writer thinks it is time that men in the experiment stat'ons gave a “quick, sure, remedy” to rid greenhouse workers of the annoying little insect. Here is a challenge that ought not to go unanswered.

* * *

MILK INSPECTION

The New York Milk Committee has come to certain conclusions as to the proper division of labor in milk inspection. They are:

1. That there should be a division of labor between the State Department of Health, State Department of Agriculture, and the City Department of Health.

2. That the State Department of Health should undertake the medical inspection and licensing of dairy employees, creamery and shipping station employees and also control the water supply and distribution of waste.

3. That the State Department of Agriculture should control, thru its Veterinarian, the health of all dairy cattle and sanitary conditions of handling milk.

4. That the City Department of Health confine itself to the making of laboratory tests of milk, and confine its inspection to the selling organizations in the city.

* * *

NEW JERSEY FARMERS' EXCHANGE PROSPEROUS

That larger profits will accrue to the producer by the elimination of some of the middlemen is amply proved by the experience of the Monmouth County (N. J.) Farmers' Exchange, as shown in the report of W. H. Ingling, general manager, rendered at the fifth annual meeting of the exchange, held recently at Freehold. Organized five years ago, actual business was begun in July, 1908, with a paid in capital of $7,000. Today the exchange has a capital stock of $75,195, and upon this amount a dividend of 5 per cent was declared early in December. The exchange’s capital and surplus amount to $101,734.26.

Potatoes form the principal crop grown in the territory covered by the exchange, and as the crop was shortened 15 per cent from last year by a drouth and the price received was less, the total amount of business for the exchange this year in dollars and cents shows a decrease from that of last year, when the amount of business done, aggregated more than $1,400,000. The total business this year amounted to $941,765.51.

The total number of packages handled by the exchange during the last year was 577,716, or 2,891 carloads, and for the five years 10,910 carloads. Fertilizer has been compounded and sold to its members only the last four years, and in that time 11,145 tons were distributed.

The exchange now has thirty loading stations and 1,227 members, an increase in membership of 178 for the year.

The treasurer's report for last year showed profits to be $29,281.72; general expenses, $22,573.42; net profits, $6,708.30; present surplus, $18,926.51, and present undivided profits, $7,613.75.

* * *

GAS ENGINE STATISTICS

With over 700 gasoline engine builders, 25,000 dealers, who sold over 800,000 engines last year; with the reliability of the gas engine fully established; with all sizes from the tiny machines for running cream separators to those of 3000 H. P.; with tractors on the farm in place of horses and mules whereby the 25 per cent. of the total farm area in the United States now given over to production of food for such animals is released for other and more useful purposes, it may be truthfully said that the next few years will be the Power Age, when cheap power will not only revolutionize farming, our greatest national industry, but also many other lines of work, thereby lightening our burden of production and resulting in greater good to all.
There are Three Important Reasons Why Cows Should be Clipped:

(1st) Their Health Will be Improved
(2nd) Yield of Milk Will be Increased
(3rd) Sanitary Conditions Will be Bettered

Clip off the long coat twice a season—in the spring and summer—and the cows keep healthier and yield more milk. Thousands of dairy farmers have proved this.

Clip the udders and flanks every month; it takes only a few minutes. This makes it easy to keep the parts clean, thereby insuring clean, uncontaminated milk.

Results like these make clipping profitable as well as sanitary.

Minimize the expense, time and labor by clipping with a Stewart Machine. Anybody can operate it because it turns easy and fast, without hard work, trouble or danger to the animals.

Use the STEWART Ball-Bearing Cow Clipping Machine

The sturdy construction of the Stewart insures a lifetime of good service. Gears are file hard, cut from the solid steel bar and are encased in an oil bath away from dust and dirt. Friction and wear are practically done away with. The clipper plates are specially hardened, tempered and ground to a fine cutting edge that stay sharp long and always cut keen.

Six feet of flexible shaft, and everything necessary to begin clipping with, is included with the machine. No extras at all and the machine as it comes is right for clipping horses, cows or mules.

The Stewart Clipping Machine is sold for $7.50 by dealers everywhere, or direct. Ask for our catalog describing our complete line of machines for clipping cows, horses, mules, and for shearing sheep.

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Hudson Valley Farms

The Kinderhook country affords many important advantages to the commercial fruit grower: a fertile soil, a clear bracing climate, nearest to the best market in America, AND COMMUNITY. The wise man is bound to consider community.

Rural Life Company

Kinderhook, N. Y.

DISTINCT FUNGICIDAL PROPERTIES

Circular No. 7 of the Virginia Agricultural Experiment Station, March, 1910, speaking of San Jose scale, says: "The Lime-Sulfur Wash, either home-made or commercial, and the soluble oil sprays are the most satisfactory remedies for this pest. The soluble oil sprays, either home-made or commercial, are probably best for treating the apple, because the oil spreads better on the downy twigs of the apple." "Scalecide" is the acknowledged leader of all soluble oils—the only one containing distinct fungicidal properties; standing the test for the past six years on all kinds of fruit trees. "Scalecide" has no substitute.

There are other reasons. A postal request to Dept. A will bring you by return mail, free, our book, "Modern Methods of Harvesting, Grading and Packing Apples," and new booklet, "SCALECIDE, the Tree-Saver."

If your dealer cannot supply you with "SCALECIDE" we will deliver it to any R. R. Station in the United States east of the Mississippi and north of the Ohio River on receipt of the price: 50-gal. bbls., $25.00; 30-gal. bbls., $16.00; 10-gal. cans, $6.75; 5-gal. cans, $3.75. Address, B. G. PRATT CO., 50 Church Street, New York City.

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<table>
<thead>
<tr>
<th>Eggs Laid 1st yr.</th>
<th>Eggs Laid 2d yr.</th>
<th>Eggs Laid 3d yr.</th>
<th>Total eggs laid 3 yr</th>
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<tbody>
<tr>
<td>Lady Cornell</td>
<td>257</td>
<td>200</td>
<td>191</td>
</tr>
<tr>
<td>Madam Cornell</td>
<td>245</td>
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<tr>
<td>Cornell Surprise</td>
<td>180</td>
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<td>Cornell Supreme</td>
<td>242</td>
<td>108</td>
<td>220</td>
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- Announcement of the College of Agriculture,
- Announcement of the Medical College,
- Announcement of the New York State College of Agriculture,
- Announcement of the Winter-Courses in the College of Agriculture,
- Announcement of the New York State Veterinary College,
- Announcement of the Graduate School,
- Announcement of the Summer Session,
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| PLANT PHYSIOLOGY             | FARM MECHANICS    |
| PLANT PATHOLOGY             | FORESTRY          |
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Cornell Co-operative Society

Morrill Hall

Ithaca, N. Y.
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COOPERATIVE SELLING

By Arthur R. Rule

Vice-President and General Manager, North American Fruit Exchange, New York

There are three well defined divisions in the fruit business: 1st, horticultural, or hanging the fruit on the trees; 2d, handling, requiring the most improved methods in picking, grading, packing and loading; 3d, selling. Each division is inter-related to the other, but each, nevertheless, requires a specialist.

There have been Utopian dreams of centralizing the sales work of all fruits and produce through one channel, the marking off of territorial lines and the allotment of supplies accordingly. This as an ideal is good; its practical operation is decidedly problematic. A number of growers' organizations in different sections of the country can harmoniously utilize the same sales medium. Others for various reasons must operate differently. There must necessarily be groups according to commodities and sales requirements.

Combination or cooperation? An almost universal idea among producers has been, let us form a trust, let us imitate the sagacity of Standard Oil, the Steel trust, et al; but the public is taking a hand. Twenty-eight officers of the National Cash Register Co. were given jail sentences the other day. President Wilson has clearly defined the illegal combination:

"A trust is a combination or agreement between corporations, firms or persons, any two or more of them, for the following purposes, and such trust is hereby declared to be illegal and indictable. To limit or reduce the production or increase the price of merchandise or of any commodity. To make any agreement by which they directly or indirectly preclude a free and unrestricted competition among themselves or any purchasers or consumers, in the sale or transportation of any article or commodity, either by pooling, withholding from the market or selling at a fixed price, or in any other manner by which the price may be affected."

The high cost of living is a personal question. It affects the hundred million. The price of an apple to the consumer is as important as the cost of its production to the grower. The searching questions fired at General Manager Powell of the California Fruit Growers' Exchange at the recent Ways and Means Committee meeting at Washington are indicative of the attitude of the general public towards cooperation of a sectional character.

The distance from the tree limb to the consumers' hand is being shortened. To the credit of fruit growers it must be said that they awoke to this necessity years ago and have developed remarkably in sectional cooperation work. Consumers are now aroused. The demand for organized selling in its broad sense is becoming insistent from both the consumer and producer. The result is as sure as the law of evolution.

While the cooperative spirit has been admirably developed locally, yet we
are today confronted with the peculiar situation of one producing section of the country at competitive war with another. The clash and grappling for markets and trade territory works useless waste both to producers and consumers. Citrus Growers of Florida and California should recognize the fact that sooner or later they must broaden their cooperation, reach hands across the continent, and as fellow growers, use discretion and avoid useless waste in marketing the crops of the two states. Likewise, apple growers of the East, of the West and North must come to understand that in a broad sense they can cooperate in the scientific sale of their fruit.

The spirit of decrying the products of another section is short-sighted. The man who spends energy or money calling attention to supposed deficiencies of products of his competitor unconsciously advertises and aids him. The Western orange grower who calls attention to the danger of eating oranges containing seeds, or the Eastern orange grower who gives the consumer a recipe including among other ingredients, "Take the juice of six Florida oranges or twelve California oranges," the Western apple grower who decries the barrelled pack as typical of misrepresentation, or the Eastern apple grower who refers to the "woody, tasteless fruit of the West,"—are all wasting their energy. Every pound of this energy should be devoted to selection of those varieties nature decrees to be premier of each locality, the production of better fruit and the proper advertising of it.

Advertising is the Siamese-twin brother of good salesmanship. They are inseparable. A wonderful opportunity exists for all apple producers to join hands in one grand movement to double and treble the consumption of this fruit. A barrel or a box in the consumer's home means a tremendously increased consumption. Packages may need to be made smaller to meet the requirements of city dealers having small storage facilities. Excessive profits must be cut out and more direct channels to the consumer established through consumers' leagues, buyers' clubs and otherwise.

No well informed person questions the correctness of cooperation as a principle. Its application must be adjusted to suit local conditions. The next step is joining hands of different producing sections of the country in the use of a central sales organization.

We see individual growers join interests for mutual benefit, in the Association; Associations merge into the District Exchange by the same impulse. It is logical that many of these exchanges situated in different sections of the country join hands in the establishment and maintenance of a central sales organization, designed to meet their joint requirements. A potato shipping organization in New Jersey ships actively only a few months in the year, and of itself cannot maintain a thoroughly organized, widely established, year around system of branch sales offices in the various cities throughout the country. Orange growers in Arizona are confronted with the same problem. Other organizations are similarly situated. Their combined tonnage, the inter-locking shipping seasons, produce a big tonnage, a year round supply.

The solution is simple. An organization with sales offices in every important market supplies the full requirements of each local association or exchange. Bonded men throughout—the maintenance of a high standard of efficiency, uniform sales, credit and collection methods—every detail meeting every requirement of modern business efficiency. This central sales organization cannot be a combination in restraint of trade. It must be a thoroughly organized, firmly established, well-oiled, simply operated sales machine. Its functions must be the furnishing of efficient, supervised salesmanship. Each producers exchange, maintains control of its own business, working direct with each sales office.

A day's demand unsupplied is forever lost. Accurate knowledge of the demand at all consuming centers every day permits most intelligent regulation of supply. This cannot be done without sales organization.
COÖPERATION IN THE HANDLING OF LEMONS IN CALIFORNIA

By G. W. Hosford

THE writer has been for three years manager of the largest cooperative association handling lemons in California. The San Dimas Lemon Association is one of the local organizations, affiliated with the California Fruit Growers' Exchange. As a member of the larger organization, it shares in all the benefits accruing from the cooperative selling agencies established throughout the country by the parent organization. The Exchange is selling over 60 per cent of the oranges and lemons produced in California. As a selling agency, it can hold its own with any organization of its kind in the country. Affiliated with the Exchange, is the Fruit Growers' Supply Company, which manufactures shook and buys supplies for all members of the Exchange. The advantages to the individual grower, derived from the selling agency; also from the company through which they can buy their supplies, are so great that they can hardly be estimated. Without going further into the advantages of the larger organization, the writer desires to bring out some specific advantages accruing by the growers through the organization of the local association.

Our association shipped during the year, Sept. 1st, 1911, to Sept. 1st, 1912, 252,000 packed boxes of lemons. The expense of handling this output, and the returns for the growers, were as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Railroad Charges:</td>
<td></td>
</tr>
<tr>
<td>Freight</td>
<td>$220,000.00</td>
</tr>
<tr>
<td>Icing</td>
<td>12,220.50</td>
</tr>
<tr>
<td>Total</td>
<td>$232,220.50</td>
</tr>
<tr>
<td>Expense:</td>
<td></td>
</tr>
<tr>
<td>Selling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$21,798.71</td>
</tr>
<tr>
<td>Packing House Labor</td>
<td>60,237.25</td>
</tr>
<tr>
<td>Picking Labor</td>
<td>58,421.85</td>
</tr>
<tr>
<td>Box Shook</td>
<td>42,156.07</td>
</tr>
<tr>
<td>Wrapping Paper</td>
<td>11,897.07</td>
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<tr>
<td>Salaries</td>
<td>9,901.25</td>
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<tr>
<td>Miscellaneous</td>
<td>14,169.91</td>
</tr>
<tr>
<td>Total</td>
<td>$218,582.11</td>
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</tbody>
</table>

It is interesting to note that, of the amount of money received in gross for this output of fruit, the freight and icing charges going to the railroads, amounted to about one-fourth; the expense of handling the business about one-fourth, and the returns to the growers one-half. Notice the small proportion of the expense which is chargeable to selling cost. Notice, also, the items aggregating nearly $118,000.00, or over half of the expense of handling the output, which were paid to ordinary labor. The amounts charged to investments in the Fruit Growers' Supply Company for stock, and payment on packing house, are in the nature of a permanent investment for these growers.

The advantages of having a well-equipped packing house located in the district, are so great as to materially affect the valuation of groves, in addition to the increased returns from year to year from these same groves.

The 300 growers participating in the cooperative features of the San Dimas Lemon Association, are able to carry on a business of this size because they have pooled their interests. There are no growers in this association holding over 20 acres of bearing lemon grove. No one of them could afford to put up buildings, properly equipped, for the handling of lemons. The buildings which have been erected for the handling of the business, represent an investment of from $80,000 to $100,000. These buildings are not only work rooms for the washing, grading and packing of the fruit, but also comprise storage rooms and curing rooms for the handling of a considerable

<table>
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<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Growers:</td>
<td></td>
</tr>
<tr>
<td>Investment in Fruit Gro's. Supply Co. Stock</td>
<td>$5,068.96</td>
</tr>
<tr>
<td>Payment on Packing House</td>
<td>12,311.90</td>
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<tr>
<td>Cash Receipts</td>
<td>434,392.60</td>
</tr>
<tr>
<td>Total</td>
<td>$451,653.46</td>
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</table>

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portion of the years' output. This association sometimes has in storage over 200 cars of lemons. It is necessary for the profitable handling of the business, that storage of this nature should be provided. Our heaviest pickings of lemons come during the months of February, March, April and May. If the lemons were all shipped and sold during this period, as fast as they became ready to pick, the prices received for them would be very low, and the distribution would fall into the hands of speculators at the market end. The lemon growers of California have demonstrated that they can store this fruit in California without artificial cooling, and hold it much more satisfactorily than could be done in cold storage plants. The successful handling of lemons in storage depends so much upon the quality of the different grades of fruit handled that the man at this end can manage the storage much better than the man on the market. The increased returns on the year's output of lemons, due to proper buildings for the accommodation of pickers, and in that way be able to command the services of a sufficient number of pickers to handle the business during the last few years. The larger corporations began providing camps first, and it soon developed that the organizations having their own camps, were more successful in holding the necessary labor during the rush season than those who left their pickers to shift for themselves.

The Association can afford to invest money in box machines, washing machines and apparatus of this kind, and can do it much more cheaply than the individual grower. A box machine costs about $1,300.00. Where it can be used for the making of 200,000 or 300,000 boxes, the saving in labor, over

![Curing Lemons](image_url)
the cost of making the boxes by hand, will pay for the machine in less than two years. The life of a box machine is from five to ten years.

The large association can also develop an organization of trained men which can handle the business much more intelligently than the individual grower. The citrus business, and particularly the lemon business, has an advantage over most fruit industries, inasmuch as its harvesting operations are extended through the greater portion of the year. It is true that our pickings of lemons are a great deal lighter in some months than in others, but there are no months, or even weeks in the year, during which the San Dimas Lemon Association does not pick and ship lemons. This feature of the business warrants the payment of salaries for 12 months of each year, and makes possible the organization, during the months of lighter picking, of a force of men which acquire sufficient knowledge and experience to handle the business most efficiently during the months of heavier work. Furthermore, the months of heaviest picking are followed by the months of heaviest shipping, and an organization handling both the field and the packing house ends of the business, can shift their salaried men from the field to the packing house when the conditions of labor make this advisable. While it would appear to an eastern grower, that the salary paid to some of the packing house managers and foremen, were extravagantly large, the expense account shown above, proves that this form of organization is warranted by the size of the business and the comparatively small proportion of the returns paid out in salaries. The losses from mis-management could easily be so large, in the handling of a business of this size, as to pay several times over the salary of a really efficient manager.

The training required in the handling of a lemon business, represents, not only the handling of labor in large quantities, but also the special knowledge of the careful handling of the fruit; the experience in knowing how long the fruit may be held with impunity, and the expert handling of the ventilation in the curing of the fruit.
In the orange business, the fruit is generally shipped as it is picked. In the lemon business, large quantities of fruit are picked which must be stored and cured for two or three months, and sometimes even longer. This feature of the business is so important, that trained men have been able to make themselves valuable to the industry. No individual grower could himself develop this efficiency, or afford by himself, to pay the wages warranted where a man’s time is spent in looking after a large block of fruit.

The cooperation of a large number of growers, also makes possible the development of a regular trade throughout the country for certain grades of fruit. The groves situated over a comparatively large territory, do not all have their heaviest crops at the same season. We have one district which has comparatively heavy pickings during the fall of the year. The average of a large number of groves, makes the receipts of fruit more uniform throughout the year, than that from any one grove. Consequently, we are able to develop a regular trade for our different brands and keep it supplied throughout the year. The large organization is also able to load for the different markets in the country, whole acres of the particular grades or sizes which individual markets prefer. For instance, the Pacific Northwest will pay top prices for first-grade fruit of the most desirable sizes. The large association can load straight cars of this fruit. At the same time, they can load whole cars of second-grade smaller sized fruit for the Southern market, which will pay more for this particular kind of fruit as a general rule, than any other market. This feature of the business warrants the larger associations and gives them an advantage over much smaller associations.

In general, the overhead expenses, including salaries, interest, insurance and selling costs, are much less per box in a large association like ours, than in the smaller organizations.

All of these features have proved, in a business-way, that the lemon business may be handled more successfully
by a cooperative organization of small growers, than by any one of the growers or even a few of them, working in small units.

WASHING AND GRADING LEMONS

WHAT IS COÖPERATION?

By Lloyd Tenny

COÖPERATION is a much discussed subject (during very recent years) wherever farm people are gathering together. This is but one of many things, which point in an encouraging way to the future success of our rural development. It is doubtful if there has been a single factor which has influenced rural life more in the past decades than the strong individualism of the American farmer. In the main, this has been a splendid trait. The farmer feels that he is master of his own situation, his own boss; he looks to no one as his superior. He accepts another's view or advice only after he has accepted it as his own. Conditions in the past have been such, that the farmer could, in the most instances, succeed well in his work without much concern as to what his neighbors were doing. New factors are coming rapidly to the front, however, and we are entering quite a different age agriculturally. The problems that now confront the man on the farm cannot be solved by individuals alone. The farmer makes but little of his own equipment. He must buy it from others, and often the manufacturers are far away and know the ways of the city and of trusts and combines. It makes a transaction in which the individualistic farmer has the losing side. It has also come about that with the great development of railroads and refrigeration, the farmer markets but little of his produce direct. The foodstuffs he grows, may be consumed three thousand miles away. All this helps to make complex farming and the individual is unable to cope with the situation. These are but two illustrations which help us to understand better the situation as it exists today, and they illustrate only in a small way the great need there is for the farmers of the country to realize that there are problems, so large and complex, that they will never be solved until the farmers stand together. This is cooperation. It may be cooperative buying; it may be cooperative selling. On the other hand it may be cooperation along one of many lines which affect rural life.
THE SMALLER COÖPERATIVE ENTERPRISES

By Paul Work
Department of Horticulture, Cornell University

Perhaps no single phase of rural development has received more persistent attention during the past twenty-five years than cooperation. A perusal of the literature which has become so extensive convinces one that attention has been focused upon the larger enterprises whose successes have been most conspicuous. The citrus and deciduous fruit selling organizations of the Far West, and such eastern concerns as the Monmouth and Burlington County, Farmers' Exchanges of New Jersey, the Eastern Shore Growers' and Shippers' Association of Maryland, and the South Shore Growers' and Shippers' Association of our own state are good examples. Each of these is fighting a good fight in the producers' battle for a fairer share of the consumer's dollar. They are pioneers pointing out the way which the producers of all agricultural commodities will be following within the next few decades. They are trying out methods and building up a body of experience and information that is of inestimable value for the future.

There are, nevertheless, many possible circumstances which in different localities prevent the immediate establishment of such great enterprises as we have just mentioned. In some places, the attempt had been made and failure has resulted. The difficulties are many. First and most important of all is the lack of the true cooperative spirit. Cooperation, by derivation, means nothing more nor less than working together. Another obstacle is selfishness of a narrow sort. Far-seeing selfishness favors cooperation. Lack of confidence in leaders has brought about many a failure. While often unwarranted, this lack of confidence has in some cases been justified. Perhaps as serious a drawback as any is half-hearted interest. Many are willing to be helped but unwilling to lend a hand. Some downfalls have been brought about by honest difference of opinion as to policies and methods. In many instances, growers outside the organization are benefited almost as much as the loyal supporters. One of our western New York associations has suffered very severely from the competition of the old line dealers, who are willing to offer exceedingly favorable terms as long as they must compete. Producers even seem to prefer to patronize these dealers, little realizing that the old conditions will again prevail as soon as the cooperative enterprise has fallen through, lack of their support.

In looking over the experience of pretentious cooperative enterprises, some of which have been successful and some of which have failed, we are led to wonder whether we are not in too many cases either beginning at the top or doing nothing. Are there not many simple undertakings that would be full of usefulness to growers, and which would at the same time prepare the community for successful cooperation in larger things? Should not such an enterprise grow as a tree rather than as a sky-scraper?

A wide correspondence during the past few months among organizations of which we seldom hear has lent support to the view that there are many advantages to be gained through association aside from the advantages of buying and selling on a large scale. Perhaps we can best consider the subject in the light of illustrations gleaned from this correspondence.

The first thing to be gained is mutual acquaintanceship. In most market garden sections, and in many shipping sections, the feeling of competition is keen. A feels that perhaps B would just as soon undermine his business as not; but when A becomes acquainted with B, each finds that the other is not such a bad fellow after all. One of the best agencies for bringing men
together is a local meeting gathered for the purpose of hearing a successful grower from another locality or a speaker from the agricultural college. In such meetings the round table idea is becoming more and more prevalent. After the address, men gather in little circles and find they are becoming acquainted. Soon they are talking over neighborhood problems. Such has been the experience of a little market gardeners' society at Gardenville, New York. The leader of the group says, "There always seems to be someone present who knows the thing that the others do not know." Unwillingness to part with choice bits of information soon disappears.

When such groups are together, neighborhood problems soon arise. One of the first is the purchase of supplies. The Gardenville people are now buying fertilizer by the carload. Not every one in the organization could agree on a given brand. Perhaps six think alike on this point and can use a car. These six go ahead and make the purchase, and before long the whole membership is ready to join in similar enterprises.

The other local problems are innumerable. The Boston Market Gardeners' Association has been able to standardize the market boxes, and to secure either the return of the package or the price of it. The Cleveland growers find that they can get better prices from the manufacturers of packages since they have established definite standards.

At Rochester the city market was managed in such a way that it was becoming impossible for growers to do business under favorable conditions. They have joined hands, and they now control the situation. The Troy Market Gardeners' Association exists for the sole purpose of superintending the drawing of stalls on market each year, and they have secured an equable allotment which was formerly impossible. The Cleveland gardeners found that they could not secure satisfactory facilities. They rented a building of their own, and placed in it a man in whom they had confidence who sold each man's produce on a commission of ten per cent. They seemed unable to agree upon a plan of pooling, so they adopted a plan upon which they could agree.

Direct control of market prices is seldom possible. The members of a little organization at Newburgh have simply agreed to keep in touch with each other by telephone. They talk over conditions, learning how much each man has to dispose of, but they are not bound to a given figure in case they find it necessary to make a cut to dispose of the last of a load.

A united body of growers can exert a powerful influence upon local legislation which affects their interests. The Boston growers experienced great difficulty in complying with unreasonable regulations of local boards of health in the suburban villages through which they had to pass since they have been working together. The Secretary of the State Board of Health has been heard to remark, "You touch one and you touch them all." In another section where taxes were becoming exorbitant, a reduction of eight to ten dollars an acre was secured.

The Massachusetts Asparagus Association was organized for the purpose of finding out how to avoid trouble with asparagus rust. They have secured the establishment of an experiment station especially for the study of this crop. While final results have not yet been attained, they feel that their society is worth while if for nothing more than their annual field meeting, although they have made much progress in the control of the disease.

Some years ago South Lima, New York, growers found it quite impossible to secure satisfactory railroad service at their station. They formed an organization and took their troubles to the Public Service Commission. The Erie Railroad spent five thousand dollars in giving them the facilities they needed. The growers in the neighborhood think that the Association has been pretty nearly a failure, but this is
only one of the things it has accomplished and this alone would be sufficient to justify its existence. An exactly similar story could be told of Ionia, New York.

Well-nigh countless other examples of success in small undertakings might be cited. A study of the experiences of these many organizations makes it clear that with a producing community as with an individual, "practice makes perfect." Success in such activities as have been mentioned leads to the adoption of simple helps in selling produce. The Long Island Potato Exchange does not attempt a pooling system, but controls the buyers by itself buying at such figures as the distant markets will justify. If this control were not exercised, prices would be set at such figures as the dealers care to pay. Doubtless some day each grower will be willing to support a real cooperative selling plan.

By trying to agree on methods of attacking large problems when there has been no experience in handling small problems, discord is often engendered and real progress is hindered. By agreeing in the solution of a single simple problem, while agreeing to disagree on others, real progress is made. As time goes on, those who once agreed to disagree are now agreed to agree, and the usefulness of the organization expands.

OBSERVATIONS ON THE DISTRIBUTION OF DAILY EGG PRODUCTION

By James E. Rice
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(Continued from February and March Numbers)

To Breed a Long Lived Race of Fowls

To accomplish this purpose, the following essentials may be enumerated: 1st, to breed only from stock that have qualified in five essentials: 1st, they must have lived for two or three years or more and must have marked evidence of possessing superior constitutional vigor which must be given first consideration. Thus by applying the law of the "survival of the fittest," as regards robust health, the winnowing process of time, will have eliminated the unfit, namely, those that cannot withstand the strain of high production and heavy eating; 2d, They must have produced a
well balanced egg yield each year for two or three years or more, rather than a phenomenal yield in any one year or parts of a year; 3d, they must lay eggs of standard size and shape. 4th, They must have demonstrated their ability to lay eggs of strong fertility and hatching power; 5th, Good breeding must be accompanied by the most approved methods of rearing, feeding, management, etc., in order to maintain the size of the fowl in proportion to the size of the eggs and the number laid. This is a problem demanding the highest science and art of breeding and management. Let us hope it is not impossible of attainment. Its importance warrants the effort. Anxious poultrymen everywhere await the result.

_Sixteen Points in Breeding and Management in Developing a Strain of Fowls for Egg Production_

The important steps to be observed in producing a strain of heavy layers may be summarized as follows:

1st, select good eggs for hatching.
2d, select strong germis during incubation.
3d, select vigorous chicks for brooding.
4th, select strong young stock to renew the flock.
5th, select April and May hatched pullets of similar ages that begin to lay in October, November and December.
6th, select hens that lay in October and November.
7th, select the late molting fowls, November and December.
8th, select vigorous hens having pale shanks in September, October and November in case of yellow shank varieties.
9th, select hens that are heavy eaters and busy.
10th, mate males from high producers to high producing hens.
11th, breed from hens, rather than from pullets except in rare instances and with especially well qualified fowls.
12th, use eggs weighing not less than two ounces, each perfect in shape, color and texture for hatching.
13th, pedigree hatch and legband the chickens from known matings of high producers in order to discover especially prepotent individuals.
14th, hatch and grow young stock large and thrifty by rearing on free range with abundance of the right kind of food.
15th, feed the breeding flock with special regard to production of eggs having strong hatching power.
16th, shelter the breeding stock in sanitary fresh air poultry houses and provide free range the year round.

*Several minor errors in the original data slightly change the ratings of a few individuals but do not affect the general result.*
THE PROBLEM OF RURAL CREDIT

By John Bauer
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Credit is a tremendously abused and confused term. It is too frequently used with hazy conceptions and mystical notions. We are told that it lubricates the wheels of industry, that it is a mysterious something whose being itself means prosperity and whose non-being is calamity extreme. But usually we are left somewhat uncertain just what the thing is and how it produces its magic results.

There is nothing mysterious about credit and its share in industry. It is important, but it fills no such magic role as is often flared before our imagination. A great deal of needless confusion has gathered about the subject, especially as it applies to the business of agriculture.

You get credit when you borrow. You obtain credit when I lend you money or ready purchasing power in any form and you promise to return to me sometime in the future an equal sum of money or purchasing power (usually with interest). You take present funds and I take your promise for future funds. That is all there is to the mystical notion before us.

Of course, credit is important. If you can get ready funds now, you can make immediate extensions or improvements in your business, which according to present prospects will enable you to pay your obligations to me in the future and to make a profit besides. The general gain from credit transactions come from the fact that all the time in society some have ready funds and have no present need for them, while other persons borrow them to immediate advantage in their business. Obviously there are no mystic wand or hokus-pokus operations.

For the purpose of our present discussion we may classify credit into (1) long time and (2) short time loans. There is no absolute division in time between the two, still we may say roughly that long time loans extend over a period of one year or more, usually from two to ten years, while those for a short time cover a period of less than a year, usually from thirty to ninety days.

The funds obtained through long time loans are usually turned into plant and equipment, while those received through short time ones are used to tide the business over the production period. The security required for the former is usually a mortgage on plant and equipment, and for the latter merely the immediate prospects of the business or other personal security—it is supposed to be paid from the proceeds of sales in the near future and it serves to tide over to that time.

The rate of interest required varies from one class of loan to another and from time to time. Fundamentally it is a kind of price—paid for the privilege of obtaining immediate purchasing power, and the price depends upon a large number of circumstances. However, other things being equal, the determining circumstance is the security or risk involved. Interest is low if there is little uncertainty of the loan being repaid according to agreement, while it is high if there is considerable uncertainty. The higher rate serves to compensate the lender for the greater risk involved. This proposition is fundamental for the present discussion.

Now, let us consider first the matter of long time loans to agriculture. It is generally claimed that the country over farmers are compelled to pay unreasonably high rates of interest compared with those paid by other lines of business. Roughly, farmers are said to pay eight per cent while other business classes pay only five per cent. Frequently also the charge is made that the bankers consciously take advantage of the farmers and discriminate against them.
While there is no statistical proof, it is extremely doubtful whether there is any such conscious discrimination or whether the farmer pays higher rates than other business men with no better security to offer. A banker looks principally for profits; he is no respector of classes or social positions; the farmer’s interest (with proper security) looks exactly as good to him as a grocer-man’s, a manufacturer’s, or a society swell’s. The important consideration is security. Otherwise, he is not finicky about interest bed-fellows.

We must remember that agriculture the country over is conducted on a small scale of production. The ordinary farmer has but a small capital. When we say that other business pays only five per cent, we have in mind the large industrial corporations, whose business standing is high and whose reputation is known in financial circles the country over. They have large capitals upon which to base their loans; they reach a large and open market because they are known; they get the most favorable loan accommodations possible. The farmers have small capitals to offer for security and their financial reputation does not extend beyond the nearby community. There is the difference!

Under like conditions of security and financial reputation the farmers probably fare no worse than do other business classes. Take an Ithaca grocer-man and a Tompkins County farmer; each has private capital worth $5,000, each sees clearly how he could make good profits if he had $5,000 more to put into the business, and each goes to the banker for assistance. Now, either one will probably have to pay a high rate of interest, if he can get the loan at all. The point is, the banker will have to be repaid finally out of the business, and he probably does not see prospects as gaudily as do the applicant borrowers.

Take a grocery clerk and a farm hand; each personally well-gifted, each (in his own mind) with fine independent business prospects if he had capital! Again, let them try to borrow, and the farm hand will probably fare no worse than the clerk; in either case the banker demands more security than just the self-confidence of the persons before him. As a matter of fact, the ordinary small business man or manufacturer cannot borrow at five per cent., if he wants considerable funds for the extension of plant. If any one without large capital security, whether farmer or otherwise, succeeds in borrowing considerable sums at a low rate, it is because he has found a personal backer who has become convinced of his exceptional personal and business qualities.

Now, let us turn to short time loans. The claim is made, and for the most part perhaps correctly so, that the farmer practically cannot borrow at all to tide over the production period. The retailer borrows till he can dispose of his stock of goods (or part of it), or can make collections from his customers; the same is true of the wholesaler or manufacturer; all can obtain immediate funds based upon the prospects of sales and collections in the near future. But the farmer stands otherwise. Practically nowhere in the country can he borrow on the security of growing crops from whose sale the loan might be paid in the future. Our banking machinery does not offer him the facility of tiding over the production period. He is compelled to provide otherwise, often at considerable sacrifice, inconvenience and annoyance; or pay ruinous interest. Here is really the crux of the rural credit problem.

Of course, the facts just stated can easily be exaggerated. While the farmer cannot get the desirable short time banking accommodations, and he often suffers as a consequence, nevertheless he does get credit in other ways which in some measure relieve the necessity of bank credit. For example, he runs an account with the grocer, the clothier and hardware dealer till he sells his crops in the fall; in case of crop shortage he is carried on their books sometimes for two or three years.
at a time just on personal security. In the same way there are other forms of credit which have been developed for the farmer's convenience. Nevertheless, he suffers from the lack of the ready accommodations that are provided for other kinds of business.

Again, there is probably no conscious discrimination against the farmer, but the fact remains that he cannot get loans that may be sorely needed, except perhaps at a ruinous rate of interest. The reasons for this condition are not far to seek. Three may be readily suggested. (1) Uncertainty of crops. With short time loans the security is personal, based principally upon immediate business prospects. A grocer is practically certain in sixty days, or in the agreed-upon period, to sell enough goods or to make collections to meet his obligations. With the farmer, his ability to repay depends upon his crops, which for any one year are subject to a score of uncertainties. Here is the chief defect in the farmer's security.

(2) Long tiding-over period. Commercial banking has been developed through ordinary business and not farmers' demands. The usual business loan is for thirty, sixty, or at most ninety days. In farming the period is much longer, covering usually perhaps six months or over. Consequently the banker hesitates to lend the farmer, because the funds would be tied up for too long when they probably would be needed for shorter time accommodations.

(3) Immediate withdrawal of borrowed funds. The ordinary business man leaves the proceeds of the loan with the bank and draws checks against the deposit as needs require. But, the farmer is more likely to draw out in cash immediately all of the funds, and then he makes his payments in cash. This fact obviously makes his loan less profitable to the bank than if he maintained a deposit and drew checks against it. The cash is more convenient to him, but the check payment plan is more profitable to the banker.

Now, is there any way by which the farmer can get better loan accommodations? In line with the reasoning in this paper, the problem above any other is to provide better and safer security. How the individual farmer is to do that is rather hard to see. And how banking accommodations are to be provided without first class security, unless ruinous interest be charged, is also hard to see, certainly ordinary private capital will not attempt such an undertaking.

The answer, if there be one, is in more or less special agricultural banks, with their foundations in farmers' cooperation, perhaps handling credit through note issue rather than the deposit system, and planning their business with the idea of longer credit extensions than is customary in ordinary commercial banking. The important point is cooperation, and the object of cooperation is to provide greater security. Any plan of cooperation must involve some sort of mutual credit insurance. How such a plan might be worked will be outlined briefly in the remaining paragraphs.

Suppose the farmers in a township or in some particular district formed an association (virtually partnership associations), with the object of insuring each other's credit. This association, having back of it the combined capital of its members, organized under and controlled by the laws of the state, would be able to reach the general loan markets of the country and would probably be able to borrow at lower rates. The security given might be special bonds of the association, backed by the individual liability of the members; even mortgages on the members' properties might be given. Out of the funds thus obtained, loans might be made to any of the members, whether for investment or tiding-over purposes; but, again, the individual loan would have to be carefully supervised so that the funds should be profitably used and not result in loss to the association. Moreover, a member with ready funds not immediately needed by him could make deposits
with the association and draw a reasonable rate of interest. Thus, farmers would extend credit directly to each other by means of the association.

Such in general is the idea of the cooperative credit associations in Europe, which have been great boons to their members. The particular form of association varies considerably from place to place, but at bottom the idea is the same; mutual guarantee of each other's obligations, hence the general financial markets can be reached at reasonably low rates of interest. There is no special magic involved. No capital can be drawn out of thin air. Further, loans to the individuals have to be carefully guarded, and membership to the association must be based upon personal integrity and financial prospects. Bad loans to individuals mean loss to the association.

The sole advantage of the association is: the members pool their capital as security for loans, and so get better terms than any individual of them could get however prosperous and well-known he might be.

The real problem is, whether the American farmer can be induced to cooperate in some such way as suggested. As a matter of fact, the ordinary American, whether farmer or otherwise, is an individualist even to the extent of his own detriment. However, various cooperative undertakings have been launched by farmers. Why not cooperate in furnishing security for each other? Whether we shall ever have such well worked out systems as exist in certain European countries, no one can tell. With the obvious advantages it seems as if some sort of credit coöperation ought to become generally established.

BILL'S SCHOOL AND MINE

By William S. Franklin
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FORTY-three years ago a man who had important official authority over much of the business of England was speaking anxiously with Ruskin of the increasing misery in the suburbs and back streets of London and debating, with the good help of the Oxford Regius Professor of Medicine (who was second in council), what sanitary or moral remedy could be found. The debate languished, however, because of the strong conviction in the minds of all three that the misery was inevitable in so vast a city. Finally the conviction was expressed by the man of affairs, and Ruskin quickly replied "Then we must not have large cities," whereupon the minister somewhat contemptuously charged Ruskin with being impractical. Ruskin was indeed impractical in many things, but the most impractical men are those who accept the increasing ugliness and misery of our industrial and commercial centers as inevitable. A man who would accept such a proposition and not arrive at Ruskin's conclusion and act upon it is hopelessly impractical.

Of all the changes that have accompanied modern developments of commerce and industry the most serious perhaps is the change in the activities of children, and my object in marking the contrast between Bill's school and mine is to help you to appreciate this change. Perhaps no out and out American of fifty years ago could have understood the London problem in the least; and even now at the beginning of the twentieth century we Americans are a great "Nation of Villagers," most of us living in what we boastfully call cities! And we are scarcely conscious

*The title and a portion of the material of this paper are borrowed from William Allen White.
as yet of the new spectre of ugliness and misery. We must become fully conscious of it before long, however, and when we do it will not be accepted as inevitable—and probably we shall not be obliged to destroy our cities either.

I always think of my school as my boyhood. Until I was big enough to swim the Missouri River my home was in a little Kansas town, and we boys lived in the woods and in the water all Summer and in the woods and on the ice all Winter. We trapped and hunted, we rowed and fished and built dams and cut stick horses and kept stick horse livery-stables where grape vines hung, and where the paw-paws mellowed in the Fall. We made mud slides into our swimming hole, and we were artists in mud-tattoo, painting face and body with thin black mud and scraping white stripes from head to foot. We climbed the trees and cut our names, we sucked the sap of the box elder and squashed poke berries for war paint. We picked wild grapes and gooseberries, and made pop guns to shoot green haws. In the Autumn we gathered walnuts and in the Spring we greeted the johnny-jump-ups and the sweet williams as they peered through the mold. Always, it seems to me, we were out of doors; and I did the chores. It is something to know the toughness of hickory under the saw, how easily walnut splits, how mean elm is to handle; and a certain dexterity comes to a boy who teaches a calf to drink, or who learns to slop hogs without soiling his Sunday clothes. And the hay makes acrobats. In the loft a boy learns to turn flip-flops and with a lariat rope he can make a trapeze. My rings were made by padding the iron rings from the hubs of a lumber wagon and swinging them from the rafters.

Bill, little Bethlehem Bill, has a better school than I had; the house and the things that go with it. Bill's teachers know more accurately what they are about than did my teachers in the old days out West half a century ago. And, of course, Bill is getting things from his school that I did not get. But he is growing up with a woefully distorted idea of life. What does Bill know about the woods and the flowers? Where in Bill's make up is that which comes from browsing on berries and nuts and the rank pawpaw, and roaming the woods like the bander-log? And the crops, what does he know about them?

The silver-sides used to live in the pool under the limestone ledges by the old stone quarry where the snakes would sun themselves at noon. The wild-rose with its cinnamon scented flower and curling leaves used to bloom in May for me—for me and a little brown-eyed girl who found them in her ink-bottle when the school bell called us in from play. And on Saturdays we boys roamed over the prairies picking wild flowers, playing wild plays and dreaming wild dreams—children's dreams. Do you suppose this little Bill dreams such dreams in a fifty-foot lot with only his mother's flowers in the window pots to teach him the great mystery of life?

Bill has no barn. I doubt if he can skin a cat, and I am sure he cannot do the big drop from the trapeze. To turn a flip-flop would fill him with alarm, and yet Bill Betts out in Kansas used to turn a double flip-flop over a stack of barrels! And Bill Betts is a man to look at. He is built by the day. He has an educated body and it is, going into its fifties with health and strength that our Bill will have to work for.

Bill's school seems real enough, but his play and his work seem rather empty. Of course Bill cannot have the fringe of a million square miles of wild buffalo range for his out-of-doors. No, Bill cannot have that. Never, again. And to imagine that Bill needs anything of the kind is to forget the magic of Bill's dreams! A tree, a brook, a stretch of grass! What old-world things Bill's dreams can create there! What untold history repeat itself in Bill's most fragmentary play, vivid and compelling! There is indeed
a magic in Bill's dreams, and it takes but little to stir it into action; and if Bill is to grow to be a man this little must be considered well. Lest our people never consider it at all it is worth while, perhaps, to develop the contrast between Bill's school and that school of mine in the long-ago land of my boyhood out-of-doors.

The Land of Out-of-Doors! What irony there is in such glowing phrase to city boys like Bill! The supreme delight of my own boyhood days was to gather wild flowers in a wooded hollow close by a sunny stretch of wild meadow rising to the sky, and I would have you know that I lived as a boy in a land where a weed never grew.* I wish that Bill might have access to the places where the wild flowers grow and above all I wish that Bill might have more opportunity to see his father at work. A hundred years ago these things were really within the reach of every boy and girl, but now, alas, Bill sees no other manual labor than the digging of a ditch in a cluttered street, or stunted in growth, he has almost become a part of the machine he daily tends, and Boyville has become a paved and guttered city, high-walled, desolate, and dirty; with here and there a vacant lot hideous with refuse in early Spring and overwhelmed with an increasing pestilence of weeds as the Summer days go by! And the strangest thing about it all is that Bill accepts unquestioningly, and even with manifestations of joy, just any sort of a world, if only it is flooded with sunshine.

I remember how in my own boyhood the rare advent of an old tin can in my favorite swimming hole used to offend me, while such a thing as a cast-off shoe was simply intolerable, and I wonder that Bill's unquenchable delight in out-door life does not become an absolute rage in his indifference to the dreadful pollution of the streams and the universal pestilence of weeds and refuse in our thickly populated districts. I can not refrain from quoting an amusing poem of James Whitcomb Riley's, which expresses, more completely than anything I know, the delight of boys in outdoor life, where so many things happen and so many things lure, and you can easily catch in the swing of Riley's verse that wanton note which is ordinarily so fascinatingly boyish, but which may too easily turn to a raging indifference to everything that makes for purity in this troubled life of ours.

**Three Jolly Hunters**

O there were three jolly youngsters;
And a-hunting they did go,
With a setter-dog and a pointer-dog
And a yaller-dog also.
Looky there!

And they hunted and they hal-loored;
And the first thing they did find
Was a dingling-dangling hornet's-nest
A-swinging in the wind.

Looky there!

And the first one said, "What is it?"
Said the next, "Let's punch and see,"
And the third, "He said, a mile from there,
I wish we'd let it be!"

Looky there! (Showing the back of his neck.)

And they hunted and they hal-loored;
And the next thing they did raise
Was a bobbin bunny cotton-tail
That vanished from their gaze.

Looky there!

One said it was a hot base-ball,
Zipp't thru the bramble thatch,
But the others said 'twas a note by post,
Or a telegraph-dispatch.

Looky there!

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*The western prairies, except in the very center of the Mississippi valley, are beautifully rolling, and they meet every stream with deeply carved bluffs. In the early days every stream was fringed with woods; and prairie and woodland, alike, knew nothing beyond the evenly balanced contest of indigenous life; and then there came a succession of epidemics as one after another of our noxious weeds gained foothold in that fertile land. I remember well several years when dog-fennel grew in every nook and corner of my home town in Kansas; then after a few years a variety of thistle grew to the exclusion of every other uncultivated thing; and then followed a curious epidemic of tumble-weed, a low spreading annual which broke off at the ground in the fall and was rolled across the open country in countless millions by the autumn winds. I remember well my first lone "beggar louse" and how pretty I thought it was! And my first dandelion, and of that I have never changed my opinion!
So they hunted and they hal-looed;
And the next thing they did sight,
Was a great big bull-dog chasing them,
And a farmer hollering "Skite!"

Looky there!

And the first one said "Hi-jinktum!!
And the next "Hi-jinktum-jeel!"
And the last one said, "Them very words
Has just occurred to me!"

Looky there! (Showing the tattered seat of his pants.)

This is the hunting song of the American Bander-log*, and this kind of hunting is better than the kind that needs a gun. To one who falls into the habit of it, the gun is indeed a useless tool. I remember a day I spent with a gun in a remote part of the Rocky Mountains, where, during the 25 days I have camped there on four different trips, I have seen as many as 150 of the wildest of North American animals, the Rocky Mountain sheep, being almost run over once by a group

*Road Song of the Bander-Log
(From Kipling's Jungle Book)

Here we go in a flung festoon,
Half way up to the jealous moon!
Don't you envy our pranceful bands?
Don't you wish your feet were hands?
Wouldn't you like if your tails were—so—Curved in the shape of a Cupid's bow?
Now you're angry, but—never mind—
Brother thy tail hangs down behind!

Here we sit in a branchy row,
Thinking of beautiful things we know;
Dreaming of deeds we mean to do,
All complete in a minute or two—
Something noble and grand and good,
Done by merely wishing we could.
Now we're going to—never mind—
Brother thy tail hangs down behind!

All the talk we ever have heard
Uttered by bat, or beast, or bird—
Hide or scale or skin or feather—
Jabber it quickly and altogether!
Excellent! Wonderful! Once again!
Now we are talking just like men.
Let's pretend we are—never mind
Brother thy tail hangs down behind!
This is the way of the Monkey-kind.

Then join our leaping lines that scumfish
through the pines,
That rocket by where light and high the wild grape swings.
By the rubbish in our wake, by the noble noise we make,
Be sure, be sure, we're going to do some splendid things.

of five. On the day in question I became so interested in killing mosquitoes—I timed myself at intervals while I lay in ambush, 80 per minute for 3 hours, making an honest estimate of 14,400—I became so interested in killing mosquitoes that the sheep came, and were out of range again before I saw them, and I was hungry, too. I fancy they were not frightened, but wished the good work to go on undisturbed.

Do any of you like candy? Did you ever consider that the only sweetmeat our forefathers had for thousands of years was wild honey? And those sour times—if I may call them such—before the days of sugar and candy, come much nearer to us than many of you realize, for I can remember my own grandfather's tales of bee hunting in Tennessee. Just imagine how exciting it must have been in the days of long ago to find a tree loaded with candy! A bee tree! If Bill were to go back with me to the wild woods of Tennessee, some thrill of that old excitement would well up from the depths of his soul at finding such a tree. You may wonder what I am driving at, so I will tell you, that one of the most exciting experiences of my boyhood was a battle with a colony of bumble bees. I was led into it by an older companion and the ardor and excitement of that battle, as I even now remember it, are wholly inexplicable to me except as I think of it as a representation through inherited instinct of a ten-thousand-years' search for wild honey.

My schooling grew out of the play of emotions and activities which constitute instinctive reactions toward natural things, hunting and fishing, digging and planting in the Spring, nutting in the Fall, and the thousands of variations which these things involve, and I believe that the play of instinct is the only solid basis of growth of a boy or girl. I believe, furthermore, that the very essence of boy humor is bound up with the amazing incongruity of his instincts. Was there ever a boy whose instincts, many
of them mere fatuity like his digestive appendix, have not led him time and again into just thin air, to say nothing of water and mud? For my part I have never known anything more supremely funny than learning what a hopeless mess of wood pulp and worms a bumblebee's nest really is, except, perhaps, seeing another boy learn the same stinging lesson.

The use of formulas, too, is unquestionably instinctive, and we all know how apt a boy is to indulge in formulas of the hocus-pocus sort, like Tom Sawyer's recipe for removing warts by the combined charm of black midnight and a black cat, dead; and a boy arrives only late in his boyhood, if ever, to some sense of the distinction between formulas of this kind and such as are vital and rational. I think that there is much instruction and a great deal of humor connected with the play of this instinctive tendency. I remember a great big boy, a hired man on my grandfather's farm, in fact, who was led into a fight with a nest of hornets with the expectation that he would bear a charmed skin if he shouted in loud repetition the words, "Jew's-harp, jew's-harp."

Talk about catching birds by putting salt on their tails! Once as I rowed around a bend on a small stream, I saw a sand-hill crane stalking along the shore; into the water I went with the suddenly conceived idea that I could catch that crane, and, swimming low, I reached the shore, about 20 feet from the bird, jumped quickly out of the water, made a sudden dash and the bird was captured! Once I saw a catfish gasping for air at the surface of water that had been muddied by the opening of a sluiceway in a dam. Swimming up behind the fish, I jambed a hand into each gill, and, helped by the fishes' tail, I pushed it ashore; and it weighed 30 pounds! A friend of mine by the name of Stebbins once followed his dog in a chase after a jack rabbit. The rabbit made a wide circle and came back to its own trail some distance ahead of the dog, made a big sidewise jump, and sat looking at the dog as it passed by, so intently indeed that Stebbins walked up behind the rabbit and took it up with his hands.

I think you will agree with me that my out-door school was a wonderful thing. The Land of Out-of-Doors is to young people the best school and play house, and to older people an endless asylum of delight.

The grass so little has to do,
A sphere of simple green
With only butterflies to brood
And bees to entertain.

And stir all day to pretty tunes
The breezes fetch along
And hold the sunshine in its lap
And—bow to everything.

And thread the dew all night, like pearls,
And make itself so fine,
A duchess were too common
For such a noticing.

And even when it dies, to pass
In odors so divine
As lowly spices gone to sleep
Or amulets of pine.

And then to dwell in sovereign barns
And dream the days away
The grass so little has to do—
I wish I were the hay.

The most important thing, I should say, for the success of Bill's fine school is that ample opportunity be given to Bill for every variety of play including swimming and skating, and wherever possible, boating. It is ridiculous to attempt to teach Bill anything without the substantial results of play to build upon. Playgrounds are the cheapest and, in many respects, the best of schools, but they are almost entirely lacking in many of our towns which have grown to cities in a generation in this great "Nation of Villagers." The Boroughs of Bethlehem, for example (for we have a kind of virtue in not pretending to be a city) have no playground connected with a Public School, nor any other public place where boys can play ball.

What do you Think?
(This and the following communications are from a small paper, printed
and published by two Bethlehem boys):

"We, the editors, have been dragged along back alleys, across open sewers, and through rank growths of weed and thistle to view the Monocacy meadows to consider the possibility of their use as a playground or park. We are not much impressed with the proposal, the place is apparently hopeless, but the park enthusiast could not be touched by argument. To our very practical objection that the cost would be excessive he made the foolish reply that there is no cost but a saving in using what has hitherto been wasted. To our expressed disgust for the open sewers and filth he replied that that was beside the question, for, as he said, we must sooner or later take care of the filth anyway. But, we said, the creek is contaminated above the town. Very well, he replied, we have the right to prohibit such contamination. But worst of all, in double meaning, was his instant agreement to our statement that we had our cemeteries which he said, were really better than any Bethlehem park could be.

**COMMUNICATION**

"Dear Editors: I took a walk along the Monocacy Creek on Sunday afternoon and discovered clear water several miles above town and a fine skating pond; but I suppose that you and all of your subscribers will have to go to our enterprising neighbor, Allentown, to find any well kept ice to skate on this Winter. Most people think that you boys can swim in nature's own water, skate on nature's own ice, and roam in nature's own woods, but it is absolutely certain that your elders must take some care and pains if you town boys are to do any of these things, and yet, here in the East, children are said to be brought up (implying care and pains) and hogs are said to be raised (implying only feeding). I thank the Lord that I was "raised" in the West where there are no such false distinctions.

Your subscriber S.

P. S. As I came home covered with beggar-lice and cockle-burrs I saw a ring of fire on South Mountain, an annual occurrence which has been delayed a whole week this Autumn by a flourish of posters in several languages offering One Hundred Dollars Reward!

S.

In these days of steam and electricity we boast of having conquered nature. Well, we have got to domesticate nature before much else can be accomplished in this country of ours. We have got to take care of our brooks and our rivers, of our open lands and our wooded hills. We have got to do it and Bill would be better off if we took half of the cost of his fine school to meet the expense of doing it. When I was a boy I belonged to the Bander-log, but Bill belongs to another tribe, the rats, and there is nothing I would like so much to do as to turn Pied Piper and lure the entire brood of Bethlehem boys and girls to Friedensville* and into that awful chasm of crystal water to come back no more, no, not even when an awakened civic consciousness had made a park of the beautiful Monocacy meadows and converted the creek into a chain, a regular diamond necklace of swimming holes. I beg the garbage men's (not a printer's error for man's) pardon for speaking of the beautiful Monocacy meadows. I refer to what has been and to what might easily continue to be. As for the diamond necklace, that, of course would have to be above our gas works where the small stream of pure tar now joins the main stream.

I know a small river in Kansas which is bordered by rich bottom lands from one-half to one mile in width between beautifully scalloped bluffs—where the upland prairie ends. In the early days thick covering of grass was everywhere, and the clear stream, teeming with life, wound its way along a deep channel among scat-

*The site of an abandoned zinc mine, where a few of the Bethlehem boys go to swim.
tered clusters of large walnut trees and dense groves of elm and cottonwood, rippling here and there over beds of rock. Now, however, every foot of ground, high and low, is mulled by the plow, and the last time I saw the once beautiful valley of Wolf River it was as if the whole earth had melted with the rains of June, such devastation of mud was there! Surely it requires more than the plow to domesticate Nature; indeed, since I have lived between the coal-bearing Alleghanies and the sea, I have come to believe that it may require more than the plow and the crowded iron furnace, such pestilence of refuse and filth is here!

I suppose that I am as familiar with the requirements of modern industry as any man living, and as ready to tolerate everything that is economically wise, but every day as I walk to and fro I see our Monocacy Creek covered with a scum of tar, and in crossing the river bridge I see a half mile long heap of rotting refuse serving the Lehigh as a bank on the southern side; not all furnace refuse either by any means, but nameless stinking stuff cast off by an indifferent population and carelessly left in its very midst in one long unprecedented panorama of putrescent ugliness! And when on splendid autumn days the nearby slopes of old South Mountain lift the eyes into pure oblivion of these distressing things, I see again and again a line of fire sweeping through the scanty woods. This I have seen every autumn since first I came to Bethlehem.

It is easy to speak in amusing hyperbole of garbage heaps and of brooks befouled with tar, but to have seen one useless flourish of posters on South Mountain in fifteen years! That is beyond any possible touch of humor. It is indeed unfortunate that our river is not fit for boys to swim in, and it is not, for I have tried it, and I am not fastidious either, having lived an amphibious boyhood on the banks of the muddiest river in the world; but it is a positive disgrace that our river is not fit to look at, that it is good for nothing whatever but to drink, much too good, one would think, for people who protect the only stretch of woodland that is accessible to their boys and girls by a mere flourish of posters!

I was born in Kansas when its inhabitants were largely Indians, and when its greatest resource was wild buffalo skins; and whatever objection you may have to this description of my present home-place between the coal-bearing Alleghanies and the Sea, please do not imagine that I have a sophisticated sentimentality towards the beauties of nature. No, I am still enough of an Indian to think chiefly of my belly when I look at a stretch of country. In the West I like the suggestion of hog-and-hominy which spreads for miles and miles beneath the sky, and here in the East I like the promise that is held in pillars of fire and smoke and I like the song of stream.

Bill's school and mine! It may seem that I have said a great deal about my school, and very little about Bill's. But what is Bill's school? Surely, Bill's fine schoolhouse and splendid teachers and Bill's good mother are not all there is to Bill's school. No, Bill's school is as big as all Bethlehem, and in its bigger aspects it is a bad school, bad because Bill has no opportunity to play as a boy should play, and bad because Bill has no opportunity to work as a boy should work.

"I'ben a-kindu musin', as the feller says, and I'm About o' the conclusion that they ain't no better time, When you come to cypher on it, than the times we used to know When we swore our first "dog-gone-it" sorto solemn like and low.

"You git my idy, do you?—LITTLE tads, you understand— Jes' a wishin', thue and thue you, that you on'y was a MAN. Yet here I am this minute, even forty, to a day And forgittin' all that's in it, wishin' jes the other way! I wonder if our Bill will "wish the other way" when he is a man, indeed, I wonder if he will ever BE a man. If we could only count on that Bill's school would not be our problem.
FORESTS AND TAXATION

By S. N. Spring

Professor of Forestry, School of Forestry, Cornell University

According to an old saying, death and taxes are two things which are certain in this world, but the manner of the one and the nature of the other are anything but certain.

A farmer's fields, meadows, pastures and woodland are collectively valued and assessed each year. Sometimes these different kinds of land are considered separately in arriving at the total or average valuation for purposes of taxation, but more often not. During the past decade in the United States there has been a growing feeling that the general property tax was not fair to investors in natural or planted forest. It is unfair if the full market value of land and timber is annually assessed, since the same crop is taxed over and over again. Examples have been found where as much as half the final yield was eaten up in taxes. Generally, however, this has not been the case because actual and present values, the standard of the law, have not been given to forest property in the lists. Individual assessors have assigned much lower values, or the average value for the whole farm acreage has been somewhat reduced. The uncertainty, however, remains in the mind of the investor and discourages forest planting and improvement of woodland. Like any business man he reckons expenditures and receipts in advance and finds that of all the expenditures that of taxes during the long period from seed to saw-log size cannot be definitely estimated.

Various ways have been proposed to prevent an excessive burden on forest growing. One way is to impose a tax on the timber when cut, in lieu of all other taxes; another, to tax the land annually, at a constant valuation, without considering the trees and tax the trees on a valuation of the stumpage at the time when they are to be cut. Some states have offered relief from taxes in part or whole on planted lands for a period of 10 to 30 years.

The State of New York was one of the first to put these plans into law. Three acts were passed by the Legislature in 1912, Chapters 249, 363 and Section 89 of Chapter 444. Two applied to planted forest and one to woodlots. Full descriptions of these laws may be found in "The Cornell Reading Courses," Vol. II, No. 28 and in Bulletin 8, Conservation Commission, State of New York, Albany, N. Y. Through these laws the State offers relief or reduction in taxation, affording more certainty and constancy in valuation and assessment if the owner will do his part in planting good forests or improving his woodland.

The provisions of these laws are worth careful consideration by land owners. Every acre of non-agricultural land should be in productive forest to meet future needs and add to New York's prosperity in years to come.

Under one law, areas of open land, one to one hundred acres in extent if planted with forest trees not less than 800 to the acre and maintained as forest, are exempted from all taxation for thirty-five years. After that period the land is taxed but not the trees unless commercial cutting is done within the first five years after the thirty-five year period. Lands located within twenty miles of the corporate limits of a city of the first class, ten miles of a city of the second class, five miles of a city of the third class and one mile from an incorporated village are not entitled to this exemption. After the owner has planted the land he has only to file proof of planting with the Conservation Commission. The plantation is inspected by one of the Commission's foresters and if the planting is found properly completed, the necessary steps are taken to exempt it. The same law provides for lands
underplanted with not less than 300 trees per acre that the trees shall be exempt for thirty-five years and the land assessed on fifty per cent of its assessable valuation for this period.

Under another law, non-agricultural lands, five dollars or less in value per acre, if planted with forest and so maintained, shall be taxed on a valuation of the land alone for thirty-five years and this valuation is determined in advance. The trees are not taxed during the thirty-five years.

Under the third law a new system is provided for woodlots (either natural growth or planted) not exceeding fifty acres in extent, if the owner will agree to manage them under the instructions of the Commission through its foresters. The same requirement is made about
distance from cities and from an incorporated village. Under this system the land is taxed at a valuation not to exceed ten dollars per acre and there is a tax of five per cent of the stumpage value of the trees when cut. Application is made direct to the Commission on forms provided by them. Under this law people have the advantage of the services of trained foresters and a constant and certain method of taxation. It is optional with land owners to take advantage of these laws or not, as may seem best to them.

These three laws are in the right direction and should encourage farm forestry both through planting out of new forests and the improvement of existing woodlots.

Legislation will never in itself ensure practice of forestry, but it may aid greatly by removing stumbling blocks in the investor's way, just as laws have provided an adequate system for protection of forests from fire and the risk has been yearly decreasing.

The State, through the Conservation Commission, assists owners by furnishing little trees at cost for forest planting. Some of the principal ones are conifers, white pine, red pine, Scotch pine and Norway spruce, besides several kinds of broadleaf deciduous trees. The State nurseries contain several million trees and are examples of the best state nursery work in the United States.

COÖPERATIVE ASSOCIATIONS OF LONG ISLAND

By Charles T. Osborne

Vice-President of the Long Island Potato Exchange and President of the East Hampton Agricultural Association

LONG Island is so situated that it seems to be a region apart with New York City as a market at its doors taking all it can produce and acting as a bar between the farmers of the Island and the rest of the country.

Its farmers once thought that they controlled the potato market in the city. They believed that it was only necessary for them to grow the potatoes and ship independently or through an agent in order to receive the highest prices. A few years ago they began to see that there was a difference between the prices received and the prices quoted in the market, and after investigation they found that in many cases the agents were not giving them honest weight or the true conditions of the markets.

The Long Island Potato Exchange was organized to protect the farmers from the high price of fertilizer and to help them to get what they ought to for their potatoes. The capital stock was $30,000, five dollars a share. No one was allowed to hold more than one-fifth of the stock and each member of the Exchange had to hold one or more shares.

The object of the Exchange is to buy supplies as cheaply as possible and to sell the produce at the highest prices. It started out very well the first year reducing the price of fertilizer five dollars a ton and getting a more uniform price for the produce. But it has had to fight every inch of the way both with the buyers and the commission men in New York City whose business was being injured.

The farmers are more independent than most farmers and since a number of them are agents for fertilizer and buyers of potatoes, it is easy to see what a proposition the Exchange had and has still. The farmers who are members of the Exchange have been accustomed to buy their fertilizer from other companies if they could get it a little cheaper, not stopping to think
that the Exchange had forced down the price of fertilizer and that the fertilizer companies were trying to kill the Exchange, so that they could sell at the old price or higher. And in selling the potatoes if an outside buyer offered a cent or two more per bushel he could get them and in that way take business from the Exchange. That dollar in front of their eyes hid the view of the past and the future. For they knew that if the Exchange failed, fertilizer must go up and potatoes down.

The Exchange has been of great benefit to the farmers and has done well considering the opposition it has had. It has been the savings of many thousands of dollars to the farmers of Long Island and has educated them in the cooperative idea. When the farmers realize the necessity of getting together and standing by one another, the Exchange will be sure of their support and will be able to do better by them than it has done.

On Long Island there are a number of other organizations of other characters. Some are for the purpose of buying grain and other supplies like the East Hampton Farmers Agricultural Association of this place which is very successful. It has its regular officers and a buyer who gets the prices of grain, manure and other supplies from different companies buying where he can get the most favorable prices and the best grades. There is a date fixed when a car load of grain, for instance, will be ordered and each member must send in his order before or on that date. They are notified by card when the car will arrive, the buyer giving only one day to unload the grain. Last year the Association did over twenty thousand dollars worth of business and the saving was estimated at ten cents on the dollar. There are one hundred members of this Association paying fifty cents a year for dues.

THE COMING FARM FESTIVAL AT THE COLLEGE OF AGRICULTURE

By Prof. J. G. Needham

A NUMBER of students at the Agricultural College are undertaking the presentation of an original, outdoor, public entertainment to be given toward the end of the year.

It will be a pantomime presentation of scenes of Indian life selected to show the relation of these primitive people to mother earth, and thus to set forth primitive rural conditions and activities. Not burlesque, not tragedy, not pageantry of history, only the simple natural romantic life of our predecessors on this soil. The place: a village or a few wigwams upon the green between the hill and the forest and beside a spring brook; the people: the resident families and a few visitors. It is proposed to present; first, Pictures, sylvan pictures that should be rural and natural, and not too small to be at the distance of the top of the hill, and not so complicated but that their significance will be easily grasped with only a few words on the program to help. Second, Action, and plenty of it, harmonious, sympathetic action. The things to be set forth during one afternoon and early evening on the green are the activities of a romantic and highly artistic people living here at peace.

The presentation will probably be made about the time of the annual school picnic, and the action may center about the strawberry festival which the Cayuga Indians were wont to celebrate at that time of year.

No models exist for such a play as this. It will, therefore, be wholly original. It should be of much educational value and should further the cause of out-door-study at Cornell.
This number is devoted to cooperation. Articles on this subject are not rare in the field of agricultural journalism; neither is the subject so haggled that it does not merit further attention. American agriculture is coming to the cooperative era but not in a day. No class of people passes quickly from one economic stage to another and the farmer has always been conservative. He is not yet sufficiently imbued with the cooperative spirit nor have we learned all there is to know about cooperation. Before we complete such a far-reaching and important change there must come a longer period of discussion and a moulding of public opinion.

The subject is too large to even outline in one number but we hope the number will be suggestive and interesting to Cornellians, who are and will be leaders in this great movement.

The work being done by our Agriculture College here has been commended by Governor Sulzer's committee of inquiry in its final report submitted to the Governor and the legislature. The report takes up the general question of agriculture education and expresses the opinion that a thorough investigation should be made of the state education department "to determine the value of several expensive features of the work generally established by special acts of the legislature and the property of such work being borne by the state and also to ascertain if it is not possible to utilize the information stored in some of the technical divisions for the benefit of other departments." "The New York State College of Agriculture at Cornell University is supported by the State government, also receiving some support from the national government, and is designed to be the real head of the system of agricultural teaching in the state. Already the state has expended large sums of money in the erection of buildings, and in the maintenance of this college, and can feel proud of the fact that under the direction of Dean Bailey it undoubtedly has at present the best College of Agriculture in the world.

The increase in number of students at the college has been enormous, and today there are about 2000 men and women enrolled as students.

"The college also does a large amount of work in the way of assisting individual farmers, and in cooperating with all the agriculture interest of the state, by means of farmers' meetings, farm trains, schools in interior counties of the state, issuing
of bulletins, and visits to different sections of the state by members of its staff, and these activities extend to and reach practically every important agriculture interest in the state.

"The cost of maintenance is, of necessity, growing larger each year, and the money must necessarily be appropriated by the legislature.

"In 1912 the total appropriations in connection with the New York College of Agriculture were actually $788,000, but the Board of Trustees were authorized to make contracts for $129,000 additional, in all $917,000. We recommend this year that the sum of $600,000 be allowed in the Appropriation and Supply Bills. This amount includes the additional cost of maintenance, but does not provide for the equipment of the buildings already erected under the authority of the Legislature. We do not deem it wise to recommend the erection of any large, new buildings, until the present group of buildings already under construction are completed."

The commendations of the Committee of Inquiry are most gratifying. They express again the fact that the people of the state believe in the work being done here in the College of Agriculture under the leadership of Dean Bailey.

The New Secretary

Our new Secretary of Agriculture, David Franklin Houston, is one of the leading educators of the South. He has served three years as President of the Texas Agricultural College, three years as President of Texas University and for five years as Chancellor of Washington University at St. Louis. His chief distinction in the agricultural world is that he has made a thorough study and investigation concerning the hookworm disease. This was the most prominent and important problem with which the South had to contend. As president of the Texas Agricultural College he became familiar with problems of production. In his studies he has shown a preference for history, biography and economics.

He is at present a trustee of the Missouri Botanical Board, a member of the Southern Education board, trustee of the John F. Slater Fund and of the Rockefeller Sanitary Commission and is a fellow of the Texas Historical Society. Secretary Houston is considered one of America's foremost educators, is progressive, and has a large capacity for administration.

A number of problems of vital importance confront the new Secretary. In the first place, the force of nearly thirteen thousand workers of the Department of Agriculture must be organized to work efficiently and without needless red tape. Then too, the Department should get in closer touch with the farmers of the country. The general feeling is that too much energy is spent in investigations which are of little practical value. The conservation of our natural resources, the preservation of public health, the improvement of our highways, such problems as these, of utmost interest to every citizen of the country, will come before the present administration. Secretary Houston, we recognize the greatness of your task and sincerely wish you well.
CAMPUS NOTES

Following the Alma Mater at the regular March Assembly, was an innovation in the singing of two old songs by the whole assembly, Auld Lang Syne and the Old Oaken Bucket. Dean Bailey remarked afterwards that the singing in "the folks way" is a way of affecting a fundamental sense in everyone. He expressed a wish that when the new auditorium is complete, the whole student body will come together often, simply to sing.

In his talk the Dean explained some internal questions. He also gave statistics which show that the enrollment of the regular students is 1263, including those that entered last February. There are 107 graduate students, 600 were here for the Winter Course, which altogether make an enrollment of about 2000 students and the Summer Students yet to be added.

The statistics of Farmer's Week show that 3100 people visited the college besides those that were in the University. The total number of lectures was 284; there were 10 demonstrations, 10 contests and competitions, 16 practices and 17 conventions. The words conference and convention are very significant at the present time in agriculture.

The Dean urged the responsibility of paying the Ag. tax by each student of agriculture, as every student enrolled automatically becomes a member of that Association. Many suggestions are continually being made by outsiders and students. All of these difficulties cannot be corrected by the staff but many could be corrected by the students themselves. The value of a college training depends on the students own use of the opportunities offered here. If the habit of going after things is formed in college it will be continued after leaving the University. Commencement, which is often spoken of as the beginning of life is really the commencement of education.

Speaking about the city students in the College of Agriculture the Dean warned them not to begin agriculture at the college end. The fellow who comes here with the idea of making up certain deficiencies in early training in the city will find that he could get more from his course after having practical experience and getting the farmer's point of view. Twelve months spent on a real farm in farm work is the only way to acquire the knowledge of the conditions as they are. The College of Agriculture does not debar any person in the state from studying agriculture but it does maintain that everyone with practical farm experience will get more out of the work in the college than those who have not that experience. There is no reason why a city bred man should not prepare himself to be an efficient farmer.

* * *

Important business in the way of appropriations was done at the meeting of the Agricultural Association held on Tuesday evening, March 18. Money was appropriated to buy the baseball team 11 new suits so as to outfit this
year's team in good shape. The matter of getting a "skinned" diamond for the use of the Agriculture team was recommended to be brought before the Intercollegiate Athletic Association. It was also decided that bronze medals be given to point winners in the Carnival as well as to regular members of the teams representing the College of Agriculture. An appropriation to buy medals for all of the Agriculture teams of last year was made. This includes baseball, crew, track, basketball, cross country, and soccer, of these teams all will receive silver medals except the soccer team which will be presented with bronze medals.

The proposed amendment to the constitution of the Agricultural Association, as printed in the last COUNTRYMAN, was unanimously passed. The matter of the use of the students' rooms was another subject of discussion. Signs will be placed indicating where the room is for the information of freshmen, and also rules posted concerning the care of the room. It is hoped that by a greater use of the students' rooms the congestion of the Ag. library will be relieved.

* * *

In a highly exciting post-season game for the championship of the Intercollegiate basketball league, Agriculture lost to C. E. by a score of 24-21. Much interest was attracted by the game and when the fives lined up, the Armory was crowded with supporters of the two college teams. Throughout the whole game the teams were very evenly matched and it was only by brilliant work that the Engineers were able to pull out in the lead. The first half ended with a score of 11-8 in favor of Agriculture who swept the C. E. team off their feet at the start. In the second half, however, the Lincolnites came back with a rush and the score at the end was a tie 20-20. In the five minutes period that was given to finish the game, the C. E. men by hard work increased their sore to 24 while Ag only added one point to theirs. For the Ag team Kopeloff and Steve took the lead in scoring while the rest of the team played very consistently. The absence of Captain Steve weakened the team since he was one of the strongest players.

* * *

The superioriity of the Agriculture athletes over those of the other colleges of the University was decisively shown at the Intercollegiate Carnival held in the Armory on Saturday afternoon, March 15. The score of the Carnival by colleges as was as follows: Agriculture 39; C. E. and Veterinary 11; Arts, Chemistry and Law 10; Architecture 0; Sibley not entered. Much credit must be given to H. H. Knight, '14, and D. W. Kelsey, '14, for their good work in the Elephant race and the Wheelbarrow race in which they captured first place. Again in the sack race, Knight took the honors paralleling his feat of last year.

The events of the Carnival and the winners were:


Potato race. Won by Chemistry.

Wheelbarrow race. Won by the Agriculture team, H. H. Knight, '14, and D. W. Kelsey, '15.


Rope Climb. Won by S. S. Burdge, '14 of Ag.


Sack race. Won by H. H. Knight, '14 of Ag.

Rooster Fight. Won by Veterinary.

Board Track Relay race. Won by Agriculture, 2d, Law 3d, C. E.

* * *

The Cafeteria in the Home Economics building was opened for Farmers' Week. It is hoped to be possible to open it permanently after Easter.

* * *

The Department of Farm Crops is planing to plant the 50 or more varieties of potatoes exhibited during
Farmers' Week. The planting will be made in the "Economic Garden" which will contain all kinds of cereal, forage and root crops.

* * *

Last month the Department of Dairy Industry announced a prize of $50.00 offered for a clean milking contest, by Mr. S. L. Stewart of Brookside Farm, Newburgh, N. Y. This contest was opened to the men regularly registered in Animal Husbandry, Course 3. The prize was divided pro-rata according to the number of bacteria per cubic centimeter in the milk, but the greatest number of germs allowed was 2000 per cubic centimeter. Beginning with this number and working backward, a scale of points was so arranged that the contestant receiving the lowest count scored the greatest number of points and so received the largest share of the prize. Thirteen men competed and the lowest count obtained at any one milking was ten germs per cubic centimeter obtained by Mr. R. M. Williams. The lowest average score was received by Mr. A. B. Dann. Mr. Stewart has again offered a prize of $50.00 to be used for the same purpose next year.

* * *

The poultry department is now endeavoring to assist in the selling of eggs and poultry on a cooperative basis by receiving them from Farmers, grading and packing them, and sending them to the best markets available. Eggs and poultry are received at the new Poultry Building and sent to a special market. The returns are made upon the basis of the selling price, less the exact cost of marketing and handling. This is to get the producers and consumers closer together and let the right man get the right profit. Further information concerning this can be had from the Poultry Department.

* * *

Professor Bently has been giving several lectures before granges, and making woodlot examinations for private owners in various parts of the state.

It is interesting to note what success the Poultry Department had with its program during Farmers' Week. The following is a table showing the attendance taken at the different exercises held in the Poultry Building.

<table>
<thead>
<tr>
<th>Event</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>4107</td>
</tr>
<tr>
<td>Dedication Exercises</td>
<td>525</td>
</tr>
<tr>
<td>Laboratory Exercises</td>
<td>315</td>
</tr>
<tr>
<td>Poultry Conferences</td>
<td>50</td>
</tr>
<tr>
<td>Poultry Association Sessions</td>
<td>135</td>
</tr>
<tr>
<td>Poultry Contests</td>
<td>170</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5302</td>
</tr>
</tbody>
</table>

This does not mean that there were 5302 different persons for there were many that attended more than one exercise, but it goes to show that the exercises were well attended; also speaks well for the Poultry Department and the new building.

* * *

E. W. Mitchel, '09, who is successfully conducting a fruit farm at Stuyvesant, N. Y., talked before the Farm Management Seminar on March 12. It is planned to have a number of the alumni talk before the Farm Management Seminars this term relating about their work as county agents or their experiences as managers of their own farms. This will give the students a chance to get in direct touch with practical farmers.

* * *

The Home Economics girls gave a stunt in the auditorium on Wednesday evening, Feb. 26. It was well attended—proceeds to be used toward payment for piano in the Girls' Recreation Room.

* * *

Mrs. Olive Watson, Alfred, N. Y., is giving a series of lectures on Dye-stuffs and Dyeing before students in Home Economics.

* * *

Mr. C. C. Engle, of the Department of Soils, made a trip to the Garden City Golf Club in order to give an opinion on the condition of the soil there. The failure of the grass to grow on the links has given much trouble.
Professor Fippen spent a week in the extension school at East Bloomfield.

The regular Summer School of Agriculture this year will follow the usual plan. New and more courses will be given which will include more college credit courses.

A son was recently born to Professor and Mrs. Savage.

Prof. C. S. Wilson will give four illustrated lectures at the Brooklyn Institute of Arts and Sciences; on April 4, "Budding and Grafting;" April 11, "Varieties of Fruit for Commercial Planting and for the Home Orchard;" April 18, "Pruning;" April 25, "Methods of Managing Orchards."

Mr. H. B. Knopp of the Pomology Department was at Ravenna, Albany Co., Feb. 3-8 and at Ticonderaga, March 3-8 doing extension work in Pomology.

Professor W. M. Wilson of the Department of Meteorology is the author of an interesting series of articles entitled "Fitting Crops to Climate" which have lately appeared in the Tribune Farmer.

Professor Edward Minns lately in charge of Extension Work in Farm Crops at Cornell has received the appointment of County Expert with headquarters at Binghamton, N. Y. Professor Minns will succeed Mr. John Barron who resigned from the Binghamton station to enter Farm Institute work and commercial practice.

Mr. Lloyd S. Tenny of the Department of Pomology has been made State Leader of Farm Bureau Work under the federal government. He will also be alumni secretary to further the cooperation of the college with its graduates.

Professor Recknagel took up his work in the Department of Forestry, February first. He has courses in Forestry Management, Lumbering and Wood Technology. During the spring recess Prof. Recknagel will take classes in Lumbering for a weeks' study in a logging camp in the mountains of Pennsylvania or the Adirondacks.

Professor Recknagel has written a book, "The Theory and Practice of Forestry Working Plans," published by Wileys. The book, which he has completed after years of study in Europe, is adapted for use as a text book in university courses in Forestry.

During the week of March 6-12, the Dairy Department held its annual one week course for managers of dairy plants of this state. This course is designed to give to experienced dairymen an opportunity to keep in touch with modern developments in their profession.

"Methods of Chick Feeding" is the latest bulletin published by the poultry department. It is edited by Miss Clara Nixon under the supervision of Professor James E. Rice.

The Newton Producing Co., has just installed one of their "Giant" 3000 egg incubators in the old Poultry Husbandry building. This is the second large incubator that the department now has, the other being called the "Mammoth" by the Little Falls Producing Co. This one also has the capacity for holding 3000 eggs.
Edwin Jackson Kyle was born at Kyle, Hays County, Texas. He entered F. & M. College of Texas in the fall of 1896 and was graduated in 1899. He was a self-supporting student while at college but nevertheless very active in all his class affairs, being president of his class, president of the Y. M. C. A., ranking officer in the Cadet Corps and valedictorian of his class, in the fall of 1899. He entered Cornell and took his B.S.A. degree here in 1901 and his Masters’ degree in 1902. During the summer of 1901 he was in charge of the shipments of fruits and vegetables from the orchards and gardens of Cornell to the Pan-American Exposition at Buffalo. Shortly after this he was appointed to the position of instructor in horticulture at the F. & M. College of Texas. In 1905, he was made head of the department as head professor. In the summer of 1911 he was made dean of the school of agriculture. He spent the summer of 1907 in the fruit regions of Colorado. He has done special work on the peach, pecan and a number of vegetable crops and is an expert on top working pecans on hickory. He has written a number of valuable bulletins on this subject. He was a pioneer in the idea of teaching agriculture in the high school. At present Prof. Kyle is secretary of the Texas State Horticultural Society.

Prof. Kyle was married in 1904 to Alice Myers. They have one child.

'05, B. S. A.; '07, M. S.—V. G. Dodge of Hawaii is now engaged in government service. He has charge of Farm Bureau work in New England.

'05, B. S. A.; '06, M. S.—J. M. Swan is now assistant Entomologist of the Department of Agriculture of the Dominion of Canada, dealing with forest insects particularly. After an extended trip thru British Columbia and Northern Canada in study of these insects, Mr. Swan will return to Cornell to complete his residence for the degree of Ph. D.

'06, B. S. A.—H. L. Westover who is in the employ of the Bureau of Soils of the U. S. Department of Agriculture is at present doing some cooperative work with the Forest Service and is stationed at Duquesne, Arizona. Mr. Westover is examining the lands of the Coronado National Forests with the view of determining the percentage available for agricultural purposes.

'08, B.S.—E. H. Anderson has resigned his position as Secretary and Fruit Expert of the Bedford Farmers’ Cooperative Association at Mt. Kisco, N. Y., in order to take a position as Director of the Niagara County Farm Bureau with headquarters at Lockport, N. Y.

Ex '08—Marvin Jack, one of the first Indians to take a course in the College of Agriculture, died March 5 at the Tuscarora Indian Reservation at Lewiston in Niagara county. Jack was only thirty-four years of age and had a promising future before him, but tuberculosis, the foe of both the Indian and white man alike, came upon him and after resisting it for three years he succumbed.
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<table>
<thead>
<tr>
<th>Varieties</th>
<th>Eggs Laid 1st yr.</th>
<th>Eggs Laid 2nd yr.</th>
<th>Eggs Laid 3rd yr.</th>
<th>Total eggs laid 3 yr</th>
</tr>
</thead>
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<tr>
<td>Lady Cornell</td>
<td>257</td>
<td>200</td>
<td>191</td>
<td>648</td>
</tr>
<tr>
<td>Madam Cornell</td>
<td>245</td>
<td>131</td>
<td>163</td>
<td>539</td>
</tr>
<tr>
<td>Cornell Surprise</td>
<td>189</td>
<td>188</td>
<td>186</td>
<td>562</td>
</tr>
<tr>
<td>Cornell Supreme</td>
<td>242</td>
<td>198</td>
<td>220</td>
<td>650</td>
</tr>
</tbody>
</table>

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THE PRESENT STATUS OF NUT CULTURE IN NEW YORK STATE

By C. A. Reed

U. S. Department of Agriculture, Washington, D. C.

The present nut producing situation in the State of New York cannot be discussed in terms of culture, for the use of that word implies active cooperation with nature upon the part of man. As a matter of fact, the energies of man have not been in harmony with nature, but have been antagonistic to her efforts to produce in nut form the food elements upon which his existence depends. If in the past development of the state the best nut bearing trees had been spared and protected instead of being used for timber purposes as were others of the forest there is no telling what the present situation would have been. No doubt, nuts would have come to figure much more prominently as staple articles of food than they now do, but at best, there would have been a splendid assortment of parent trees to serve as stock upon which to establish valuable varieties.

Nine species of trees bearing highly edible nuts are native to the greater portions of New York State. In probable order of past importance these are the American chestnut (Castanea dentata), the shagbark hickory (Hicoria ovata), the pignut hickory (Hicoria glabra), the black walnut (Juglans nigra), the shellbark hickory (H. laciniosa), the butternut (J. cinerea), the two hazels (Corylus Americana and C. rostrata) and the American beech (Fagus ferruginea). There are also four species of foreign walnuts which seem more or less suited to cultivation in New York State and two species of chestnuts which in the past have given considerable promise but concerning which there is now great uncertainty. They will be discussed more fully later on.

Much might be said regarding the lost opportunities and mistakes of the past, but we all recognize the fact that little effort either to develop or even preserve the native nut trees has yet been made and that the situation is far from what it might have been. Therefore, it is the purpose to confine this discussion to present and future problems rather than past misdeeds. Further, it is addressed to those who have already decided to plant nut trees rather than to any who have not fully considered the matter. Instruction, not persuasion, is the present mission. As nearly as possible the view point taken is to be that of the intending planter.

In order of sequence questions by the prospective planter are, what to plant; where can the stock be obtained; what soil is best adapted to the species or variety; what culture is necessary; when will bearing begin and what will be the profits. These will be followed by endless other questions regarding important details, but both space and disposition preclude exhaustive depth of discussion at the present time.

Of the nut trees that are at all suitable for planting in New York
State at the present time the American chestnut is the most to be avoided. It is native to a large portion of the state, capable of adapting itself to many soils, very prolific, and the quality of the nuts is exceedingly pleasing, but as a species it is threatened with extinction by a fungous disease \((\text{Diaporthe parasitica})\) commonly known as the chestnut-bark disease. Since the discovery of this disease on Long Island in 1904 chestnut trees have died by thousands in New York and other states into which the disease has spread. The European species of chestnut \((C. \text{ sativa})\) is also highly subject to this malady and as more trees of the European varieties (principally the Paragon) have been planted than of all others combined, and no adequate means of controlling the disease has been found, the seriousness of the danger to chestnut orchards already planted is apparent. To some extent the Japanese-American hybrid chestnuts are also susceptible but how seriously so far has not been ascertained. However, it has been noted that thus far these hybrids have been quite resistant, and with this as a clue, efforts are now being made to develop strains of chestnuts practically if not altogether immune to the blight.

The Japanese chestnuts \((C. \text{ japonica})\) are larger and usually more prolific than are those of the American species but they are rarely of as good quality. Character of the nut as well as resistance of the tree to disease must therefore be kept in mind if chestnut trees suitable for orchard planting are to be developed.

Next to the chestnut in order of past importance we have placed the shagbark hickory. Together with the other species of the hickory, it is like the chestnut in that it is threatened with extinction by a natural enemy, but unlike that species in that its danger is due to an insect pest \((Scoly\text{pus quadrispinosus})\) commonly known as the hickory bark beetle rather than to a fungous disease. However, we have assurance1 that by cutting and burning all branches and trees during the first winter after their death, the new broods can be destroyed and the insect kept in check. It would seem, therefore, that the culture of the hickories can safely be encouraged.

The fruits of the pignut hickory are seldom heard of as edible products.

1Hopkins, A. D. U. S. Dept. of Agr., Bureau of Entomology Circular No. 144.
This is doubtless due to the name rather than because of a lack of merit, as to a large extent these nuts are sold as shagbarks.

The shellbark hickory attains a degree of prominence, because of the size of its nuts, which is perhaps more than it deserves. The nuts are usually large and the kernels of good quality, but as a general thing, the shells are thick and difficult to crack. The species is less common than are either of the two previously discussed as in its natural range it is confined to a few counties in the south central portion of the state.

The black walnut and the butternut have no serious natural enemies like those of the chestnut and the hickory. Both are native to large portions of the state and capable of adapting themselves to wide ranges of cultural conditions. The nuts of both are ordinarily thick-shelled and difficult to crack, but vary enough in these respects to offer inviting fields for selective breeding.

The native hazels have received little attention. The two native species previously mentioned are common to much of the state but cultural interest in the genus has been confined to the European species which thus far have not been able to adapt themselves to New York conditions. A fungous disease moderately severe with the native hazels, and on this account the cultural status of the European hazels in New York State is not unlike that of the American and European species of chestnuts. The building up of a hazel nut growing industry appears to be dependent upon the selection and development of stock from the native species.

The American beech is more often spoken of as a nut tree in books than elsewhere. Its nuts are delicious but difficult to extract from the shells, and too small to be of commercial importance. Nowhere, so far as there is record, has this species ever been propagated solely for its nuts.

Of the foreign nuts the European and Japanese chestnuts have already been discussed. There are four exotic species of walnuts worthy of attention; two, J. cordiformis and J. sieboldiana, are from Japan; one, J. Mandshurica is from northern China and the last J. regia is from Circassia, a region of western Caucasus.

The first three are of importance chiefly because of their hardiness and the opportunities they offer of improvement by selective breeding. The nuts of the first two are smaller than are those of the American black walnut; of little if any better quality; quite as difficult to crack and so far as New York State is concerned, not more hardy. However, they bear at an earlier age and are somewhat more prolific. The species Mandshurica is less well known, as it has not been long introduced. In outward appearance the nuts of this species greatly resemble those of our American butternut. Owing to the small size of the nuts of the Japan species they meet with very little demand in the markets; consequently there is nothing to encourage their commercial planting at the present time.

J. regia is the species most commonly known as the English walnut, but, it was not native to England. Early history shows it to have been introduced by the Greeks from Persia and for that reason we have been educated into calling it the Persian walnut. From Greece it appears to have been carried to Rome, and to other parts of the world. Recent authority holds that the true origin and natural range of this species is in Circassia, a region of Western Caucasus and therefore it ought properly to be called the Circassian walnut. No matter what its proper name may be, this species has long been tried in New York and other Atlantic Coast States, but the usual result has been that the trees have been unable to endure the climatic conditions for any

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1Sudworth, George B., U. S. Dept. of Agr., Forest Service Circular No. 212.
number of years. Recently, however, several individual trees in New York and neighboring states have appeared which are apparently of sufficient merit, including hardiness, to offer the foundation stock for varieties suitable for at least conservative, commercial planting in favorable locations.

In closing, it may be well to call attention to a few matters which the prospective nut tree planter in New York State must not overlook.

1. Plant only budded or grafted trees.

2. The mere operation of budding or grafting adds nothing to the value of the tree. The improvement is in the replacing of the top of a less desirable tree with one from a more desirable tree.

3. There are now practically no available nursery grown nut trees of varieties suitable for planting in New York State. There are seedlings in abundance but there are few budded or grafted trees.

4. In order to develop good varieties the trees bearing nuts of the best quality, the proper thinness of shell, the easiest to crack, and in the greatest quantity, must be found. From such trees, buds or scions must be taken for propagation by budding or grafting.

5. At present commercial planting of pecan trees in New York State is unjustifiable, as no varieties have yet demonstrated their hardiness in this latitude.

6. Almonds must be left out of consideration. Being very early bloomers and easily killed by light frosts following the blooming period, their culture in the United States has thus far been restricted to certain favored districts in the far western and southwestern states.

7. Propagation of nut trees by asexual methods is not an easy undertaking. It is therefore, usually much more satisfactory to obtain budded or grafted trees from experienced nurserymen.

A number of agencies are now at work endeavoring to build up the nut growing industries of the United States. Various Associations of Nut Growers, Nut Exchanges, State Agricultural Experiment Stations and Colleges, and the Federal Department of Agriculture at Washington, D. C., are all doing what they can in that direction. The proper representatives of these institutions will examine any nut specimens sent them and will report to the sender regarding the evident value of the nuts for new varieties. They will also give such other information regarding nut culture as they may be able.

THE THIRTEENTH ANNUAL BANQUET

By E. C. Heinsohn, '15

SERVED in the Cafeteria of the Home Economics Building, the thirteenth annual banquet, held on March 26th, surpassed in excellence all such previous affairs. The Cafeteria, with its low ceiling and cozy atmosphere proved an ideal banqueting hall. Fully 350 sat down to a well prepared and well served repast. As most of the preparations, except some of the cooking, was done entirely by the girls and men of the college, the feast was doubly enjoyable. The tables, with a pretty red and white color scheme, with various plants and flowers scattered here and there, looked very attractive. Aided by men of the college, the girls who had complete charge of the serving, are to be complimented for the merit of their work. Indeed the banquet, being the first affair held in the Home Economics Building for the agricultural student body, may well be spoken of as a big house-warming party.

After all had enjoyed a most hearty meal, Toastmaster C. W. Whitney, '13, arose. With some very witty remarks,
he introduced W. H. Bronson, '13, student representative, as the first speaker of the evening. Mr. Bronson choosing as his subject some of the important student problems, first discussed the "Student Loan Fund," a fund to be raised in part from the student body, for the purpose of helping needy students. Next he described plans for a General Student Building where the classes and student organizations could hold their meetings, with recreation rooms and the like. In reference to the honor system, he declared that the main reason why it is not working as well as it ought, is lack of publicity. One solution is to attach a coupon to the freshmen registration blanks in September, and in February affix another on which the freshman must vote yes or no, whether or not he wants the honor system. Lastly he told of the amendment to the constitution of the Agricultural Association, wherein most of the business will be done by a representative committee, and that the association will have at least two meetings a year, with well known men as speakers.

Following Mr. Bronson came Professor Tuck, in behalf of the faculty. Speaking of education, he declared that the only education worth while comes from effort and sacrifice. In order to help its children to become better fitted for life, the State is spending vast amounts of money and in return expects their help in the further development of the state. Therefore, all should make the best of their opportunities while at college. The speaker, now turning his attention to the question of fraternities, urged that the tendency prevalent in the group idea to center the interests of the men in small gatherings should be fought, and the men encouraged to do all they can for their University. In hearty approval of the student fund, the professor suggested that action begin at once and $1,000 be raised this spring from the students. The alumni and business men should not be approached for help until the initial steps have been taken by the students themselves.

The next number on the program was selections by the Varsity Quartet. Their songs were enjoyed by a very appreciative audience.

Now came the speaker of the evening, the Hon. H. B. Winters, First Assistant Secretary of Agriculture of New York State. The world, said Mr. Winters, expects more of college men because they are trained. At present there are comparatively few well managed farms in this state and therefore it behooves the younger generation to increase this number. When the student goes back to the farm, the first thing to do is to make the home and surroundings as attractive as possible. The herd of cows should be improved by culling out the poor and adding pure breeds, community breeding should be established, and many other improvements made. In New York State few of the seeds are raised by the farmers themselves, a condition which ought to be remedied. Here lies an excellent field for the young man. Living conditions, continued the speaker, need much improvement; the home should be equipped with a furnace, with running water, telephone and the like. To the country minister, a force in the country life movement, all possible help and support is due. There should be built up beautiful country villages, for village life, where everyone is known by his first name is ideal.

Such an event as this banquet would be incomplete without some remarks from Dean Bailey, the next speaker. He chose for his subject extension work, one of the most necessary parts of an agricultural college. His speech is given elsewhere in this issue.

Professor Rice, the last speaker, gave an illustrated talk in the auditorium on "Early Days in the College." In those days, he stated, altho the faculty of the college were greatly handicapped by lack of facilities, and altho they did not know as much about the science of agriculture as they now do, nevertheless, they accomplished excellent results. One of main reasons for the success of the college is the confidence of the farmers of the state, which has been gained in part by the excellent crops which have been produced on the university farms.
THE SURGERY IN THE ORCHARD
By J. P. Evans

Tree surgery is the science of tree preservation but must not be confused with forestry. Generally speaking the tree surgeon treats trees that are worth much more than their lumber value and he devotes more time to them than a forester can afford to do.

Now that the value of our old neglected orchards has been recognized and we are rejuvenating them, the field of the tree surgeon has broadened. Tree surgery is needed in the orchard. But the orchardist who must grow apples at a profit is unable to employ the services of an expert and consequently the trees are left untreated. However, any one who understands the fundamentals of tree repair and can apply them to the individual case can do his own tree surgery. Therefore, let me state some principles which must be understood before any tree can be treated successfully.

In the first place all trees with sharp weak crotches and limbs that are apt to be overloaded should be braced either with bolts through or just above the crotch, or with a chain or loghooks between the limbs; or perhaps both methods should be used. Here is an instance when the individual must use his own mechanical ingenuity to decide which method is best and what sizes of chain and loghooks and bolts should be used. In the case of large limbs, the loghooks should be screwed in about halfway between the tops of the limbs and the crotch. Then the limbs should be drawn up far enough with block and tackle so that when the chain is hooked over the logs and the tackle released it will be tight.

For the treatment of cavities, the tools that are used most are an inch and a half gouge and a fairly heavy mallet. A small straight edge chisel will also be needed for edging the cavity and tracing the bark back.

The first step is to open up these old rotten cuts and any other exposed portions of the tree. All the decayed wood should be thoroughly cleaned out and in order to avoid further infection, should be burned. The edge of the cavity's face should be straightened and the bark should be traced back an eighth of an inch from the edge of the sapwood so that the cement filling can be brought just flush with the sapwood. During the entire operation care must be taken not to bruise the edge of the bark and the edge should also be painted to keep the cambium layer from drying out.

In studying fungous growth, since we find live, active mycelium in the apparently solid wood, the interior of the cavity should be sterilized with corrosive sublimate in wood alcohol.
using a 4 to rooo solution or four tablets to a pint of alcohol. This will
penetrate from three to five-eighths of
an inch. Care should be taken in
applying this sterilizer to prevent it
from getting on the bark. Next the
interior of the cavity should be water-
proofed. Coal tar may be used unless
the tree or limb being treated is a mere
shell. In such a case if the tar contains
much creosote there is danger of pen-
etrating as far as the cambium
and killing the tree or limb. For this
reason never use carbolineum nor
creosote for any kind of waterproofing
on a tree. In the case of a shell
cavity, pine tar and resin may be used.
Four and one-half pounds of resin
should be used to a gallon of pine tar.
This mixture should be boiled half an
hour after the resin has dissolved. It
should be applied warm but not so hot
as to burn the bark.

If the cavity is so large that the
swaying of the tree will crack the
cement, it will have to be reinforced
with five-eighths or three-fourths of an
inch bolts. Countersinks should be
made at the end of the bolt holes so
that the washers and nuts will be back
of the bark. When the cavity is filled,
these countersinks should be filled in
the same way. Jam nuts and washers
should be used on the inside of the
cavity. There are different ways of
reinforcing the cement when the cavity
is large enough to warrant reinforcing,
such as studding the interior with
spikes or running a piece of wire back
and forth on staples from the top to
the bottom of the cavity, three or four
inches back of the cavity's face. A
cavity of this size should be cut wider
at the back than it is at the face.

The cement should be mixed three
parts of good sharp sand to one of
cement. Use no more water than is
necessary to give the cement a good
sticking quality. The cement should
be put into the cavity in sections with
layers of tar paper in between, so that
when the cement sets it will still be in
sections, thus giving the job more
elasticity. Then when the tree sways,
if the aforementioned bolts have been

properly placed and tightened the
cement will sway with it and the tree
will sway as a whole.

The cement should be rammed in
tight and allowed to set for a hour or
two before the finishing is done.
Pieces of burlap or cement sacks nailed
over the face of the cavity will make
the best forms when forms are neces-
sary. After the filling has dried
sufficiently, the forms should be re-
moved and the job finished. A small
trowel may be used for finishing but
much better work can be done with a
moulder's slick. In slicking the job
first get the edge clearly defined by run-
ning the slick around the cement on
the protruding edge of sapwood and in
finishing try to preserve the original
contour of the tree. After the cement
has set at least twenty-four hours and
is hard, the protruding sheets of tar paper should be trimmed off and the job should be given a thin coat of coal tar. There are two reasons for doing this, first the coal tar will make the job less conspicuous, and second, the small crack that has formed between the edge of the cement and the sapwood must be filled so that no moisture can get behind the filling. The paint that has been applied to the edge of the bark will protect it from the tar. Later when the bark has grown over the edge of the cement, the cavity will be hermetically sealed.

And now, why is it that so many orchards contain so much decayed wood? There are two reasons. Most old orchards contain many weak crotches that hold water and form water pockets. Every winter the water in these crotches freezes, the ice expands and the crotch is split down a little farther, and every once in a while we have a limb splitting off and the wound is untouched. But a still greater reason for cavities is that when cuts have been made they have not been waterproofed. The importance of waterproofing all cuts having a diameter of 1½ inches or more cannot be overestimated. Lead paint serves fairly well as a waterproofer but the cuts must be repainted every year until the cuts have grown over. Coal tar which does not contain much creosote is better because it will last longer. But while care must be taken to cover the center of the cut well, very little can be put around the edge for it will cause the bark to die back a little. Pine tar and resin (mixed as mentioned before) makes the best but also the most expensive waterproofer. However, it is probably just as cheap in the end as any other for the reason that it does not injure the bark and that one application makes the cut waterproof for all time. An ounce of waterproofing is worth several pounds of cement.

LINCOLN AGRICULTURAL SCHOOL

By Bro. Barnabas
Lincolndale, N. Y.

THAT quaint character, David Harum, in the very interesting book of that name tells somewhere within its pages of his very important bookkeeper who could never overcome any difficulty unless David was at his back, to push him out of it. So it has been with the dependent boy—always, there has been someone to stand behind him and be a prop for him. This has gone on from time immemorial but, some five years ago, an unique work was started under the direction of the Christian Brothers, to foster a new ideal in the minds of dependent boys. That ideal was to fit the dependent boy to stand on his own feet and to plough his way through the world.

The Lincoln Agricultural School, in the northern hills of Westchester County, is the place where the dependent city boy is given this wonderful opportunity to develop character and stability. A two-fold object was kept in view with the commencement of this work: 1st—To remove such dependent boys from the congested city districts where the best opportunities were denied them; 2d—By a system of sympathetic care and special training to fit them to take the places in the rural sections vacated by so many of the country boys. Here, the boys, varying in ages from 12 to 16 years, are received.

The boy, as has been said, is a dependent, oftentimes practically without schooling of any kind and ill-nourished. Every available force is brought to bear to remove the old obstacles of ignorance and physical deficiency and the boy is built up and strengthened in his bodily requirements in order to give him the stimulus
for self-development, for it is perfectly logical to assume that you cannot start a boy on the road to self-conquest and development until he is physically fit to make the effort.

We have turned our attention to the wonderful field of agriculture and we find that the boy responds in a measure simply marvelous. He comes in close touch with the great number and variety of farm animals and every sympathetic quality of his mind is developed through contact, in the care and handling of these animals. He is taught the quality of the milch cow, how to care for it, how to feed it, how to keep it clean, how to record his milk production for each cow, the feeding records, the sanitation of his dairy for the production of clean milk and, lastly, proper breeding for the continuation of his herd.

A feature at Lincoln School is the maintenance of cattle under the Bang System, a work which is regarded as one of the most necessary and progressive for the elimination of tuberculosis in cattle.

The boy studies the relation of farm crops to the needs of his dairy and learns how to produce his crops in all their various phases—vegetable gardening, fruit culture, berrying, orchards, poultry and pigs in their turn receive the attention of the boy. His work, fortunately, is studied under working conditions, which blend with the theoretical studies in the class rooms.

After the boy has remained at the school until such time as he is deemed fitted to take his place in the work-a-day world, he goes to a very carefully selected home in the rural districts, there to bring into operation the training that he has received at Lincoln Agricultural School.

The School has 600 acres of land and 150 head of cattle, a large piggery and poultry houses, and is equipped in every way with modern buildings and machinery for the proper training of these boys.

The number of boys accommodated is about 250. Every one of these boys is given this practical course at Lincolndale and is in every respect fitted by its training to become a progressive, aggressive agriculturalist. Such boys bring new life to the agricultural districts and become most worthy and acceptable members of the rural communities in which they locate. They are no longer dependent boys, but boys well equipped to stand on their own feet and boldly face the world as self-respecting, self-supporting young Americans.
WHAT IS EXTENSION WORK?

By L. H. Bailey

EDITOR’S NOTE.—Governor Sulzer’s Committee of Inquiry has recommended that the extension work in agriculture be made a unified state program. Director L. H. Bailey took this subject for the theme of his remarks before the Thirteenth Annual Banquet of the students of the State College of Agriculture at Ithaca on March 26, 1913, and explained what is now understood to be extension work, quoting mostly from former addresses.

EXTENSION work in agriculture comprises all educational efforts at the homes and on the farms of the people, and also such work at the institution itself as is more or less temporary and that centers directly in interests away from the institution. Extension work is welfare work, and is properly a necessary part of an institution that is maintained by the people for the service of the people.

Extension work should aid the people in the solving of their own problems of farming and also the social, economic and educational problems of farming communities. To this end, it is necessary that trained men and women be available in many different lines of agricultural work. Persons must be specially trained for this work, as well trained as for regular teaching or for research or administration.

The temptation is to use extension work merely as a means of publicity of the institution. This will fail in the end, and it will react unfavorably on the institution itself. The whole motive must be sincerely to help the people, not to push or advertise the institution, nor to make publicity for any person.

If the colleges of agriculture, and other rural institutions and agencies, ever come to be dominated by the desire to aggrandize themselves, or to exploit the people for the sake of appropriations, they will fail of their purpose and be repudiated by the people. Only so long as they have the spirit of service and of substantial disinterested work will they have reason permanently to exist.

It is proper that every public institution that is doing good work at home should extend itself to the people, but it is well to bear in mind that it should not begin the process until it has something to extend. Extension efforts should be the result of work rather than the beginning of work.

One is likely to make the mistake of beginning the extension work first, whereas the extension work should grow gradually as the institution grows and be the natural expression to the people of the work that arises in the institution itself.

The people should not be too anxious to have extension work issue from any particular department of the institution. The extension work should come in the process of time, as the work ripens, and under such conditions it will be substantial when it comes and will produce real results.

What any locality gets in extension work should depend directly on what it wants and what it puts into the work. The rapidly growing farm-bureau work is an illustration of the fact that farmers are now taking the initiative in work in the localities, often supplying even a good part of the funds. At this day, extension should meet demands rather than make demands.

Extension enterprises are of many kinds,—of any kind whereby a department or institution or organization may extend and apply itself to its constituency. Some of the extension methods in agriculture are itinerant lectures, institutes, extension schools, reading-courses, traveling-libraries, publication, farm trains, tests on farms and in gardens, follow-up work of many kinds, demonstration farms, farm bureaus or agencies, organized correspondence. Actual demonstration, and work directly with persons on their special problems, are in the end the best form of extension work. In the end, there must be sustained teaching in the localities.

The widespread extension effort is one of the most hopeful applications of
the time. It may also be one of the most inefficient, depending on how it is done and particularly on the motive that propels it. We have now passed the early experimental stages in extension work. To be most useful, it must be well organized, as well organized as any work at the institution itself.

While extension work should be organized, the organization should not be of the dictator kind. The spirit of free personality in work is absolutely essential. All domineering and institutional selfishness must be eliminated. The autocratic type of organization cannot do effective extension work.

Everything depends in the end on the spirit of the place.

The many educational agencies are now fairly established, and the country people in general are aware of the aids that they may secure; and they are also aware for the most part of the deficiencies. There are some regions and places, of course, into which extension enterprises must be carried bodily and as a gift; but these are now relatively few. It is best to let the desires originate in the people themselves even if it is not as rapid as some of us would wish, and to be cautious of the plans for those who sit in offices.

Speaking for the New York State College of Agriculture, it was formerly our practice to pay all the traveling expenses of members of the staff in the several lines of extension work. Demands for assistance from the College grew very rapidly. During this time we had an opportunity to study the situation. Two facts became outstanding: 1st, that our appropriation would always be inadequate to meet the needs of the state; 2d, that we were sending assistance to many communities that were able to pay something toward these expenses themselves. We found that many communities took a deeper interest in a particular piece of extension work when there was contribution on the part of the community toward the expenses; the people naturally felt as if they were partakers rather than onlookers.

As a result of these observations, we have finally arrived at the policy, excepting some special reason to the contrary, of withholding until each community, society or individual is ready to meet the traveling expenses dollar for dollar. There is no charge in such cases for salary or per diem.

The policy has proceeded successfully with the extension schools, in which the tuition fee of $1.50 each student meets practically one-half the traveling expenses of the teachers. Single lectures, lectures in series, cooperative experiments, and the like, are usually conducted on this basis.

This policy automatically relieves the College of those requests that do not represent the solid backing and serious thought of the community in question. It also stimulates those who actually contribute to make the necessary arrangements in proper form so that each contributor may receive at least the full value of his contribution.

Of course, when the society, community or individual cannot really afford to pay half the traveling expenses, we judge the situation on its own merits and often pay all of the expenses until such time as the community may get itself on a working basis. We always reserve the right to aid backward or disadvantaged localities.

Now and then there is a feeling that the community is entitled to this service without direct expense because the individuals feel that they have paid for it in their taxes. This feeling is not marked, however, and is easily met by pointing out the very small amount of extension service that could ever come to any given rural community merely on the basis of the taxes paid. The communities cannot expect any very special aid on the basis of taxation alone; taxation supports the institution and maintains the staff; the institution is here, for such use as the people desire to make of it in an extension way.

We have arrived at standardized methods of college teaching, in the sciences, professions and arts. We are
beginning to standardize our regular college instruction in agriculture, as experience accumulates.

We shall also arrive at standard methods of extension work. We appear to be now in an epoch of exploitation, and the putting over of enterprises. I am afraid of many of the variegated schemes. The safety in the situation lies in the fact that the farmer is more concerned in his plowing than in anybody's pet scheme.

Assuredly we need attention to government in rural communities, better economic opportunities, better social privileges, better institutions and organizations, and all that; but our problem is to let the educational processes work themselves out.

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THE FILIPINO FARMERS' PLEA FOR THE INDEPENDENCE OF THE PHILIPPINES

By Manuel A. Gonzalez, 14

Editor's Note.—This speech won the second prize of $25 at the Fourth Annual Eastman Stage in Public Speaking.

ON THE day of Dewey's memorable victory over the Spanish fleet in Manila Bay, the Philippine Islands fell into the guardianship of the United States. Since then, the question which has faced the people of this country has been "What shall we do with the Philippines?"

This question must not be left unanswered. The United States has had the Islands long enough to be able to decide it definitely. Are you going to follow the Spanish policy and keep saying "tomorrow, tomorrow," and leave the people making conjectures as to their future government? Ladies and Gentlemen, the demands of the people must be answered! Silence only creates uneasiness. Every year that slips by this silence makes conditions worse and confirms the Filipinos in the fear that independence will never be granted them. If independence is intended, why not say so at once?

It lies within your hands to solve this problem, and I shall attempt to show you that its solution depends upon giving the Filipinos their independence. To do this I shall divide the issue into two parts:

1. Should the United States permanently retain the Philippines?

2. Are the Filipinos now ready for independence?

The first part must be answered negatively, for the United States must not retain the Philippines. What would you profit by their retention? Americans and Filipinos would have constant misunderstandings. It is only a dream that leads one to believe that people differing so much could live together peacefully under the same roof. They could no more become united than the Philippine Islands could be connected by a strip of land to the United States. As the deep ocean separates these two countries, so do race, customs and temperaments separate the two peoples.

Nevertheless, let us suppose for a moment that these barriers did not exist. Still, the permanent retention of the Islands would not be possible except by a fundamental change in your constitution for your own government rests upon the principle of the consent of the governed. Like your forefathers, the Filipinos have shed their best blood for independence. For this cause they fought many years against Spain. Poorly armed, poorly clad and famished for two long years they heroically resisted the United
States, and peace was only accomplished under the general understanding that the United States being a free country would not deny freedom to the Islands. So the people laid down their arms but proposed to gain in peace what they had not won by war.

Fifteen years have elapsed since the tumult of war has been heard in the fields of the Philippines, but today, every Filipino heart thobs with no less love for independence than when with tears in his eyes but with a firm resolution he relinquished his beloved wife, children and parents to die for his country. If notwithstanding these conditions, the United States should retain the Philippines, then you will establish there a government against the will of the governed.

Moreover, you can not govern the Islands because you have enough problems of your own to solve. Your government is jeopardized by the trusts and these reach like the arms of an octopus even into the Philippines and mercilessly crush the Filipino farmers, the sustaining pillars of the country.

Your dealings with the Islands have served mostly to help swell the money bags of the trusts. In 1902, Congress, in spite of the vigorous protests of the Filipino farmers, established in the Philippines an export tax. It is true that when the United States took the Islands it was declared that the American constitution would not be enforced there, but certainly it was not mentioned that the government would promulgate laws which the constitution expressly prohibits! The export tax law is one of these, and yet it is enforced in the Philippines!

This was only the first step to a tremendous scheme whereby the Filipino farmer was to be made the victim of American Trusts. Later Congress passed another law with the supposed purpose of helping the Filipino farmer. The essence of this law was the abolition of the export tax from all of these products raised in the Philippines, exported and consumed in the United States. It sounded magnanimous, but in reality it was sugar-coated poison for the farmer.

Let us see how it worked out in a specific case, that of the hemp grower, Manila hemp being our principal export. If the farmer tries to export his hemp, although his bales are consigned to the United States of America, he has to pay the export tax as a deposit, till he proves by receipts that his hemp has reached the United States, and that the people of this country have consumed it. At a glance you will discover how ridiculous this is! A small exporter can not keep track of his goods till they are consumed. On the other hand, the principal exporter of hemp, the International Harvester Company, exports it to the United States, can prove that it is received and consumed in this country and, therefore, is able to reclaim its export tax. In eight years, the meagre treasury of the Philippines has had to return to the already repleted vaults of the trusts over four million dollars! More than one-fifth the amount paid by the United States for the whole of the Philippines! This special privilege given to the large American exporter makes competition by other foreigners impossible; thus the American trusts have the monopoly of the hemp of the Philippines and have been able to force down the prices to one-half what they were during the Spanish domination! They have the Filipino farmer by the throat and yet the government stands complacently indifferent!

The farmers might still be happy if it were not for further abuses. After having lowered the prices of their products so that they are practically compelled to plant something else in order to subsist, your trusts are stepping in and acquiring the land. Foreseeing this and trying to prevent it, the United States Congress passed a law limiting the amount of land that could be owned by a citizen or corporation, and only giving to foreigners, or non-citizens, the privilege of working the mines and cutting the timber, thus making it impossible for them to monopolize the land. What did the American Government in the Philippines do? They interpreted the law
so that they have been able to sell or contract to sell to large American corporations one hundred and fifty-five thousand acres of the "friar estates." Land which was bought from the religious orders with the sole purpose of selling it back to the people in small lots! The government is merely thrusting a new master upon the people!

Worst of all, has been the violation, by the government officials beginning with the governor and ending with the most insignificant government employee, of the well-known principle of law whereby a person occupying a trust relation can not deal in the property of which he is a trustee. One case is that of an official who made up his mind to acquire a large estate near Manila upon which there were over two thousand tenants, in such a form that their labor pays for it and at the end of twenty years he will find himself the absolute owner of the property without having disbursed a single cent.

Furthermore, your national honor is involved in this problem. The nations are watching with eager eyes your policy in the Philippines. Retain them, and the European nations will lose their faith in you. Your prestige with the South American Republics will fall to pieces. They will look upon the United States as an Ogre ready to pounce upon them at any time, and they will consider the Monroe Doctrine a fake to help you to accomplish your own selfish ends.

Since we see that it is wiser for the United States not to retain the Islands:
1. Because of the incompatibility of Americans and Filipinos;
2. Because their retention would be unconstitutional;
3. Because of the impossibility of governing them rightly; and
4. Because your national honor would be blistered should you retain them, therefore the only way remaining in dealing with them is to give them their independence.

The Filipinos are as fit for self-government as many European, Asiatic and American nations. Our literacy is forty-five per cent. as against fifteen per cent. in Brazil, twenty-seven per cent. in Portugal, forty-two per cent. in Cuba and forty-five per cent. in Argentine. In addition to the education, the Filipinos are not only united by a common religion, Christianity, and by blood, but their struggles against a common enemy has made of them a nation with one ideal, "independence." Moreover, the people have the ballot, elect their own mayors, provincial governors and many other important officials. The good use made by the people of the power to vote, together with the prudence and judgment displayed by the officials elected by them, prove conclusively that the time has arrived when the reins of the government should be turned entirely into their own hands. Then the United States will have accomplished a great deed and made eight million people happy!

The Philippines will be able to maintain their independence by remaining neutral. They are situated in the heart of the Orient in the same way that Switzerland is situated in the heart of Europe, and for the same reasons that Switzerland has been neutral, the Philippines could be made a neutral nation, thus obviating entirely the danger of a foreign invasion.

In the Islands, the wall that fills the air is "When will Congress settle the uncertainty in which we live?" This question will soon have to be answered, and its answer depends upon you, the people. Do not be indifferent. I entreat you not to forget the gallant Filipinos, who like your heroic forefathers, sacrificed their lives to free their country; the pining Filipino farmers who extend their arms to you that you may liberate them from the relentless clutch of the trusts. Let not ambition and greed harden your hearts. Remember the noble words of the late President McKinley: "The Philippines for the Filipinos," and as you are free and independent, so let the Filipinos be and thus make the United States the Protecting Angel of every weak nation; and the stars and stripes the Symbol of Liberty loved by all the world!
LESSONS THE EASTERN FRUIT GROWERS CAN LEARN FROM THE WESTERN ORCHARDIST

By C. C. Vincent
Associate Professor of Horticulture, University of Idaho

A FARM paper that came to my desk recently had this inscription as a motto: “Better Farming, Better Business, Better Living.” That is a good guide to follow, for we find that experiment station men, government experts and practical farmers are continually experimenting and planning how to “make two blades of grass grow where one grew before.” If we wish to improve our methods of farming, we must from necessity experiment for ourselves or learn from the experience of others. Many of the most difficult problems that confront the eastern fruit grower today might be worked out by a study of the experiences of the orchardists in the Pacific Northwest, for never in the history of the country has so much interest, so much intelligent thought been given to land, to the soil, to the possibilities that may be realized in its improvement as at the present. Hardly half a century has elapsed since the pioneers laid the foundation of the Empire of the West, and yet progress is noted on every hand.

A few years ago the fruit industry was just in its infancy. From a small acreage at that time, the industry has reached such a magnitude that today in the state of Idaho alone over 142,000 acres are planted to orchards. This phenomenal growth, however, during the past few years, has not alone been due to improved business methods of packing and marketing. Nor has it been due to the cool nights, the warm days, and the amount and intensity of the sunshine. Other factors have been instrumental in prompting this rapid advancement. Success has largely rewarded the growers because (1) they have exercised care in selecting varieties best adapted to their localities; (2) they have paid particular attention to the types of soil best adapted to certain varieties; (3) they used judgment when selecting the proper location as regards site, slope, irrigation, transportation, etc., and (4) they were careful in planting. In reality the successful orchardist exercises care from the start. When it comes to planting a commercial orchard, the prospective grower should “make haste slowly,” for the fruit industry is becoming more and more a specialized business and as such requires specific treatment. Mistakes made in fruit-growing are generally irreparable. A discussion then of the common methods and practices followed by the successful orchardists of the Pacific Northwest will no doubt be of practical value to the eastern fruit grower.

THE LOCATION

All of our successful growers have agreed that a proper selection of a site is quite essential to successful orcharding. Faulty selections have been made from time to time by the speculator, and the result has been failure. Site has reference to the exact location; hence, when choice is permitted, the orchard should be on a more elevated spot than the surrounding country. A selection of this kind insures good air drainage, as well as good soil drainage. From experience the orchardists have found a northern or eastern slope to be more suitable for the apple orchard. These slopes are preferable for the following reasons: (1) the soils do not become warm until late in the spring and this retards the blooming period; (2) a better protection from the prevailing winds can be had; (3) the soils are usually deeper and richer. Generally speaking, the dark loamy soils with deep and porous subsoils, are best adapted to the growing of the apple. As the character of the soil influences, to a certain extent, the character and quantity of the product, the grower should keep in
mind this fact when locating the fruit plantation. He should select a soil suitable to the variety or varieties he wishes to grow. Then again, orchards located on slopes within close proximity to large bodies of water or rivers, are less liable to injury from radical climatic changes than more distant slopes. Lakes, large rivers, etc., exercise an ameliorating influence by retarding the development of vegetation in the spring and extending the season in the fall. With such a location immunity from late spring frosts is practically insured.

Selection of Varieties

One of the first problems confronting the prospective grower is the selection of the proper varieties for commercial planting. Several factors, such as soil, climate, etc., must be taken into consideration when making the choice. A variety that does well in one section probably will not do equally well in another. The grower should select the variety or varieties that flourish in his locality and confine his attentions to them. Nothing is gained by lamenting over the fact that a certain variety cannot be grown that is bringing such handsome returns in another section. The apples that find the readiest sales in the markets are those that are fairly large and highly colored. The American people prefer a highly colored apple. Many of the yellow sorts are selling remarkably well. This is especially so in the English markets. The grower should endeavor to supply the market with the best varieties he can grow under his conditions and success will crown his efforts.

Selection of Trees

In starting the commercial orchard, the proper selection of trees is an important factor. The grower should insist upon having nothing but first-class trees, no matter if the initial cost is a little greater than those of a lower grade. It is very seldom economy to buy cheap, low-grade trees. The best is none too good. The following points constitute a first-class tree:

1. A well grown, medium sized specimen.
2. A tree having characteristics of the variety.
3. A tree that is healthy and free from injurious diseases and insects.

If the grower is not familiar with the characteristics of the variety he wishes to purchase, it will be well to deal thru a reliable, well-established firm in his locality. It is generally safe to rely upon the nurseryman’s judgment, in sending first-class material, for his business reputation rests upon the service rendered. The age of the tree to plant is another very important factor in successful orcharding here in the Pacific Northwest. Experience has proved that the one-year old tree is best adapted to our conditions.
Successful growers prefer the one-year-old trees for the following reasons:

1. Young trees make a more vigorous growth than older ones.
2. In removing from the nursery less of the root system is destroyed.
3. With the root and stem system intact, the transplanted tree does not receive such a severe shock.
4. The head can be formed at any height to suit the convenience of the grower.
5. A better yield is obtained.

Preparation and Planting

The ground should be put in the best possible tilth before it receives the trees. Many of the growers prefer to prepare their ground in the fall. The reasons for fall plowing are: (1) the ground catches and holds the snow and rain of winter; (2) the soil is exposed to the ameliorating effects of frosts, and (3) the sub-soil becomes more firmly settled. When plowed in the fall the ground is in much better shape for the spring planting. While both fall and spring planting are practised, the spring planting, however, seems to have the preference, as in many sections the falls and winters are rather dry. Such conditions are usually detrimental to fall-set trees. By heeling-in the trees in the fall, the roots become thoroughly calloused and on transplanting in the spring respond with an excellent growth. The square system of planting is followed more generally, as it constitutes the simplest method of arrangement, and is very satisfactory from the point of convenience of cultivation and general appearance. The usual distance of planting is thirty feet. This gives the tree ample room for their fullest development. The treatment at the time of planting has a marked influence upon the future welfare of the tree. The roots should be very carefully pruned by removing all bruised, mutilated pieces and interlacing roots. A treatment of this kind insures a more perfect development of the tree. In order to establish an equilibrium between tops and roots, a portion of the top should be removed. Since low-headed trees are preferred, the necessary pruning of one-year-old trees is sufficient to reduce the top. Large, convenient holes, large enough to accommodate all the roots and deep enough so that the tree can be set about three inches deeper than it was in the nursery, should be dug. Shallow planting should not be tolerated. By planting fairly deep, a better root system is developed and the tree becomes more firmly set in the ground. Many trees, however, are lost annually by too deep planting. When removing the dirt from the hole, the usual practice is to place the surface soil by itself in a pile. This soil is reserved and placed around the roots of the tree, as it is rich in plant foods. The soil in the bottom of the hole should be finely pulverized. By means of a tree locator, the tree can be placed in its exact position in the hole. The roots should
now be spread out in all directions and the surface soil placed firmly around them. By moving the tree slightly up and down, the soil may be worked under the roots. When the hole is about half full, the soil should be tramped down firmly. After filling, a few shovelfuls of soil are thrown around each tree to prevent excessive evaporation and the operation is complete.

Training the Young Trees

As soon after planting as possible, the tops should be removed. This operation encourages wood growth, and the grower should endeavor to maintain a good thrifty wood growth throughout the season, as the first year is the most vital period in the development of the orchard. The top should be removed to within thirty inches of the ground. If the first branch is allowed to come out fifteen inches from the ground, this allows fifteen inches for the distribution of the other branches, and thus no bad crotches are formed. From three to five scaffold limbs are all that are needed to form a well-developed tree. In windy sections, an extra limb is allowed to develop on the windward side to serve as a weight. During the summer all of the upper limbs are allowed to develop. If some of the top ones are making a too rapid growth, they are pinched back, so that all will have an equal show for development. A few of the buds at the base of the tree are allowed to develop slowly so that the leaves will protect the trunk the first summer from sun-scald. Most growers in the Pacific Northwest are striving to produce a strong, stocky, symmetrical open-topped tree during the first three or four years. Hence, the pruning should be carefully and systematically done during this period. At the close of the first year, or during the second year, the grower should go thru his orchard and select his scaffold limbs, removing all others. The remaining limbs are then shortened back from one-third to one-half. This makes them grow strong and stocky. During the second year, laterals will begin to develop. The training the third year will consist in shortening back these laterals, removing all crossing and broken limbs, and cutting off from one-third to one-half of the current year's growth. From two to three side laterals on each main branch are allowed to develop, and all others removed. The future prunings should be of such a nature that by removing all crossing and broken limbs, the top will still retain its symmetrical form, thus permitting full circulation of air and sunlight.

The key-note of success with the fruit grower in the Pacific Northwest is thoroughness as to details, and there is no reason why the eastern grower cannot gain as much prominence if he will enter the business with the determination to succeed.
MASTERY IN BUSINESS
Delivered at the New York State College of Agriculture, March 20, 1913
By M. G. Kains
Associate Editor of the American Agriculturist

ONE of the chief secrets of happiness is to look upon all work as an opportunity to develop character. From this point of view no labor, however distasteful, can be a task. It must be done, of course; but to make light of it is easy when you reflect that it will help to develop your genuine worth. To dread it will not only make it a task—drudgery—but will undermine your character as surely as a stream erodes its channel. Perhaps you cannot always choose for yourself how you will learn but it is within your power to improve your opportunities and to come out more than conqueror in every experience.

Boys, accept responsibility, for in that direction lies mastery. If you do not take away any other thought than this from my talk today, take this one: Accept responsibility.

When at home on the farm one of my friends began accepting responsibilities all the time training himself to do each task a little better than the previous one. He worked his way through an agricultural college and was given a position as farm foreman. Here his practical knowledge, acquired mainly by self training made him conspicuously successful and he was soon invited to go to another institution at a better salary and with wider responsibility. Success again came his way. He made his department the leading one of the college. Another college wanted him and he went with a similar result. He next became director of an experiment station and finally editor of one of the leading farm papers of the world. Always his advances brought with them greater and greater responsibility and broader culture. Indeed, he is one of the broadest-minded men of the agricultural world.

Some fellows are like the young man who said that all he wanted was a start, but of whom the American Lumberman said that what he needed was a self-starter. Boys, "Start something—back of the bread of the nation is the porous little yeast cake." If you have the "yeast" you will do it all right; for men who accomplish things neither need a "pull" nor a boost. They wait for no one but get busy themselves.

In some establishments, employees are encouraged by prizes to offer suggestions for the good of the business, but such opportunities exist in every business. Make the most of them, prize or no prize. If you do, you will never have time to be envying the opportunities that another fellow embraces. Improving what comes your way will keep you busy and happy. If you never see an opportunity going begging, but notice it only after some other fellow has improved it, you will thus place yourself upon the undesirable list and will sooner or later be entitled to an indefinite leave of absence.

Don't think that a man is big because he gets a large salary. On the contrary he gets a large salary because he is big; and he grows big in small positions. The surest way to merit promotion is to make yourself conspicuously effective in a lowly position. Remember, it is invariably more difficult to find men of ability to fill positions than to find positions for men of ability. The world is constantly groping for men to shoulder its burdens. If for no other reason than selfishness, it would seize every likely man and give him a chance to prove his worth.

Never be dazzled or dismayed by genius. Great geniuses overshadow us by their greatness. We are apt to be unnerved by the splendor of their achievements, to become discouraged by the thought of our own littleness in comparison, to hesitate and to halt in doing our own work or attempting to
do the work nearest at hand that is ours to do. This is fatal to our success. We wrong no one so much as we wrong ourselves, for by such action we borrow from our own futures and fling our talents to the winds.

- Not one of the great geniuses of the world ever thought of himself as a genius. He did what he saw was his work in the best way he knew and when one task was done he leaped to the next with the same energy that characterized his earlier attempts. This is the way that everyone may achieve—shall I say fame? No, satisfaction; for unless a man takes joy in his work he cannot experience the mental approval that is above and beyond any and all acknowledgment from the outside world. Before he can become great in the eyes of the world, every man must become great to himself, not through hallucination, but because of his actual achievements. To seek greatness on any other basis is to blast all hopes of it.

Longfellow is right when he says, "The talent of success is nothing more than doing what you can do well; and doing well whatever you do—without a thought of fame." The man who itches for fame will never be satisfied with what he wins or what he has. He will forever be wanting to scratch something just beyond his reach.

There is more honor in triumphant mediocrity than in any achievement of genius; for the man of small ability has thus made the most of himself, whereas the genius has merely omitted what was natural and easy for him.

This leads me to say that the basis of mastery in business, as in everything else, lies in correct thinking coupled with hard work. You cannot justly estimate your ability or your capacity, nor can you tell whether you are capable of only small things or of great achievements, until you have made actual tests; but every one of you can learn to think correctly and to demonstrate your thinking in deeds. It is not your affair whether you are a genius or not, but it is your business to think correctly and to do your work well. If you have great talents, industry will improve them; if you have but moderate ability, industry will supply the deficiency. Indeed, the more limited your powers, the greater the need for effort; and the smaller the result of your efforts, the greater the need for increased effort.

"A little more persistence, courage, vim! Success will dawn o'er fortune's cloudy rim. Then take this honey for the bitterest cup; There is no failure save in giving up, No real fall as long as one still tries, For seeming setbacks make the strong man wise.

There's no defeat, in truth, save from within; Unless you're beaten there, you're bound to win."

This matter of persistence is one that stirs me very deeply because I know that through apparently no fault of your own some of you may possibly not be able at the start to secure the kind of work you would like, or that later you may possibly be thrown out of work, may perhaps have to walk the streets, may even be forced to depend for a time upon the kindness of others for the necessities of life. Never give up. Always be ready to break out in a fresh place. Lack of funds and lack of work are sometimes an inestimably valuable asset. They develop the best qualities of manhood. They dig the priceless treasure of resourcefulness. But this great blessing of lack is seldom seen as such until after it has done its work.

From this don't suppose that I advocate poverty. Not at all! I wish only to declare that money is too often a handicap. It makes a man indolent, intolerant, insolent, unsympathetic. On the other hand, too great a lack is apt to lead to miserliness. Would you have money? Then forget it in your work. There is no true success where money is the object. To aim at it is usually to miss it; but to give an equivalent in service, in goods, in anything is to gain a double satisfaction; first, and most important in the joy of having done good work, and second, in having received value for value given. Whoever devotes thought, time and energy to good work
is entitled to his just compensation and he alone can enjoy the fruits of his labor in the truest sense. He alone can know how to expend his surplus to best advantage, not upon himself but in the service of others. The sooner a man discovers and applies this knowledge, the happier for him and the better for the human race.

The greatest fortune each of you can possess is to know that there is something in you of use to yourself and to other people. When you know this you will begin to express yourself; that is, to press yourself out; in other words to press the power in yourself out into the open for others to see and to utilize. Some of you will learn this fact intuitively. Others must have hard experience, in order to bring it to fruition. In the midst of your trials, remember Josh Billings' wholesome thought, "As in a game of cards, so in the game of life, we must play what is dealt us and, and the glory consists, not so much in winning as in playing a poor hand well."

Many, many of the world's greatest men have had to go through this kind of experience and it is no dishonor; rather is it a credit, a great credit to them because it has revealed the true metal of their genuine manhood. So if you are forced to follow in their footsteps, remember that the world will take your measure and judge you by yourself, by your own standard. It is not interested in your ancestry, but in you. No matter how humble or how exalted your father's station in life, no matter whether your mother may have achieved fame or been an obscure drudge, no matter if you have no tangible property except the clothes you stand in, you can gain your own footing and take your own place in the world upon the basis of what you are.

And what you are depends wholly upon the way you think. Never give way to a discouraging thought, a pessimistic attitude, a hopeless outlook upon your prospects in life. "Self pity, harsh judgment of others, envy, jealousy, doubt, mental indolence, weak longings for more than you have won by strong endeavor, all these things prevent more men from becoming successful than all the unjust conditions which exist in our industrial system. Waste of thought is the most common waste which exists, and there is no extravagance so far-reaching and so vast in its devastations." These thoughts are all negative; they are destructive. Banish them. What you need at all times is the attitude of correct, positive thinking.

One of the fundamentals of correct thinking is to become thoroughly imbued with the conviction that you have your own work in the world and that no one can do it for you. This is an inspiring thought. It will make you feel as you really are, unique. It is progressive, hopeful, positive, stimulating. No matter what your work at the present moment, do it with this thought and you must grow in strength of character, in capacity, and you will surely be rewarded according to your deserving. If you have prepared yourself thoroughly along some line that really interests you and can be made of service to your fellow men, you will find your next higher place open and ready for you as soon as your preparation is complete. You can thus prove that all things work together for good to you because you love your work.

Boys, mark my words: Let a man but dedicate his thoughts and his deeds to the service of others and his day must come. He can no more escape his reward than the sun can fail to arise. True, he may meet discouragement, disappointment, delay, betrayal; but let him maintain his steadfast purpose and his genuineness shall triumph and he shall reap where he has not been conscious of having sown, and he shall have honor—even in his own country. You must each of you have faith, more faith in yourself. You must realize that the whole matter of success lies in yourself. You can succeed in spite of everything and everybody if you come fully into the consciousness of your personal responsibility and your unlimited powers.
The Cornell Countryman

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May, 1913

“The New Board

"Today is not yesterday: we ourselves change; how can our works and thoughts, if they are always to be the fittest, continue always the same? Change, indeed, is painful; yet ever needful.”

—Carlyle.

Again the time has come for the old Countryman board to retire and leave to the new board the active direction of Countryman for another year and while we regret that we must sever intimate connection with the publication with so many plans undeveloped, and after so many opportunities lost, yet we are pleased to leave the responsibility of the Countryman with a board so able and deserving. They will have their perplexities and their triumphs, their difficulties and their achievements, their work and their pleasure.

We feel that the Countryman at the close of its tenth year is as is the College of Agriculture, in the formative period of development. With the increase in the size of the College, and the attendant difficulty in getting the students together it is bound to become more and more useful in reflecting the ideas and sentiments of the student body. With the increasing number of alumni it will become more and more a potent bond between former student and alma mater.


We wish at this time to express our sincere thanks to the following men for work done during the past year: A. B. Dann, ’15, E. F. Johnson, ’16, and H. M. Kowalsky, ’16.

At this time, the 1912–1913 board wishes to express its gratitude to those who have made the Countryman possible. We thank especially our contributors, advertisers, and subscribers, as well as those who have offered us suggestions and well-meant criticism.

May the Cornell Countryman prosper and continue to fearlessly serve the student body of the New York State College of Agriculture.

The Agricultural Association

A new era in the affairs of the Agricultural Association was begun Friday evening, April 18th when the first meeting of the new Executive Committee was held. This executive
committee which is a representative committee of the whole student body will hereafter carry on all routine business and thus save much time and unnecessary discussion.

The nature of the Association meetings will also be changed. Prominent men in the agricultural and educational world will be brought here and instead of the old business sessions interesting only to a few, an interesting program will be given.

The Association is taking up several important problems for the betterment of the college. The officers have the welfare of the Association at heart and are trying to make it a live factor in the college. But the best results cannot be accomplished without the cooperation and hearty support of every student. Let's everyone lend a hand.

The Honor System

As far as honor systems are concerned, student bodies may be divided into three classes: (1) those who need none; (2) those with whom it will work if applied correctly; (3) those with whom the honor system does not work. Unsympathetic outsiders have recently placed the students of the College of Agriculture in the third class.

We believe that the honor system will succeed in the College of Agriculture if correctly applied. The reason for its present inefficiency is the laxness with which the student looks upon the man who "cribs." Let us stop and think just what the man who "cribs" is doing. He is doing things in secret which he dares not do in the open. He impairs his intellectual powers by doing the task at hand not even half well. But worse than this he tends to pull the standard of scholarship in the College of Agriculture down to his own chosen standard and thus decreases the value of a Cornell degree.

The remedy lies with every student in the college. It is not right that we should look upon such a man as one who is playing a joke on the faculty. Do not delegate your responsibility to honor system committees. They can accomplish little without your active support. Let us built up a public sentiment which will not tolerate such a dangerous individual.

The Student Loan Fund

There is a movement on foot in the College of Agriculture to raise a student loan fund.

The time of the year is unfortunate since there are so many expenses piling up to compete with its collection. But the movement is deserving of more consideration than any which has occurred at the college in recent years. It is, an unselfish effort, to do something for somebody else.

Ultimately the fund will reach $10,000.00 and will supply a great need. And the College of Agriculture needs the kind of men this fund will encourage, men who will undergo sacrifices to get an education. This fund is in thorough accord with the principles underlying the founding of Cornell University.

We extend our sympathy to Professor Savage in the death of his wife.
CAMPUS NOTES

The April Assembly, held April 17, was one of the most enjoyable of the year. Following the "Alma Mater" the Glee Club rendered a song. In continuance of the practice of singing Old Folk Songs, introduced at the last Assembly, the audience sang "Dixie Land" and "Old Folks at Home." Next they had the pleasure of hearing some well-played selections by the Mandolin Club.

In the first part of his speech, Dean Bailey told of some of the activities to be carried on next summer. The mains from the new heating plant are to be laid across the quadrangle north of the Main Building, and then the ground will be levelled and seeded. After removing the old Poultry buildings, work on the new Agronomy building will be started. This building will be situated just east of the Home Economics building. Eventually, but not in the near future, a new front will be put on the north side of the Main Building, facing the quadrangle.

Another point of interest is that a real auditorium will be built in the woods replacing the old one, thus furnishing an ideal place for summer lectures.

The Dean changing his subject, now turned his attention to the satisfactions to be gained by a farmer. He has the opportunity of working hard and reaping the rewards of good work; a good appetite results and he can really enjoy his meals. He also has the satisfaction of getting very tired physically and sleeping soundly, he can love and own all kinds of animals, horses especially; he can have a near creative power, that is, of making fields very productive; he can run machinery and do many other things, himself. The farmer has the further advantage of having only a few books which he may read well, and not possessing a great many half-read volumes. Lastly he has the great opportunity of knowing some folks well. He should cultivate neighborliness and be a good neighbor himself.

After the evening song the usual social hour was enjoyed.

A vegetable gardening train was run over the New York Central Lines, March 31 to April 5th. Although farm trains have been run by different railroads in various states, this is the first train ever sent out for the marketing interests alone. It consisted of two cars, one consisting of an exhibit of vegetables, greenhouse material and models, seeds, model hotbed, potted plants, implements, cultivators, seed drills, charts, photographs, publications, etc. The train was in charge of F. S. Welch, agricultural representative of the railroads and Professor A. C. Beal of the Department of Horticulture. Stops were made at Newburg, Kingston, Catskill, Coxsackie, Albany, Schenectady and Troy. The stops were usually for one day. Lectures were given on greenhouse construction, planting home grounds and school gardens, by Professor Beal; on growing early plants, on planting and
transplanting vegetables, planning gardens and home gardens by A. E. Wilkinson; on intensive vegetable growing, irrigation, harvesting, marketing and packing, market gardening and grower's organization by Paul Work. There was a large attendance and great interest was manifested in the exhibits and in the discussions.

The Cafeteria in the Home Economics Building opened Thursday, April 10, prepared to serve four hundred dinners at one time. It is the only eating place run by the University and one of the only two places where meals may be obtained on the Campus.

The big dining room is 75 feet long and 55 wide, airy and well-lighted and decorated after the manner of banquet halls. The serving counter extends the whole width of the room.

Everything of the best has been the principle, guiding the Home Economics Department in fitting out the place, and the best will be provided at all times. A staff of expert chefs have charge of the food. All of the latest appliances are used in the kitchen—mechanical cake mixer, carbonic anhydride process of ice-making, portable oven, electrical dough-divider, and proofing oven.

This spring the College is beginning to plant trees and shrubbery wherever such planting can be permanent. A row of tulip trees is to be planted along the Tower road from the Veterinary College to the Poultry Plant and perhaps further. Plantings are to be made around the head houses and main buildings which will be permanent. It is also hoped that the main drives entering upon the college grounds will be developed into better and more attractive highways in the near future.

It is the idea to begin a real botanical garden collection which, having such a large area to cover, will contain many kinds of trees, shrubs and herbaceous plants which will be hardy here.

Already we have a rather large nursery on the Bool Farm and much material which is ready for the student to plant.

The planting end will be one of the real developments in the next year or two.

The Junior class of the College of Agriculture held their last meeting in the Home Economics building on Friday, March 21. A program of talks, stunts, instrumental and quartet numbers was given and the entertainment was a great success. The stuntsters were: R. T. Kiddle, '13; M. J. Barrios, '14; B. W. Hendrickson, '14; and E. G. Fleming, '15. Professor A. R. Mann, '04, was the speaker of the evening.

The sophomores in the College met on Tuesday evening, March 18, in the Home Economics building and had a regular get-together party. A talk by Dr. Gilbert, stunts, musical numbers and dancing all helped to make the evening an enjoyable one.

The second annual meeting of the New York State Forestry Association will be held in Ithaca in the winter of 1914 to take part in the dedication of the new Forestry Building.

Professor Wing has entirely rewritten his book "Milk and Its Products." In its old form the book went through thirteen editions. The new work is reset throughout and contains 125 extra pages with new illustrations.

In the Rural Textbook Series, edited by Dean Bailey, are announced "Farm Management," by Professor G. F. Warren; "Corn Crops," by Professor E. G. Montgomery, and "Animal Husbandry," by Assistant Professor Merritt W. Harper.

Mr. Henry Hicks '92 has presented the collage with a carload of trees and shrubs.
FORMER STUDENTS

WM. PITKIN
Rochester, N. Y.

'07 Sp.—William Pitkin, Jr., was born in Rochester June 3, 1884. After completing work in the public schools at 14, he spent two years in Bradstreet’s Preparatory School for Boys at Rochester. Mr. Pitkin then spent a year in the Rochester Business Institute and a year with his father’s business house—Chase Brothers, nurserymen of Rochester. With this excellent preparation Mr. Pitkin came to Cornell and took two years of work in Landscape Architecture followed by a year with Townsend and Fleming, Landscape Architects of Buffalo. For three years after this he was partner in the firm of Pitkin and Weinrichter doing landscape work at Rochester. Mr. Weinrichter withdrew from the firm after this time and the business is now carried on by Mr. Pitkin alone with success and very favorable prospects for future business.

'91, Sp.—William J. Kerr has been appointed president of Oregon State Agricultural College at Corvallis, Oregon. He was formerly president of Brigham Young College at Salt Lake City, Utah, and of the Utah Agricultural College.

'01 M.S.A.—William Macdonald is the editor of the Agricultural Journal of the Union of South Africa. He recommends strongly the College of Agriculture as a model for the proposed national college of agriculture for South Africa.

'02, M.S.—C. K. McClelland writes that he celebrated Founders’ Day in Honolulu with C. J. Hunn, '08, and J. E. Higgens, '98. All of these three former students are now connected with the College of Hawaii at Honolulu.

'05, B.S.A.;—'06, M.S.—J. M. Swain is now assistant Entomologist of the Department of Agriculture of the Dominion of Canada, dealing with forest insects particularly. After an extended trip thru British Columbia and Northern Canada in study of these insects, Mr. Swain will return to Cornell to complete his residence for the degree of Ph.D.

'06, W.D.—Ellis M. Santee has been chosen Director of Agriculture at the Good Will Home Association—a school for boys at Hinckley, Maine. He recently visited the college.

'08, B.S.A.—Andrew W. McKay, who is doing field investigational work in Pomology for the U. S. Department of Agriculture was in town on April 3d.

'10, B.S.A.—Louis F. Boyle is consulting agriculturist of the Inter-Mountain Industrial Association. His office in the Vermont Building, Salt Lake City, Utah.

'10, Sp.—R. V. Callan is assistant manager of the St. Croix Farms at Johnsonville, N. Y.

'10 B.S.—H. N. Kutschbach is now managing an 800 acre farm at Sherburne, N. Y.

'10 B.S.—J. H. Rutherford is now in the employ of the Paine Investment Company of Geneva, N. Y. His company is buying up many tracts of fine farm land throughout western New York and advertising them for sale particu-
larly in the West. Mr. Rutherford is manager in charge of operations and improvements on the company's holding.

'10, B.S.—G. B. Scoville is in charge of the Chemung County Farm Bureau with offices at Elmira, N. Y. He recently gave a very interesting address before the Farm Management Seminar. Mr. Scoville described in detail the methods of carrying out the work of the county farm expert as he has conducted them in his district.

'11, Sp.—S. R. Heffron who has been testing milk for Prof. Wing during the past winter, visited Ithaca on April 3. On April 15 Mr. Heffron will begin work at New London, Ohio, as agent of the United States Department of Agriculture in forage crop investigations. He will be associated with a former student, Morgan W. Evans.

'11, B.S.—W. P. Strong is manager of the large "King's Mill Farm" at Grove, Virginia.

'12, B.S.—H. B. Knapp was married on April 3 to Miss Gertrude Newkirk of Port Byron, N. Y. Mr. Knapp is an instructor in the Department of Pomology and is working for a Master's Degree.

'12, Ph.D.—J. Turlington is now principal of the Agricultural High School of Varreboro, N. Carolina. This is the first agricultural high school in the state.

'13, B.S.—Mr. B. C. Georgia is now instructor in charge of vegetable work at the Massachusetts Agricultural College at Amherst, Mass.

'13—R. W. Jones is in the Farm Management Department at Washington, D. C.

Ex '13—Mr. T. J. McElroy has accepted a position as agricultural expert with the Louisville and Nashville R. R.

BOOK REVIEWS


This book outlines the differences between the urban and the rural civilization, the problems of the rural civilization such as labor, middlemen, fairs, reclamation, the woman's contribution to country life and conservation. It cannot fail to fascinate anyone who is interested in rural progress.

The Young Farmer and What He Should Know. By T. F. Hunt. Published by The Orange Judd Co. Price $1.50.

A book worth reading and containing some every-day facts that every farmer should know. It is written especially for the young man who intends to take up farming giving both practical and theoretical points of view.

Sheep-Farming in North America. By the late John A. Craig, Professor of Animal Husbandry at the University of Wisconsin. Published by the Macmillan Company, New York City. 300 pages; price $1.50 net.

A timely book dealing with modern developments in the sheep-raising industry. Unlike most former books which have considered this subject mainly from the view-point of wool production, this volume emphasizes the raising of sheep for mutton.
GENERAL AGRICULTURAL NEWS

Commissioner Calvin J. Huson is planning to make more effective than ever before, the work of the Bureau of Agricultural Labor in his department. Through the agency of the department some 5,000 people were sent out to work upon farms in the state last year. Commissioner Huson expects that the demand for farm labor for the year 1913 will exceed that of last year and therefore all persons in need of help are advised to file their applications as early as possible. Commissioner Huson may be addressed by those desiring farm help either at Albany, N. Y., or at the branch office which the department maintains at 627 White Building, Buffalo, N. Y. Full information and application blanks explaining how to secure the assistance of the labor bureaus of the department will be promptly furnished.

APPLE GROWING CONTESTS

The Ohio State Board of Agriculture is arranging for Boys' Apple Growing Contests. The prize to the winner will be a free trip to Washington. An effort will be made to get sufficient funds to send one boy from each county. It requires only ten trees and is limited to farm orchards. The trip will be made on the Buckeye Corn Boy's Special trains.

FEDERAL REGULATION OF MARKETS

The following is an excerpt from the address of Hon. E. W. Kirkpatrick at the First National Conference on Marketing and Farm Credits at Chicago, April 8. The producers part of the consumer's dollar has been too small. The main reason of failure of individual or concerted plans of organization to regulate prices is inefficient supervision, the absence of power or authority to enforce rules or regulations. A federal bureau of markets, with local supervision, regulation and control of grading, packing and valuing according to established standards of supply and demand, is an inevitable necessity.

Agricultural Press Receives a Boost

The Bureau of Plant Industry has published the results of a national survey to discover the relative value of various helpful farm agencies. Of 3,698 farmers visited, 6.3% placed the agricultural bulletins first, 3.6% placed the farmers institute first, 40.3% favored the farm papers, 4.5% regarded all agencies as equally valuable, 43.7% stated that none was helpful. Many of the farmers claimed that the papers contain all the essential information contained in bulletins or heard at the institutes. The conclusions are that agricultural research institutions of the country should make systematic use of the agricultural press as one of the most efficient means of reaching the farmer.

Eight students recently graduated from the Practical School of Agriculture at the University of Idaho. This is the first class to receive this honor as the school is but three years old.

Most of the boys went back to the farm by preference. Dr. Carlyle had difficulty in persuading a member of the class to take a position at seventy-five dollars a month with board. Graduates of this school are in great demand. The people of Idaho evidently realize the value of practical experience.

Agricultural Experts

The Connecticut State Agricultural Society is being commended for its policy of securing expert advice for Connecticut farmers. Mr. H. O. Daniels a very successful farmer and dairyman, has been engaged by the year and there will be no charge for his services. He will not volunteer advice but when asked for advice he will give it out of years of sound experience. There is no attempt to dictate to the farmers but an effort to give them farm advice which will rank with the advice of a good lawyer in a legal difficulty.
Handy Farm Helps

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- Announcement of the College of Arts and Sciences
- Courses of Instruction in the College of Arts and Sciences
- Announcement of Sibley College of Mechanical Engineering and the Mechanical Arts
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- Announcement of the Winter-Courses in the College of Agriculture
- Announcement of the New York State Veterinary College
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- The President’s Annual Report
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We are open all the time, and can take care of your orders in the summer as well as now. When you get home you may need one of those Poultry Killing Knives. We shall always be glad to hear from you.

CORNELL CO-OP

Morrill Hall, Ithaca, N. Y.
Contents, June, 1913

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Canada, $1.15  Foreign, $1.30
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SURVEY OF THE AGRICULTURAL JUNIOR CLASS 1912-1913

SURVEY figures were obtained from as many of the class as possible, and the results secured cover 134 members.

Of these 106 came from New York State, six from Pennsylvania, five from Ohio, three each from Massachusetts and New Jersey, and one each from Washington, Maine, Missouri Texas, South Carolina, Maryland, Colorado, Louisiana, Michigan, and one from Nova Scotia, and one from China.

Those from New York State arranged as to counties give New York City and Brooklyn the lead with 13, Tompkins Co., 10, Monroe 8, Erie 7, Orange and Otsego each 4, Delaware, Orleans, Cattaraugus, Steuben, Chemung, Westchester, Washington, Montgomery, St. Lawrence and Tioga each 3, Chautauqua, Seneca, Niagara, Oswego, Herkimer, Cortland, Rensselaer and Jefferson each 2, and 14 other counties each 1 representative.

The ranks from Tompkins Co. are probably well filled because of its nearness to the College of Agriculture. But the representation from the other counties appears to bear a direct relation to the agricultural prosperity of the county, placing Monroe and Erie counties well at the head.

One hundred and twenty-nine responded to the question, "Was the fact of free tuition a factor in influencing you to take agriculture rather than some other course in the University?" Of these, 17 said that it was perhaps of some influence, but 112 said that "free tuition" did not enter into their choice of a course.

The above figures would seem to contradict the opinion that is so frequently expressed that "free tuition is swelling the ranks of the agricultural college with a great host of students who are taking agriculture merely to take advantage of free tuition in getting a college education, with the intention of pursuing some other line of work." However, we do not feel that the granting of free tuition is a waste of state funds, for although it is seldom a factor in persuading a student to pursue agriculture in preference to some other course, we believe that many of those who are taking agriculture because it is the course they wish to pursue would be unable to take this course or any other college course if they were obliged to pay a high tuition in addition to their other expenses.

Of 129 students, 89 entered the University direct from preparatory school. Of those who did not enter directly, 18 spent an interval of one year, 11 an interval of two years, and 11 an interval of more than two years. During the interval 10 were engaged in business, 10 in teaching, 15 in farming, two at day labor, one in forestry work, one an agent, and one in housekeeping.

As to farm experience—of 134 students 29 have had no experience, 20 have had less than one year's experience, 40 have had from one to five years' experience, 17 have had from six to ten years' experience, 38 have had from 11 to 20 or more years' experience and 29 have always lived on a farm.
Of 134 students, it was found that 25 cannot trace themselves back to any agricultural ancestry. So far as they know, neither their father nor mother, nor any of their four grandparents were farmers or farm reared. This seems to clearly indicate the place that agriculture takes at the present day when compared with other professions. It is no longer considered on a lower level than other professions. The statistics of the 134 people surveyed, it was found that in the preceding generation, when agriculture was perhaps at about its lowest level, there was not a single instance where a man had taken up agricultural work who had not been brought up in actual farm work, whereas there were several who had been reared on farms but had followed other pursuits. This strongly illustrates the difference in the attitude toward agriculture of the preceding generation and that of the present generation.

Of the 134 students, there were 71 whose fathers were farm reared, and 63 whose fathers were not farm reared; there were 73 whose mothers were farm reared and 61 whose mothers were not farm reared; nine had but one grandparent farm reared, 16 had two grandparents farm reared, seven had three grandparents farm reared and 77 had all four grandparents farm reared.

Classifying the students according to size of farm from which they came, the statistics appear to confirm the statement by Prof. G. P. Warren in farm management that there appears to be a direct relation between size of farm and percentage of boys retained on the farm.

1 came from farms of less than 10 A
4 " " " from 10—40 A
16 " " " 41—100 A
23 " " " 101—200 A
19 " " " over 200 A

Though there are less from farms of more than 200 acres than from farms of 101 to 200 acres, the number per equal number of farms is probably much greater.

One hundred and twenty-one responded to the question, "Do you intend to settle ultimately on a farm of your own?" Ninety-six replied in the affirmative, and 25 in the negative.

Believing that their answer would in general be an expression of their opinion as to the possibilities for success in their home community as compared with other regions, they were asked the question, "If you do intend to settle ultimately on a farm of your own, do you expect to settle in your home community?" Forty-one replied in the affirmative and 58 replied in the negative.

The students are specializing in a great variety of lines of work. 31 are specializing in general agriculture
24 " " " pomology
25 " " " poultry and fruit
9 " " " science
11 " " " farm management
7 " " " animal husbandry
7 " " " dairy work
6 " " " horticulture and floriculture
5 " " " poultry
6 " " " forestry
1 is " " " landscape art
1 " " " fruit and vegetable growing
1 " " " plant breeding
1 is planning to pursue cotton farming.

One hundred and twenty-eight responded to the question, "What do you intend to do after leaving college?"

Seventy are planning to go into farming, 22 into government work, 15 into educational work, 14 into commercial work, three intend to take up dietition work, and four intend to take up housekeeping.

Of the 134 persons surveyed, 19 are girls.

The age of the youngest person in the class is 19, that of the oldest 40. The average age of the class is 22.

One hundred and twenty-seven persons gave their expenses for freshman and sophomore year.

The total for the freshman year was $61,437
The total for the sophomore year was $63,184
Average per individual freshman year, $475.88
Average per individual sophomore year, $497.51
Freshman Sophomore 
Year Year
14 14 kept their expenses below $300.
47 39 kept their expenses between $300-$400
31 37 kept their expenses between $401-500
35 37 had expenses over $500.
The above expenses cover all expenses whether earned wholly or in part, or whether paid in cash.

EARNINGS DURING THE COLLEGE YEAR
Total earnings during the freshman college year were $8,265.
Total earnings during the sophomore college year were $9,203.
61 earned something during the freshman year.
64 earned something during the sophomore year.
The average earning for the 61 was $135.49 freshman year.
The average earning for the 64 was $143.80 sophomore year.
The average earning for the 127 during freshman year was $65.08.
The average earning for the 127 during sophomore year was $72.46.
Sixteen earned over $200.00 during freshman year. Nineteen earned over $200.00 during sophomore year.

EARNINGS DURING THE SUMMER
Of the 127 persons replying, 104 worked during their freshman summer and 111 during their sophomore summer.
Total earning during freshman summer $9014.
Total earning during sophomore summer $11752.
Average for the 104 during freshman summer, $95.38.
Average for the 111 during sophomore summer, $105.87.
15 earned over $200 during the freshman summer
8 earned over $200 during the sophomore summer

Savings from Summer's Work
Total savings from freshman summer's work, $3363.
Total savings from sophomore summer's work, $3991.
Average for the 87 saving from freshman summer work, $38.66.
Average for the 94 saving from sophomore summer work, $41.50.
32 saved $100 or more during freshman summer.
30 saved $100 or more during sophomore summer.
In answer to the question, "What did you do during the summer of your freshman year?"
65 replied farming
12 " agent
10 " day labor
8 " attended summer school
6 " commercial work
4 " clerk
3 " house work
2 " on railroad
1 " green house work
1 " city forestry
1 " serving
1 " teaching
"During the summer of your sophomore year?"
73 replied farming
5 " commercial work
11 " day labor
12 " attended summer school
3 " agent
5 " clerk
1 " forestry work
3 " domestic or home work
1 " waiting table
1 " scientific exper. work
It is plainly evident that farming is the most popular work among the agricultural students.
We realize that our work is not as complete as it should be, nor as efficient as such work can be made, and that if the work is continued by other junior classes, (and we hope that it will be) the value of the work can be greatly improved. However, we believe that the survey work will prove of interest and value not only to our own class, but also to the general public.

Junior Survey Committee,
Cornell Agricultural College
S. R. Lewis, chairman,
R. H. Cross,
H. D. Bauder,
W. F. Friedman,
R. C. Shoemaker,
Miss M. E. Wright.
KEEPS FRUIT TREE BUDS BY THE ICE-BOX METHOD

By G. Hale Harrison '16

THE keeping and selecting of fruit-buds is one of the most difficult and important problems of the nurserymen. Since there are very few nurserymen in America who handle their buds in the same manner, there are various opinions as to the best method. In former years most of the practicable methods of handling buds were tried by the Harrison Nurseries at Berlin, Maryland, sometimes with fair success, but very often with expensive failure. After a few years' experience in those nurseries, the writer noticed that some years there were good stands of buds among the peach and apple trees, while in other years the stands were very poor—the latter condition being more frequent. At that time no one could say what caused a fair stand of buds one year, and almost a total failure the next; although the same methods were used and most of the same men were employed. These frequent failures caused the various nurserymen to investigate whether there was a better way of handling buds than the "bucket method," which was the one then most commonly used.

The buds used in the "bucket method" were either from the nursery or orchard, but mostly from the former. This method was very simple and easy. From the time the buds were cut from the parent trees until they were used they were kept in a bucket, in water from three to six inches deep. The buds during the working hours in the bucket were generally exposed to the wind and scorching sun which in a short time warmed the water, thus causing the bud-sticks to draw up large quantities of it. If the bud-sticks remained in the water for any length of time, they became water-logged, thus causing the eyes, which are part of the buds, and the parts of the sticks under the eyes to turn brown. The browning of the bud-eye cannot always be detected unless the bud-stick is considerably water-logged. If a bud, in which the eye is totally or partly browned, is put in a tree it will almost invariably die. Although, it is obvious that such buds should not be used it would be an endless job to examine every bud before it was put into a seedling.

It has been proved by numerous experiments that buds from a bearing orchard are much stronger than those from a nursery row, although trees grown from buds which came from the nursery will in a year grow taller but not so large in caliper as those from the orchard. The buds used in the so-called ice-box method came from profitable bearing orchards, where the varieties are true to name and the trees are free from all injurious pests and fungous diseases.

It is important that a man who is well trained in the nursery business should do the selecting and cutting of all the buds; the cutting should not be done by a gang of men, for their standards of selection would be different and there would be numerous mistakes. Immediately after the bud-sticks are cut they are sprinkled with water and placed in a cool, shady place which is protected from the wind. The bud-sticks are then leafed; that is, the leaves are cut off with a sharp knife, and about a quarter of an inch of the stem left to protect the eye of the bud. Only the well ripened part of the bud-stick is saved during this operation. After the bud-sticks are leafed, they are labeled and placed on a box in the sun in order that the outer surface may dry. Only one variety undergoes the operation at one time. After the buds are dried they are placed in the fumigating box, to clear the bud-sticks of all injurious insect pests.
The fumigation of buds, when properly done, is a most efficient and practicable method of keeping nursery stock free from injurious insects. The fumigating box is four feet long, two feet wide, and two one-half feet high, inside measurements. Its walls consist of three thicknesses of lumber, each layer running in a different direction. The spaces between the boards are filled with a preparation of tar, which helps to keep the box air-tight. Ordinary building paper is placed between the layers of boards. Around the edges of the lid there are several layers of canvas, which help to keep out the air. The chemicals used for generating hydrocyanic acid gas used in fumigation, are:

1. Fused cyanide of potassium.
2. Sulphuric acid.
3. Water.

Cyanide should be guaranteed 98–99 per cent which is practically chemically pure; if much below this strength, it should not be used. The best grade of commercial sulphuric acid, with a specific gravity of at least 1.83, should be used. A grade known as chamber acid used ordinarily in the manufacture of fertilizers will not do, and under no circumstances should it be employed. Water from any source will suffice, the only requisite being that it is clean. In combining the chemicals, first measure the acid in a graduated glass beaker and put it in any container such as an earthenware crock. Second, measure water in the same beaker and pour it on the acid. Third, drop in the cyanide, wrapper and all, close the door quickly and leave the desired length of time. When water is poured into the vessel with sulphuric acid, some heat and fumes are given off, which is not dangerous. As soon as the cyanide is dropped into the acid and water, there is a bubbling and sizzling similar to that produced by a piece of red hot iron when plunged in cold water. The result of this chemical action is hydrocyanic acid gas, known, when in liquid form, as prussic acid. Hydrocyanic acid gas has an odor somewhat similar to that of peach pits. Great care should be taken to inhale none of the gas, for it would cause instant death. Plants are less injured by a short exposure to a relatively large amount of gas than by a long exposure to a relatively small amount. A stronger dose in shorter time is more destructive.
to the insects affecting the tree. The resisting power of a tree is dependent largely upon the open or closed condition of the breathing pores, the peculiarities of the cell contents and the temperature of the enclosure (box). From 0.05 to .1 or .105 grams of cyanide of potassium should be used for every cubic foot of the air space enclosed. The process of fumigation should continue about half an hour.

Immediately after the fumigation is over, the budsticks are taken out and sprinkled with water. The bud-sticks are then wrapped in bundles with wet sacks. Much precaution must be taken here, since if the bud-sticks are not dampened and cooled quickly they are likely to spoil. The bud-sticks are now put into the ice-box, where they should remain until most of the heat is removed—twelve hours if possible. The bud-sticks plump up while in the ice-box, but there is no danger of their water-logging as in the case of the "bucket method." The lower the temperature the better the success with the buds. The box should always be kept full of ice. Buds can be kept a week or more by this method without any signs of damage, but with the other methods it is impossible to keep the buds in good shape for any length of time.

The ice-box is five feet long, three feet wide, and three feet deep, inside measurements. On the outside of this box there are two layers of one and one-fourth inch board, one layer making right angles with the other. Between these two layers of board there is ordinary tarred paper. Between the double outer wall and the single inner one there is a space of six inches, which is filled with sawdust. The inner wall is made out of first-class flooring, which makes the inner compartment airtight. The inner compartment is covered with tin in order to keep the inner wall from rotting, and to help keep the box airtight. In the inner compartment there are three sections. The middle section is used only for ice (of which it holds about 700 lbs.) and the other two are used for the storing of the bud-sticks. The edges of the lid are covered with canvas so as to make the whole box airtight. The lid con-
sists of four layers of board. The ice-box is kept on a truck so that it can be carried from one block of seedlings to another. The box must be kept locked so that the budders will not disturb the contents. It is best to let only one man have the key, and allow him to distribute the various varieties of buds to the budders. This one man is able to control the distribution of small quantities of buds to a gang of over a hundred men and boys as they need them.

In 1910 the Harrison Nurseries budded about three and a half millions of peach trees, which produced only about 500,000 merchantable trees. The budding was in charge of an experienced man, but his methods of handling buds were found impracticable, and hence something different had to be adopted. At this point the writer received authority to take charge of the budding. He conceived the idea of using a refrigerator box filled with ice in order that buds might be kept cool and in a dormant condition. This method has been a success from the very beginning and has saved the firm several thousands of dollars.

Ice was first used in 1910 with Bartlett pear buds, with the result that the buds which were kept in the ice-box made an almost perfect stand, while those kept in the bucket gave only a partial stand. These buds were cut from the same trees and budded at the same time and on the same kind of seedlings in adjoining rows. It was also observed that the iced buds seemed to knit faster to the seedling than the others. Hence, in 1911, the entire budding of several millions of peach, apple, pear, plum, and cherry trees was handled in this way with remarkable success. As the buds came through the winter in prime condition, the same method was used for handling the buds in 1912, during which season there were budded over five millions of fruit stocks. At the present writing the buds which were put in during the summer of 1912 are showing an almost perfect stand.

During a quarter of a century in the nursery business the ice-box method has given the Harrison Nurseries the best stand of buds they ever have had.

SOIL ACIDITY

Dr. H. O. Buckman

DURING the last few years there has appeared in both technical and popular agricultural literature constantly increasing discussion and comment in regard to soil acidity. Perhaps no one problem of practical and scientific agriculture has received attention from so many directions. Nevertheless, no phase of soil technology is so little understood in general and so often misquoted, particularly by laymen as is the particular one under consideration.

At the outset the name itself is a misnomer and really should not be utilized to designate the condition in question. Its use continues perhaps because no better term has as yet been suggested. To make clear the misleading tendencies of the name an explanation of what is really meant by soil acidity is opportune. The so-called soil acidity may be of two forms, active and inactive or negative acidity. The former, as the name indicates, is induced by an actual acid in the soil and probably was the condition which gave rise to the name. The acid present may be hydrochloric, nitric, sulfuric, or what is a great deal more probable, certain simple or complex organic acids. These tend to react with and use up the bases in the soil particularly calcium, the active element of lime. It is probable that very few soils are actively acid, as ordinary
soil conditions do not long permit the presence of an actively free acid. Hence, the misleading tendencies of the term soil acidity. However, the continued use of certain fertilizers as ammonium sulphate may turn a soil acid by liberating sulfuric acid. This has been shown by certain well known experiments, but is only brought about after many years of continued use.

The second form of acidity, and really the more important, inactive or negative acidity, accounts largely for the so-called acid conditions in many soils, particularly those of southern New York State. Inactive or negative acidity may be induced by several conditions, one being the presence of carbohydrate materials in the soil capable of reacting with calcium in a way somewhat similar to acids, but of course not imparting actual acid conditions thereto.

Insoluble acid salts not satisfied in their content of basic constituents also have the power of taking up and holding by chemical fixation the calcium of the soil. A third factor may be the absorptive effect of certain finely divided materials in the soil called colloids. By a simple physical absorption, calcium in particular may be retained from plant utilization. Negative acidity, therefore, while seldom maintaining in the soil actual acid conditions, functions in the same general way as an acid, namely, in the withholding from crops calcium compounds necessary for the furtherance, either directly or indirectly, of plant growth.

For all practical purposes, therefore, we may consider soil acidity, be it negative or active, simply as the lack of basic matter in the soil. As calcium is probably the most valuable in this respect, acidity resolves itself into the need of lime on any particular soil. Just what the different effects upon the crop in satisfying the soil as regards lime may be, is a somewhat difficult proposition to answer specifically. An alkaline soil condition affects most plants differently and usually in most devious and indirect ways. The effects of soil acidity then are mostly indirect through modified chemical, biological and physical conditions in the soil. In a great many cases in acid soils, nutrient elements fail to pass into solution, beneficial bacterial activities cease or are checked and the soil may become in bad condition physically. Also, often because of poor tilth and improper aeration with the necessarily feeble action of certain organisms, and possibly an increased function of others, toxic material may develop which only aids the more in the depression of crop growth. The effects of adding lime are mostly indirect, although quite marked and distinct. Most ordinary crops grow best in a neutral or alkaline medium.

Some soils, while not distinctly poor soil, may be strongly in need of lime. The detection of a so-called acid soil is, therefore, of vital import to the farmer. This may be done in several ways, all of which have their active adherents. One of the best means of detecting the need of lime is to observe the physical condition of the soil, the character of the crop, and the presence of certain weeds. Acidity generally tends to depress crop yield and will ultimately impart a bad physical condition to a soil. Paint brush, sorrel, moss, ferns and Canadian rye grass are considered as evidence of lack of lime. These plants may not necessarily be acid loving plants. They often appear on an acid soil because nothing else will grow there.

The use of litmus paper is strongly advocated by some as a test for soil acidity, but from the fact that litmus paper is so likely to be lacking in the proper sensitiveness, it has not proven successful in the hands of the farmer. Even with the greatest care, it is highly probable that the litmus test is not accurate. The soil, being a highly absorbing body, tends to break up the litmus compound carried by the paper and may give a reddening or acid reaction when the soil is neutral or even strongly alkaline. This phenomenon is due to the fact that the litmus compound is a sodium salt of that dye.
The dye itself is red. Any absorptive matter such as cotton, carbon or soil may break up the compound selectively and produce a red color by liberating the litmus itself. The resulting color may be mistaken for actual acid conditions. Litmus paper, as an indicator for acidity, is therefore vitiated by absorptive action. An alkaline or blue reaction, however, when obtained by this test, is always a sure indication of plenty of basic material.

Another method, strictly a laboratory one and handled only by a chemist, is the Veitch method. This consists in adding lime water of standard strength to the soil according to a certain definite procedure until the absorptive power of the soil is satisfied. The amount of lime per acre necessary to correct the acidity is then calculated. This constitutes what is termed the lime requirement of a soil. One objection here is that this necessitates the sampling of the soil usually by the farmer himself. The chances of obtaining a representative sample are slight unless detailed directions are sent out beforehand. Then, also, good results in the field can be obtained by adding amounts of lime far less than those indicated by the Veitch mode of analysis. The method is at best, therefore, but an approximation as its accuracy is barely within five hundred pounds of lime per acre. No one determination can alone express the lime needs of a soil when both acidity and alkalinity affect the soil and crop in so many different ways.

The real issue then is to first determine whether the soil is acid and then apply lime. Probably the most rational method is to first examine the soil, and the vegetation for lime need. If any suspicion exists, even of slight acidity, utilize neither litmus paper or the chemical test described above. Simply treat a plot of ground, a strip across a field, or even a small field, wholly with lime and watch results. The effect indicates the need of this particular soil and is a specific answer to a specific inquiry. Generalizations are of little value in the ultimate analysis of a soil's need. The sooner, therefore, that the farmer begins experimentation along rational lines, the better agricultural conditions will become. One point must be kept in mind, however, in the use of lime. Keep the organic matter up by every feasible means. The increased crop yield from the use of lime on an acid soil is a serious drain upon the humus constituents, so necessary to proper crop growth and so likely to be low on soils of recently corrected acidity.
WHAT THE COLLEGE OF AGRICULTURE IS DOING TO HELP STUDENTS GET PRACTICAL EXPERIENCE ON FARMS

Professor J. L. Stone

THERE are several phases of agriculture. It may be considered as a science, as an art, or as a business.

The science of agriculture considers the facts and laws of nature in their relation to the production of economic plants, animals, and manufactured agricultural products. The art of agriculture is practical knowledge of the operations used in the production of agricultural commodities and skill in the doing of these operations. It implies some knowledge of the science of agriculture, but often reaches quite high development with very little such knowledge. The business of farming is an attempt to combine the science and art of agriculture for the purpose of making a living and earning a competence.

Agricultural business success is impossible without considerable knowledge of the art, and reaches its highest point only where both the art and the science are of high development.

The science of agriculture is well adapted as a subject for teaching in the college classroom and laboratory, and much about the business of agriculture may be taught there, but the art of agriculture can only be acquired by actual experience on a farm.

In the early days of agricultural colleges the students were few and practically all of them came from farms, and were familiar with farm methods and farm affairs. There was little occasion for much teaching of the art of agriculture. A suggestion as to an improved method was easily grasped by the student and he was able to apply it. In recent years the number of students has increased very greatly and the proportion of those who are inexperienced in agriculture is very large. More than two-thirds of our present freshman class have had little or no farm experience. How shall they get this necessary element of an agricultural training? This is a difficult problem to solve.

Many of the courses in the College of so-called applied agricultural subjects, such as Soils, Farm Crops, Farm Mechanics, Dairy Industry, etc., have laboratory periods connected with them and tend to make the student familiar with the things and operations of the farm. So far, good; but there is not and cannot be enough of this work to meet the requirements.

The College farm should furnish opportunity for such training, and to some extent it does, but the extent of this opportunity is vastly less than the casual observer would expect. In the first place, the number of students needing this training is so large that even with our large farm it is a physical impossibility to handle them. Probably two hundred members of the freshman class should be taught to plow. If all the land available for crop growing were devoted to training these students in plowing, it would not be sufficient to enable them to become proficient plowmen. If the land were plowed by students at such times as students could do it, it would not be possible to successfully grow the crops upon it that are required to sustain our live stock.

In the second place, students carrying a university schedule have not the time to get this practical training while in college. This training is not a matter of hours and days, but of weeks and months, and even of years.

Some effort is made to use the College farm for this work, but only for those students who are without any farm experience. Before the season
when classes can go out to the fields, they are instructed in harnessing, hitching, and driving horses. In the fields they follow the teamsters who are plowing, harrowing, drilling, etc., and later are given the reins while the teamster follows along to guard against injury to team. So far as possible we give them a hand in whatever is being done, but we do not delay the work that it may be done by students. This little practice helps these inexperienced students considerably when they get jobs on farms, but it is scarcely a drop in the bucket in comparison with the practice they need. We urge students not to depend upon the practice they can get during the little time they can spare during the school year, but to get on ordinary, practical farms during the months of vacation or, better, to take a year or two out of college and get an experience that is worth while. Furthermore, students are advised that the College farm is not a desirable place to get farm experience.

It is not a normal farm. Much of the activity on the College farm is, of necessity, devoted to investigation and demonstration that no farmer would attempt. The demands made upon the Farm Department by the other departments and the University compel it to use equipment and methods that are not normal for a private, practical farmer. The student should go to a normal farm.

To help students to get places on farms we run a sort of employment bureau. Formerly we sent hundreds of letters to farmers in various parts of the state apprising them of the fact that there were students in the College desiring work at various times and for various periods. More recently we have used the Announcer of the College of Agriculture as the medium through which to reach the farmers. A month or two before the close of the winter courses and also before the close of the school year, paragraphs in the Announcer call attention to the several classes of persons who seek places on farms through the College: viz., prospective students who desire to get experience before entering college; inexperienced students who want vacation work chiefly for experience; experienced students who want work for the pay they can get; and those who are completing their courses and want permanent positions. Many rural papers copy the paragraphs from the Announcer, so the information regarding student help is quite widely disseminated. The result is that there is usually received a large number of applications for student helpers.

There is a great deal of difference in students as to desires and capability, and there is a great difference in the places offered. The effort is to direct students to the places where they will meet the requirements most satisfactorily. This is difficult for we do not know either the students or the places well.

The results are variable—often satisfactory, but sometimes misfits occur. As these lines will be read by students chiefly, I may be allowed to address a few words to the less experienced. You go for experience chiefly and desire to try your hand at everything, but desire to leave a particular task as soon as you think you know it (or you tire of it). The farmer hires you because he is running a business and wants work done. He is not running an instruction camp. He must employ his help to get the most accomplished.

As a rule, a student must accept the situation as he finds it. As in the city, he must earn the opportunity to try his hand at the more important work.

The habits of life of farmers and well-to-do city people are very different. Probably farmers live as well, or better, than city people of the same income. But the living is different. There is less variety because the farmer depends upon the products of his own farm so far as possible. It is not so dainty, but it is wholesome.

Heretofore when you have gone to the country you have been a guest. Do not expect to be entertained nor waited on, but lend a hand.
EVERYONE acquainted with the many phases of farm business knows that it is a good sized undertaking to attempt to keep account of everything, and the excuse generally given “have no time to keep accounts” sounds pretty well. However, if the records are kept each day, the time required will be but a few minutes per day, and the returns in many cases will be more for these few minutes than for the rest of the day’s work. If a man lacks interest in the business in which he is engaged, he may eke out an existence, but will never be very successful. In order to be successful, one must know which of the varying enterprises are most profitable.

Many manufacturing establishments are more and more impressed with the desirability and necessity of ascertaining the exact cost of their product, and trained experts are frequently employed in the solution of this different problem. The manufacturer knows the cost of his goods, and in determining their selling price he adds a certain percentage for profit. If he did not know the cost he could not fix the selling price. However, he does know the cost, and in determining it, he has taken into consideration every item of expense; rent, hired help, insurance, taxes, interest on his investment, and his own time.

Someone has written that the most important farm implement is a lead pencil. Without some form of account, one cannot know where the profits or losses are. The keeping of accounts does not require an elaborate system, but may be made quite simple. The great mistake that is too frequently made by those wanting to keep their own farm accounts, especially beginners, is in attempting to keep too many accounts. This generally results in giving up the attempt in disgust, with the excuse “That it takes too much time,” or excellent detailed records may be kept but the results never summarized, and little or no benefit is gained by having kept the records. As is shown in Farmers’ Bulletin No. 511, “Farm Bookkeeping,” it is generally better to keep a few accounts accurately and to interpret the results, than to attempt to keep all the accounts and not be able to make them of value in succeeding years.

Besides helping to fix the selling price by determining the cost of production, farm records increase one’s knowledge of his business. With this increased knowledge, one should be able to stop many of the economic leaks. From the annual summaries it is possible to determine what enterprises have proven most profitable, and to plan each succeeding year’s work with greater success, for figures, if heeded, guarantee success.

The keeping of farm records or farm bookkeeping is very different from ordinary bookkeeping, and we do not think that any one method can be prescribed as being the best for all farms and all farm conditions; but, each individual should work out a system that is best suited to his conditions. After one has once worked out a system for himself, he understands it better, and is more likely to carry it out, than if he attempts to use a system someone else has worked out for him, and which may not be applicable to his particular conditions. Farm bookkeeping is not a question of forms, but a question of what records to keep and how to use them. No matter how carefully the forms are worked out, they will not get good farm records unless the person using them has a very clear idea of the purpose of a record. The forms should be as simple and with a minimum of detail as is consistent with the results desired. However, no matter how thoroughly the above details may be worked out, the success of the system depends upon regular
entries made on the day the work is done, or the transaction takes place, and in the summarizing of the results at the end of the year.

Of all of the farm records it is possible to keep, the inventory taken at the beginning and end of the year is the most important. This is the simplest form of farm accounting, and yet it is the foundation of every other form. No matter how well the labor, financial feed or production records may be kept during the year, but very few conclusions can be drawn without the inventories. One may think he is making a great deal of money because his bank account is increasing, while the inventories may show that this increase is at the expense of the investment in lands, livestock or machinery. Similarly, another may feel that he is not getting ahead because his bank account does not increase. A study of his inventories may show him to be considerable richer, but instead of putting his money into the bank, he has increased his capital.

These inventories should be taken with a great deal of care. Not only that one may know what his investment is, but it also aids materially in keeping track of various items, especially tools, which are quite apt to get lost or broken. In taking such inventories the writer has frequently mentioned articles which the farmer had, but had forgotten about. This is especially true of the smaller tools which are usually mentioned on the sale bills, as, "Other items too numerous to mention." They may be numerous, but, as shown in Circular No. 44, Bureau of Plant Industry, "Minor Items of Farm Equipment," their value frequently amounts to much more than is generally supposed.

It is quite probable that a great many farmers keep some sort of records of at least the majority of their transactions. This is to be commended, but if an inventory has been taken at the beginning of each year, the record of financial transactions will be of much greater value. From these we can now determine the income from the farm as a whole, the principal sources of income, the total expenses, and the distribution of these expenses. From these records one may get a very good idea of the business as a whole, but the careful analysis of each farm enterprise cannot be made without further records, of which the entire labor cost is one of the most important.

One can scarcely pick up any agricultural paper but that he does not see an article on the cost of some farm enterprise. However, too frequently the writer of the article has entirely disregarded the item of labor, especially if it has been done by himself and his family. Or, if the labor is shown it is usually in terms of dollars and cents rather than in man hours and horse hours; and since the rate of labor varies in different sections such records are of little value to anyone, except to the man who has kept them.

We will not go into detail at this time as to factors and records which are essential to working out the rate per hour of man and horse labor. However, if complete records of every enterprise are desired, the records previously mentioned must be supplemented with feed and production records notes regarding yields, materials, and supplies used, personal and household expenses, interest paid on indebtedness, and the value of all farm products that go toward the living of the farmer and his family.

We do not believe that every farmer should be encouraged to keep accounts unless he has an inclination for this method of studying his business. However, this inclination and the desire to do better should be cultivated. The kind of accounts to keep will depend on the results desired, but it is always best to start with the simpler form and work out the details of the more complex forms gradually, than to start with too many details without knowing just what is wanted, and becoming confused, discouraged and giving up the attempt in disgust.
RELATION OF COLOR AND SEX OF BARRED PLYMOUTH ROCKS

Dr. Philip B. Hadley
Rhode Island Experiment Station

SOME of your readers may be interested in the recent discussions regarding the standard requirements in the barred plumage pattern in the Barred Plymouth Rock breed of fowls. I am heartily in favor of obtaining a standard in which different requirements are set for the male and female with respect to the barred pattern, and I am writing at this time merely to indicate how this is a perfectly natural conclusion and one that is supported by every fact which we know regarding the nature and manner of inheritance of this character, barring.

In the first place it may be pointed out that when one considers the "barring" of poultry, his attention is usually focussed upon the dark bands running across an otherwise light feather. When he thinks of the inheritance of barring he has in mind the transmission of these dark bars from one generation to another.

Now, it appears from much investigation of the method of inheritance of this character, as well as the coat-color of many species of mammals, that the above-mentioned conception of barring is not entirely adequate. We know of course that there is some "factor" in the germ cells of the birds, representing this character; and that, if that "factor" is passed on to the next generation, barring will result in the progeny. So much is clear. But here is the main point: we must not focus our attention upon the dark bands of the feathers, but upon the light ones. There can now be no doubt whatever, that the thing that is inherited, the factor that brings about the barred plumage pattern in a bird, is not something that marks a dark band across the feather, but it is something which keeps the black from showing in all other parts of the feather. Thus the "barring factor" is, in reality, a factor which inhibits or restricts the appearance of black.

One other point should be mentioned before we are ready to apply these facts to the formulation of standard requirements for Barred Rock plumage. And this deals with the constitution of the male and female Barred Plymouth Rock with respect to the "barring factor."

When single comb is inherited by a bird it is inherited equally from both parents; both contribute toward it. The chick, whatever its sex, receives some "single-combness" from its father and some from its mother. It has, so to speak, a double dose of the single comb character and is therefore homozygous for single comb. Many characters of poultry are inherited in this way—that is, equally from both parents.

But some characters obey quite different laws of inheritance and barring is one of these. Barring is not, in other words, inherited equally from both parents. It is true that Barred Plymouth Rock males always have a double dose of barring, one having been received from the father and one from the mother. Both male and female parents have a part in the production of the barring of their male progeny.

In the case of the female the condition is different. Barred Plymouth Rock females never have more than a single dose of barring. They never receive it from more than one parent; and that parent is always the male. When Plymouth Rock females form their eggs (i. e., before fertilization) only one-half of the number receive in their making a dose of the barring factor; to these eggs (as to all the eggs) will be added a single dose of barring from the male, so that the new individuals will be endowed with a double dose of barring. Such individuals are always males.
On the other hand the other half of the mother's eggs do not receive from her a dose of the barring factor. All the barring they ever get comes from the male—a single dose. The new individuals arising from these eggs, therefore, start life with only a single dose of barring; and such individuals are always females.

To put the matter in another way: The Plymouth Rock male has the ability to transmit the barred character to both his sons and daughters. But a Plymouth Rock female can never transmit the barring character to her daughters. All the barring that she possesses goes to her sons, and were it not for what her female progeny receive from the male, these daughters would be destitute.

A male Barred Rock chick, therefore, inherits barring from both his father and his mother, but a female inherits barring from the father only. Hence, all pure bred Barred Plymouth Rock males possess a double dose of barring and all females possess but a single dose. This can easily be proved experimentally. Cross a B. P. R. male on R. I. Red females and all the progeny will be barred; the males will be fairly dark. On the other hand, cross a R. I. Red male on B. P. R. females, and only the males will be barred. The females which will be black were able to derive neither from the male nor the female side. If the female could transmit barring to her daughters, some of the daughters resulting from this cross would be barred. But such birds are never observed.

Now we know from studies on inheritance of many characters in both plants and animals that, those individuals which possess a character in double dose (i.e., are homozygous for the character) are often likely to show that character in a greater degree than do those individuals which possess it only as a single dose (i.e., the heterozygous individuals.) How does this bear on the case in point?

The Barred Plymouth Rock male has a double dose of the barring factor. That is, he has a double dose of the character which holds down or restricts the development of color (dark bands) in the feathers. Having a double dose of this inhibiting character (the factor for barring) the color of the male will be lighter than that of the female which has only a single dose (is heterozygous) of the inhibiting factor. Where the inhibiting factor is double there the pigmentation will be restricted to the greatest degree. It seems very probable that breed as long as he may, a breeder will never be able to produce a Barred Plymouth Rock female that contains more than a single dose of the barring factor.

Is it not fully evident from this explanation, the various points of which are capable of complete experimental verification, that nature has set different grades of barring for the male and for the female, the former lighter, the latter darker? This natural difference is just as truly a form of sexual dimorphism as the differences which obtain between the male and female Brown Leghorn, or between the male and female Brahmas. In all these cases the differences are due to fundamental variations in the constitution of the male and female germ cells; and merely because the dimorphism of the Barred Plymouth Rocks is comparatively slight, this is no justifiable reason for overlooking it or for treating it as if it did not exist. It is a nice difference which, just as appropriately as other more striking cases of sexual dimorphism should be taken into careful consideration when standards in plumage color of plumage pattern in the Barred Rocks are under discussion.
THE IDEAL RURAL LIFE

By Joseph F. Wing
Associate Editor The Breeders' Gazette

That is a pretty large and general request that the editor of the Cornell Countryman makes upon me, to write on “The Ideal Country Life.” Not that I do not know what is the answer, for I think that I do. It takes the young men for ideals, and to them we look to see developed an ideal life in the country. It has not yet been attained except in rare instances.

Primarily it depends upon keeping fertile and productive the soil. Ideals are hard of realization without money. Money comes freely only from soils rich in producing power. Almost one might say that the whole thing depended upon having a soil that is drained, supplied with limestone, given its mede of phosphorus and then sown to leguminous forage crops in regular rotation, the times coming pretty close together. Such a soil as that will grow crops that will bring money enough to make a basing principle for an ideal life in the country. Money is needed. For example, I write this having come from the field where I have been ditching. I am weary and sweaty and dirty. I need a bath before supper and I am going to have it. If the farm did not produce enough to pay for a bath tub and water to fill it, then I would fall short of my ideal in that respect. It is marvelous how the bath adds to one’s happiness on the farm, to his self-respect as well, and to the happiness of the family around him.

Next after the fertile soil I should place the ability to work and the knowledge of how to work. Sometimes I wonder whether the life of the agricultural student is a good thing; he gets so out of touch with work! Would it not be better, possibly, if he were to remain on the farm working half a day each day and studying the other half day? Impossible to accomplish this, maybe, yet I myself, secured no college training but my mother early instilled into me a love of good books and my father gave money for their purchase.

We worked very hard upon the farm, we read about soils and crops, we read of drainage and went out at once and dug ditches.

To have ability to work but to know when to cease from toil, come home, clean up and rest and smile! That is the hardest thing to teach, maybe. It is an act of intemperance to overwork, it is a crime to frown and be sour in the home. Well, let’s paint a picture of an ideal country community. Every man works hard in the field with his own hands, all employ enough labor to let them do things well. They have made the soil dry and rich and productive. They have found their market and are producing just what they ought, so they are prosperous, all.

Every man has a neat and comfortable home, each one with sleeping porch and open fire. About the home are plantings of trees, shrubs and flowers. The men go early to the fields. At four in the evenings they come home, bathe, clean up, and either rest on the lawn, or drive to a neighbors, or to the village. There are books, not trash, to read in the home. Each child plants things, is interested in things growing.

The country school is made a center. There are lectures there and innocent amusements. The country people live to themselves, avoiding the big towns. They read the best periodicals and books. They grow to be more intelligent and better informed than are the people in towns who read only the daily newspapers or the latest trashy novels.

All this is easily possible but it is all based on the assumption that the soil be made dry, fertile and productive, the owners thereof given ideals, capital and energy to carry them out.

I know a few such communities. One is in Maryland, yes, two or three such are in Maryland. Some are in Ohio. Some, let us hope, are in each state, and may their numbers increase.
STRAWBERRY TIME

Albert E. Wilkinson

STRAWBERRY time. Of what great significance is this term! How it brings to the mind a picture of those large, red, melting fruits, often creating in the individual an unlimited desire to be furnished with a generous helping of the king of all berries!

To think that, in the majority of cases, these fruits (called delicious) are purchased at the local store—bought quite often after they have been picked on some distant farm! Many times the fruit is green or not fully mature, and sometimes bruised or injured by the severe pressing while in the crates.

Contrast all this with the small patch of selected plants located in the backyard where the most intensive system of culture and care can be given. At the same time these are without weed competition besides being supplied with the correct amount of water, plant food and protection. The result will be large plants that are able to bear the full quota of blossoms in the spring. Later these blossoms develop into large, well-formed fruits, loading the plants to their fullest capacity. The fruits, when fully ripe, are quite easily severed from the plant by breaking the stem. The berries as gathered may be placed in a clean dish or box. They require very little handling during the harvesting.

How easy it is to have these small, but very satisfying beds of strawberries if only the necessary attention is given; and who would not expend the necessary effort to have wholesome fruit instead of the very inferior product from the grocer?
The Cornell Countryman

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ASSISTANT MANAGERS

JUNE, 1913

The Junior Class has recently completed a survey of its members which we publish elsewhere. The class is to be congratulated on such a useful work. Such a survey should contribute much to the study of agricultural education.

Survey methods are becoming very important in the study of agriculture. We have seen what they are doing in farm management and pomology at Cornell. It is expected that the United States Department of Agriculture will soon make a survey of the farm home, which will give much light on the great problem of the farm home. The survey method will some day be applied to many branches of agriculture such as the country fair and the rural school.

We suggest to the presidents of the other classes that committees may be elected or appointed to make surveys in each class. We also suggest that these surveys may be uniform as to data so that they may be compared or combined. The work in making a survey is long and tedious perhaps, but the results are worth it and the training which the committees would get in survey methods is not to be forgotten.

Practical Experience

We are pleased to publish an article by Professor Stone on the employment of students by farmers. The need for practical experience is so great in the college and in many regions labor is so scarce that the employment of students by graduates ought to be more general than it is. Where there is so much to be gained on both sides, satisfactory terms can be easily arranged. It is well to remember that some students do not make satisfactory farm laborers and that some farmers expect too much of an inexperienced hand but this condition is not general. In order to make such employment a general practice, each must do his part.

Student Clubs

The Lazy Club which is the oldest professional club of the College of Agriculture and numbers among its alumni many of the most prominent horticulturists in the country, has recently undergone a somewhat radical reorganization. The great increase in the student body has made evident the fact that the Lazy Club as a single organization could no longer meet the needs of the students in Horticulture and Pomology. To meet these new conditions it was decided to reorganize the Lazy Club into three sections, namely, a section for the Fruit Growers, one for the Vegetable Growers and a section for the Florists. Each division is
to conduct its meeting and proceedings as best fits its needs but all are to cooperate in preserving and carrying on the name, ideals and purposes of the Lazy Club.

The Flower Growers have already held several enthusiastic meetings. The Vegetable Growers have made a fine beginning and their meetings have been very well attended. The Fruit Growers' Section held their first meeting with more than 50 students present.

The reorganization of the Lazy Club has met with student approval to a marked degree. The real interest and activity in each of the new sections is a promise that the Lazy Club will resume and strengthen its old position as an invaluable focus for exchange of professional thought and for the promotion of good fellowship among its members.

With this number a new board assumes control of the Countryman. This board intends that the Countryman shall continue to develop and improve. To this end we will welcome suggestions from our readers as to how we may make the Countryman more effective.

It is essential that every graduate shall keep in touch with the College of Agriculture. The contact will be of great benefit both to the graduate and the college. An active graduate body, especially if it be organized is a great asset to any institution. It is our purpose to keep the graduates in touch with what is going on at the college both through campus notes and special articles. We expect to devote the former student notes of each number to certain classes which will be announced previously.

Our publication goes to practically every rural community in New York State, going largely to our graduates. We desire to present to them what is new in agriculture, whatever may be of use to them in their community or farm activities.

Inasmuch as the Countryman is published monthly, we cannot be very active in the discussion of student problems. As Dean Bailey has said there is a need at the college of a daily publication to discuss these problems. In the absence of a more suitable agency we will discuss them to some extent. Owing to the large numbers at the college and its rapid growth, there are many problems and these must be solved all over again every few years. The Countryman will feel that it is serving the College of Agriculture if it helps the student body to solve its own problems.

The College of Agriculture will receive $334,000 for the construction and completion of buildings according to the bill which has recently passed the legislature. Of this amount $129,000 will be used to pay off contracted work already begun and to erect two barns for hogs and sheep and a tool barn. Some of the other large items are for the completion of the heating plant, the auditorium and the new forestry building, additional small buildings for the Poultry Department and a new rural school-house.
CAMPUS NOTES

The May Assembly was held on May 8th. Besides the usual talk by the Director, musical selections were given by the Girls' Glee Club and C. W. Whitney, '13.

Director Bailey spoke in part as follows: "If as your chairman says, you have received benefit from the College of Agriculture, I will say that the faculty receives a benefit by your stay. It is good for older men to be in touch with the hope, and ambition and energy of youth. We are sorry to see you go, and yet we are glad because now you will put the ideas you have gained, in practice.

It is a great thing to come to the end of a task so one can begin something else. We admire the spirit of a man eighty years old who sets out trees. He is not selfish. Not only is it never too late to mend but one is never too old to begin. It is worth while to finish a college course that you may begin life.

In college you bring together ideals, plans, processes, programmes. The college itself is a programme. One of the greatest joys of life, however, is the joy of accomplishment. Here is the difference between man and beast. No one has a right to live in this world unless he wants to accomplish something worth while.

I am glad to see the student body working out its problems. The plan for a student loan fund is very commendable. The matter of housing student clubs is to be solved. These clubs ought to have rooms. The live-liest bunch in the college just now is the girls' club which is raising $500.00 for a club building.

It is the purpose of the college that the students shall partake of its activities. We want to give them experience in applying knowledge. The college is a welfare organization, and the human problem is the important one.

I have spoken before of neighborliness. One of the clubs in the college is sending delegates to old and helpless people in this region. A survey is to be made of Tompkins County to find people of this kind. Let this work be done in a spirit of humility and kindness.

Have your ideas organized and a definite aim. It is a great thing to have a program. One may not know where he is to arrive but he can choose a direction. I hope everyone will feel it his duty to be responsible for something. Vice and graft are due to lack of responsibility in the training of youth. The farm boy is fortunate in having responsibilities. The growing sense of brotherhood gives us new obligations. Irresponsibility is laziness; laziness and shiftlessness are sins. In our relations to society we must express ourselves just as much as in the development of personal character.

I hope the college has made you sensitive to nature, thus giving you many of the satisfactions of life. Be sensitive to the conditions in which you find yourself. You will then be more sensitive to the expression of these things in literature. The inordinate reader has
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not much else to do. It is not the amount but the spirit of your reading which counts. The more experience you have the more appreciative you will be.

The modes of literary criticism are according to the standards of 100 years ago. We ought to judge literature according to the spirit of the times. Great literature is being written today. A poet should get his inspiration as he goes along and not wait for moods.

* * *

The Third Annual Summer School in Agriculture will begin Monday, July 7 and close on Friday, August 15, 1913. Full information as to courses, admission, expenses and other details may be had from the Secretary of the College of Agriculture.

Each year the Summer School has been of increasing interest to many classes of students but particularly to teachers who desire instruction in agricultural subjects. This year, the courses of instruction offered will be far more detailed than ever before. Emphasis will be laid on individual work and on practice in the laboratories and on the farm. Outside the formal courses, the students will have the opportunity of consulting numerous experts in all the lines of country-life work.

A School for Leadership in Country Life will be held at the College, June 24 to July 4th, immediately preceding the Summer School of Agriculture. The school is open to all persons who are interested and more especially to those who occupy positions of leadership and influence in the open country.

* * *

The following assistant professors in the College of Agriculture have been advanced to full professorships: K. C. Livermore of Farm Management; M. W. Harper and E. S. Savage of Animal Husbandry; E. S. Guthrie of Dairy Industry; W. C. Baker of Drawing; and C. R. Crosby of Entomology Extension Work. H. A. Hopper has been elected Extension Professor of Animal Husbandry.

The “Comprehensive Handbook” a complete guide to the farms and buildings of the College of Agriculture will be ready for distribution next September.

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Helios, a senior honorary society of the College of Agriculture, announces the election of the following juniors:


* * *

Director Bailey has indicated that if the girls will raise $500 before June 1st he will duplicate the amount, making a sufficient fund to start the building of a club house in the rear of the new Home Economics Building. The grounds about that section will further be developed into a girls’ campus.

The agricultural girls are enthusiastic and determined to raise this amount.

* * *

Professor Wilford M. Wilson of the local station of the United States Weather Bureau appeared as one of the witnesses in the case between the cities of Auburn and the village of Moravia, N. Y. Records covering the velocity and direction of the wind for five years were shown in their bearing upon the question at issue, the transmission of bacteria from the sewage of Moravia down Owasco Lake to Auburn where the water supply has been seriously affected. This incident illustrates the value of the work done at the local weather station apart from its importance in the daily forecasts.
The Department of Forestry has just completed the planting of 40,000 trees on its land at Varna. The total plantings made by the department during 1912 and 1913 cover more than 50 acres. Most of this is white pine although several other species are being used on a smaller scale. This land is part of the 400 acres which the University purchased as a site for a future reservoir just above Varna. All that part of the tract which is above the flow line of the future reservoir has been put in charge of the Forestry Department by the trustees, thus giving the department about 200 acres of open land for experimental and demonstration plantations. This work has been done under the supervision of Professor Spring.

The class in Forest Utilization in the Department of Forestry spent the spring recess in the study of logging operations, saw mills, and wood-working factories in the Pennsylvania mountains under the supervision of Professor Recknagel.

The Forestry club which was organized in the fall of 1912 has had an active year, all of the meetings having been well attended and good spirit shown. This club is designed to bring together the men who are taking the professional forestry course.

Ithaca is to have a real Municipal Market. The Housewives' League in conjunction with the Ithaca Business Men's Association have laid careful plans and in a few weeks the market will be running full blast.

The market is to be located near the Lackawanna Station. It will supply a means whereby the farmer can sell his produce directly to the consumer to the profit of both. Such a plant has proven extremely successful in other cities and will without doubt, do much towards lowering the cost of food-stuffs in Ithaca. Among the faculty members interested in its success are Professor Pippin and Professor Tuck.

Prof. W. H. Chandler will take up the work of Research in Pomology next October. Mr. Chandler is now Assistant Professor of Horticulture in the University of Missouri, from which institution he graduated in 1905. He received his Master's degree from the same institution in 1907.

Mr. L. S. Tenny will be Professor of Rural Development and State Leader in Farm Demonstration, beginning with next October. Mr. Tenny since his graduation from the University of Rochester in 1902, has been engaged in Plant Pathology work, field investigations in pomology and in practical work on his large fruit farm at Hilton, N. Y.

Professor H. H. Whetzel, of the Plant Pathology Department, will leave on June 11 for a fifteen months' stay in Europe. Next year is Professor Whetzel's sabbatical leave, and he will return in time for the beginning of University work in the fall of 1914.

Professor Whetzel will spend a month in Denmark, and thence he will go to Heidelberg to study with the noted German physiologist, Dr. Klebs, at the University of Heidelberg. Next summer, before returning to Ithaca, he will travel in Europe.

Dr. Donald Reddick will take Professor Whetzel's work in his absence.

An unusual amount of interest is being taken this year in the Intercollege sports and much importance is resting on the Agriculture crew to help us win the championship. Agriculture is now in the lead in the number of points won so far, with C.E. a close second. Our crew has been practicing regularly for some time, having been rowing regularly on the inlet ever since the Easter vacation. The following men are at present holding places in the Ag. boat: Stroke, E. G. Pearl; No. 2, R. G. Sierk; No. 3, G. L. Philip; No. 4, F. O. Gavett; No. 5, H. C. Jackson; No. 6, F. W. Ohm; No. 7, M. F. Abell; No. 8, J. G. Wilson, with B. J. Pratt as coxswain.
Work on the buildings is progressing rapidly. The Auditorium will be ready for the June Commencement Exercises if the weather forbids their being held in the open. A force of eighty men are now at work on the interior decorations which when completed will be of much beauty.

Several Ag. men are rowing with the varsity crew these being Commodore Bates, Dole, Chapman and Munn while Bird and Teall are regular members of the varsity squad.

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Seniors in the College of Agriculture

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4 Miss Caroline D. Higgins 36 J. E. Whinery 75 B. C. Georgia
5 Miss M. L. Robinson 37 W. A. Hutchison 76 D. H. Rosenberg
6 Miss Ruth Graham 38 J. H. Munn 77 N. F. Stearns
7 L. W. Kephart 39 Geo. H. Pound 78 H. L. Lautz
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9 F. S. Parker, Vice-Pres. 41 F. D. Putnam 80 A. M. Besemer
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'05, M.S.A.—Director Thornber of the Lewiston-Clark School of Horticulture was born in Illinois in 1874 and moved with his parents to the Dakota territory in 1883.

Like many other middle Western boys, he was compelled to work his way through College. He spent five years in the South Dakota Agricultural College, graduating from there in 1897.

In 1898 and 1899 he did special work in Cornell University, taking his Master's degree from the South Dakota Agricultural College in 1899. The years 1904 and 1905, he spent in the Department of Horticulture of Cornell University taking his Master's degree from there in June, 1905. Early in the summer of the same year he was elected head of the Department of Horticulture of the Washington State College at Pullman, Washington, where he remained until July of 1911.

As an Institute lecturer upon general subjects of fruit growing and agriculture, Professor Thornber is very popular in the West, where he has given hundreds of addresses before Farmers' Institutes, Fruit Growers' Meetings and Conventions in the Pacific Northwest. He has made several trips into British Columbia, in the employ of the Provincial Government, lecturing before the growers upon practical phases of fruit work.

As a judge of fruit he is recognized as one of the best systematic pomologists in the Pacific Northwest.

At the close of the college year in 1911, he gave up his College work to accept the position of Chief Horticulturist of the Lewiston Land and Water Company, and the Lewiston-Clarkston Improvement Company and Director of the Lewiston-Clarkston School of Horticulture of Lewiston, Idaho. This position pays a salary of $5,000.00 per year with the privileges of professional and consultation work, thus making Professor Thornber easily the highest paid horticultural expert in the Pacific Northwest.

In addition to instructional work in the present position, he is interested in the community interests of the district and is carefully guiding the building of the Lewiston Orchards Community, which promises to be one of the most unique and interesting districts in the world.

'96 Sp.—T. E. Knowlton of Watertown, N. Y., is engineer and farmer in charge of a large drainage project in the Oak Orchard Swamp of Genesee and Orleans Counties. This project involves more than 25,000 acres of swamp mucklands.

'98, B.S.A.—A. R. Ward is in charge of the Veterinary work in the Philippine Islands with his headquarters at the University there. He has been doing a great deal to improve conditions in the Islands along veterinary lines.

'98, B. S. A.—E. Dwight Sanderson, director of the West Virginia College of Agriculture and Experiment Station at Morganstown, was in Ithaca during the third week in April accompanied by Mrs. Sanderson.
'05, B. S. A.—H. W. Hochbaum, formerly a teacher of Nature Study, Agriculture and Landscape Gardening at the State Normal School of Greeley, Colorado was transferred a year ago to a similar position in a normal school at Los Angeles, California. He now has been appointed in charge of the Department of Agriculture in a large high school at Boise, Idaho. His new position offers very unusual opportunities in the development of high school agriculture.

'05, B. S. A.—Ray C. Simpson who has been growing pecans extensively at Monticello, Florida since he graduated is planning to spend the coming summer in Ithaca with his family. He will take some work in the Summer School of Agriculture.

'07—Lynn F. Ayer has accepted the position as manager on the farm of John R. Loomis, Jr., at Glens Falls, N. Y.

'07—'10, W. H.—Harold Wilson was killed on April 14th, while blasting a piece of ground where an excavation was to be made. Three blasts were put off at once and in running from his own blast he ran directly over another one. He was well known and much respected among the fruit growers of the state.

'07, Sp.—H. S. Merry who for several years has been employed by the Department of Dairy Industry, has secured a position with the Empire Cream Separator Company at Bloomfield, N. J. Mr. Merry will be in charge of the testing department.

'07, B. S. A.—T. M. Morrison of the United States Soil Survey will return to New York State this summer to take charge of the Soil Survey work in Chautauqua County.

'08, Sp.—W. G. Depew is running a large grain farm at Canandaigua, N. Y. Mr. Depew started his farm at first with a well developed herd of Guernsey cattle but is now operating it as a general grain farm.

'08, B.S.—Mr. Lewis A. Toan of Perry, N. Y., has been appointed Assistant Secretary of the Rochester Chamber of Commerce in charge of the Farm Bureau Work of Monroe County.

'08—C. J. Grant is the County Farm Adviser of Hampton County, Mass., with headquarters at Springfield, Mass.

'09, Sp.—E. L. Baker has taken a position as teacher in the Perry Agricultural High School.

'01, M.S.A.—A. V. Steubenrauch, who this winter accepted a position in Horticulture at the University of California has been transferred back again to his former position in the Bureau of Plant Industry of the United States Department of Agriculture in charge of Fruit Transportation and Storage Investigations.

'10, Sp.—William E. Hymes has a position with the Hicks Nurseries at Westbury, Long Island, N. Y. He is doing plant breeding work especially in rhododendrons and pears. He is especially occupied with the Chinese Sand Pear which is not subject to blight.

'10, B. S. A.—N. R. Peet is in the nursery business with his father at Webster, N. Y. Mr. Peet was formerly editor of the COUNTRYMAN.

'11, Sp.—G. U. Tiffany is superintendent of the State Hospital Farm at Dayton, Ohio.

'11, B.S.A., '12, M.S.—Carlos Collado of San Jose, Costa Rica, has been visiting the college several days this week.

'12, B. S.—E. C. Auchter, instructor in Horticulture at the West Virginia College of Agriculture at Morgantown visited Ithaca during the second week in May.

'12, B. S.—H. B. Rogers is County Expert for Chautauqua County. His address is at Chautauqua, N. Y. The county has taken up this movement entirely on its own behalf.

'12, B. S.—Earl T. Maxon will have charge of the soil survey in Oneida County this summer for the United States Department of Agriculture.

'12, B.S.—H. B. Knapp has recently been appointed Assistant Professor of Extension.
'12, B. S.—G. C. Supplee, an assistant in the department of Dairy Industry has been appointed an inspec- tor for the Navy butter at the Troy Creamery Company, Troy, Pa. This company has a contract for 80,000 pounds to be put up during May, June and July.

'13, B. S.—C. E. Dimon has been appointed Assistant in Vegetable Gardening in the Department of Horticulture.

'13, B. S.—H. M. Doyle has been appointed Pomologist to the Oswego Fruit Growers' Association with headquarters at Oswego, N. Y.

Ex '13—Mr. A. J. Mix has been selected to hold the fellowship in Plant Pathology and Entomology supported by the Champlain Valley Fruit Growers' Association of Clinton County, N. Y.

'13, B. S.—Miss Blanche Corwin has been appointed superintendent of farm work at the New Jersey Women's Reformatory, Clinton, N. J.

'13, B. S.—E. J. Hoffman has secured a position with the Castle's Ice Cream Company, Irvington, N. J. He will be in charge of the testing work.

'13, B. S.—L. W. Long will be with the Newark Milk & Cream Company, Newark, N. J. He will take charge of the chemical and bacteriological work of the company.

'13, B. S.—E. H. Stevens has just passed the civil service examination for the soil survey work of the United States Department of Agriculture.

'13, B. S.—C. S. Stowell has secured a position with the Sheffield Farms, Slawson-Decker Co. This is one of the largest milk companies in New York City.

'13, Sp.—F. E. Newland has secured a position as ice cream maker in a new department just installed by the Solvay Process Company, at Syracuse.

'13, Sp.—R. M. Tillou has been appointed milk tester in the department of Dairy Industry.

'13, B. B. S.—Charles P. Alexander, left the first of June for Orono, Maine where he will spend the summer in making a special study of crane flies in Maine. The results of his work will be published by the Maine Agricultural Experiment Station.

GENERAL AGRICULTURAL NEWS

A Students' Federation

The New England Federation of Agricultural Students held an annual meeting on May 3. The purpose of this federation is stated to be the further improvement and cooperation of agriculture with its allied sciences. Under its auspices judging contests are held at the various fairs and shows throughout New England. There seems to be a tendency among agricultural students throughout the country to federate in some form or other. These organizations ought to accomplish much if they have definite aims.

A New Agricultural Paper

The students of the College of Agriculture at the University of California have organized a new publication, the Journal of Agriculture. To quote from one of its editorials "its founders hope to see it take its place as one of the leading factors in the advancement of the college. It will accomplish this by gaining the interest of the farmers throughout the state in what the college is striving to do in agricultural science." On the Faculty Committee which helped in the organization was Professor J. E. Coit, a former editor of the Countryman.
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Dairy cleanliness is no longer a theory, but a necessity. And the only question is how best may it be accomplished. Dairy and Agricultural Colleges, Creameries, Cheese Factories and large Dairymen almost without exception are using

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