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THE CORNELL COUNTRYMAN

19 - FARMERS' WEEK - 19

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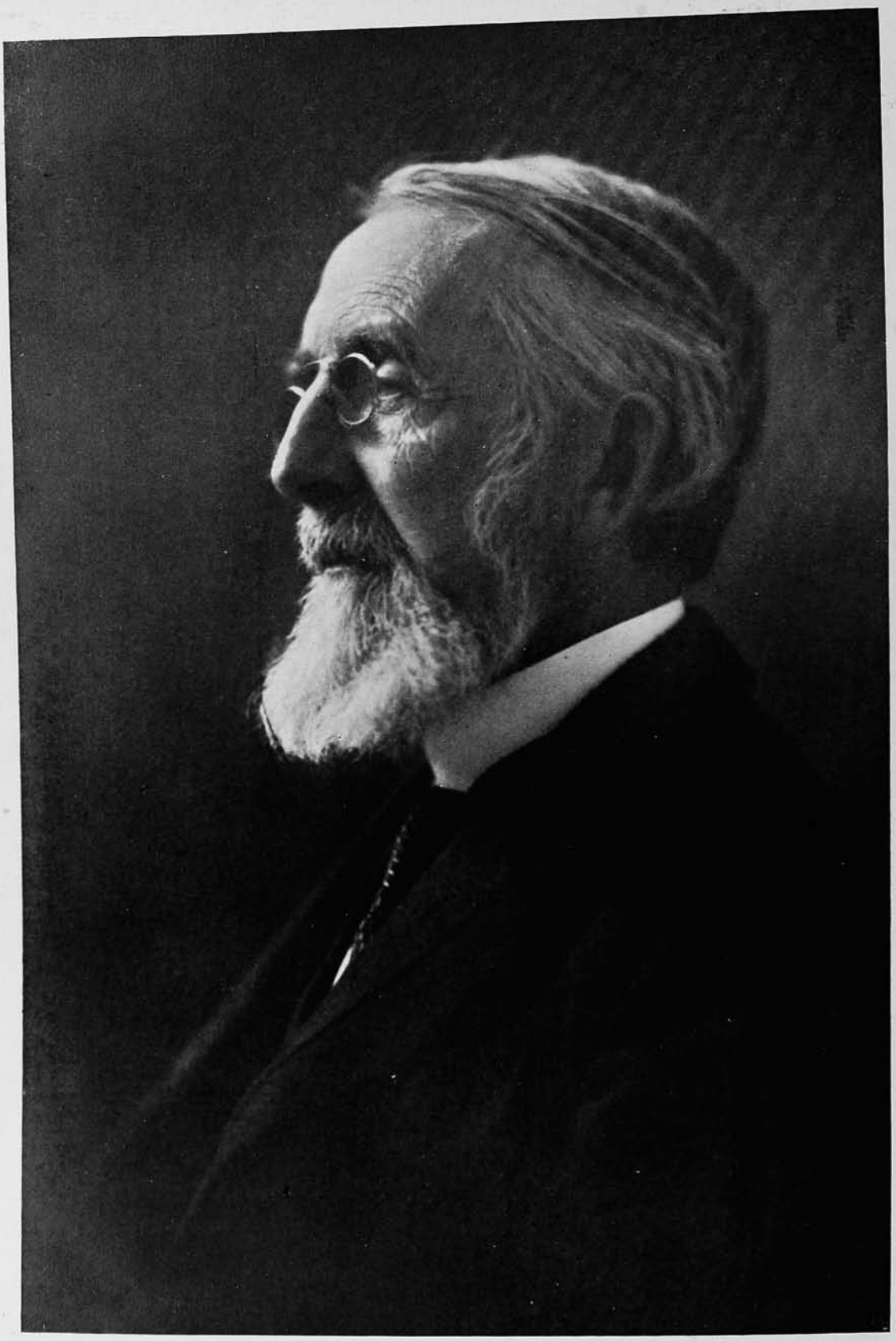

Thruout the sad or joyous years he wrought,
With love and wisdom meeting hate and strife;
Thrice blessed was his work; the thing he sought
Is here, the fair fruition of his life.

THE CORNELL COUNTRYMAN

Vol. XVI ITHACA, N. Y., FEBRUARY, 1918 No. 1

In Appreciation

IT was characteristic of the life of Andrew D. White that his influence was a reality even when he was absent. In my early years at Cornell he was abroad much of the time, yet we were all conscious of his personality, and I think we judged the University events largely as we conceived he would react to them or find pleasure in them. It was not my privilege to know him well in those days, but his interest in the work I attempted to carry was so keen, intimate, and sympathetic that I went to him with anticipation whenever I had opportunity to seek his counsel; and I think all the teachers in the University had the same feeling. His interests were so broadly human and his meeting of men so natural and unaffected that the way of approach was a delight and the reward was sure.

He knew the founder's hope for the agricultural side of the University and felt always under obligation to further it. To this responsibility he added a living personal interest of his own in the teaching of agriculture and in the farms. In a time when these subjects were little understood in their educational relations and when the way was difficult for the teacher, Andrew Dickson White was always a beacon of hope and a tower of strength. He saw a great university of generous endeavor in which all subjects were good and all men stood on their merit. This attitude has had much to do in the making of the spirit of comradeship, equality and democracy that has been a characteristic of Cornell.

To me one event stands out with special clearness. The agricultural work was approaching a crisis, due in part to the development of institutions elsewhere. I was asked to make an address at the University on the needs and the hopes of agriculture and its allied subjects. The address was printed. To my great surprise I received, in due time, a stimulating letter from Dr. White from St. Petersburg, for he was then representing the United States in Russia. That letter, probably more than anything else, committed me to the enterprise and confirmed us in a hopeful undertaking. This event, perhaps soon forgotten by him, has always stood to me as a great lesson in life, to the effect that the simple opinion of the master at the right moment may have more weight with men than any extent of public speech or official action.

Andrew D. White typified Cornell. He has left us and the world is not the same. I hope we may not only keep his memory green but that some appropriate course may be taken to preserve his spirit in the University democracy.

L. H. Bailey

Leveling for Drainage Purposes

By J. C. McCURDY, C. E. '12,

Assistant Professor of Rural Engineering at Cornell University

MANY of the problems in drainage where the area affected is small could be solved by the farmer himself if he had a suitable level and level-rod and had a working knowledge of their use. The principles of leveling can be easily mastered by the man of average ability if he will spend some time in a careful study of them.

Let us first consider the spirit level: it is a hollow glass tube nearly filled with a liquid such as ether or alcohol, leaving enough space to form a bubble. This tube is not finished on the inside like a perfect cylinder but is ground to a circular curve longitudinally, grinding in this way gives a fairly constant length of bubble which, however, will vary somewhat with changes in temperature of the air surrounding it and also permits the bubble to move more slowly as one end of the tube is raised or lowered. In a carpenter's level this tube is set in a block of wood or in a metal frame; such a level, when properly supported, can be used in conjunction with a level rod to determine the difference of elevation between points not widely scattered. If, however, the points are further apart, it would be more convenient to have the level tube mounted on a telescope and both firmly set on a suitable tripod. Such an instrument is generally called the engineer's level; its telescope contains cross-hairs and lenses, the latter magnifying both the image and the cross-hairs. To use the carpenter's level place it on a firm support and raise or lower one end until the bubble is in the middle of the tube; then look along the top of the level and, if it is in proper adjustment, the line of sight will be a level line. To use the engineer's level set it firmly on the ground, giving the tripod legs enough spread for stability, and then bring the bubble to the center of the level tube, first over one pair of opposing leveling screws and then over the other pair; the bubble should now stay in the center of the tube thruout a complete revolution of the telescope about the vertical axis of the instrument, and if the instrument is in proper adjustment, the line of sight will be a level line in any direction the telescope is turned.

Let us suppose that we desire the difference in elevation between two points A and B within range of the level; if when we hold the rod at A we get a reading of five feet, and when it is held at B the rod reading is seven feet, we know that the ground at A is five and at B is seven feet below the line of sight; and since the line of sight in any direction from the instrument is a level line, the difference in rod readings will be the difference in level between the two points, and the lowest point will be the one at which we get the greatest rod reading.

If with the instrument still in this position, we hold the rod at any other points whose difference in elevation is desired, the difference in rod readings at any two points will give their difference in elevation. To illustrate this, let us assume that this work has been done in a depression which was afterwards filled with water to the same elevation that the line of sight formerly occupied, and that we are able from the surface of the water to locate the points where the rod was held; if now we go out in a boat and measure with the rod the depth of water at the various places, the difference in depth will be the same as the difference in rod readings which we obtained from the level. We can now see that the surface of the water corresponds to a horizontal plane which would be generated by the line of sight if the upper part of the level were swung about its vertical axis.

It often happens that the points are

too far apart either vertically or horizontally to be read from a single set up of the instrument. When this happens it may be necessary to set up the instrument several times as shown on the diagram below.

In this case we desire to drain the shallow pond on the right into the stream on the left. By looking at the diagram, it will be noted from the rod readings that the hill is too high to set the level at a point midway between the stream and pond and secure the difference in elevation by a single set-up. We would then proceed as follows:

Set up the level thirty or forty paces from the stream in the direction of the pond; hold the rod at the surface of the water near the place that we wish the outlet for our ditch; from the level we now get a rod reading of 6.20; this is called a backsight (abbreviated B. S.) and is shown in the proper column in the notes; the rodman now paces the distance from the stream to the level which is found to be thirty-three paces; this is recorded in the same horizontal line as the backsight rod reading and in the distance column marked B. S. Next, the rod is taken to some well-defined point (such as the top of a solid rock, stump, or a stake driven firmly in the ground) and held upon it; a reading of 1.36 is taken; this is called a foresight (F. S.), and the distance from the level to this point should be about the same as the distance from the level to the stream. The difference between the two rod readings gives the difference in elevation between this new point, called a turning point (T. P.), and the surface of the water at the stream. The level is now taken to a new position and a backsight (8.44) taken on the turning point just used. A new turning point is now chosen further ahead and a foresight (1.52) taken on it.

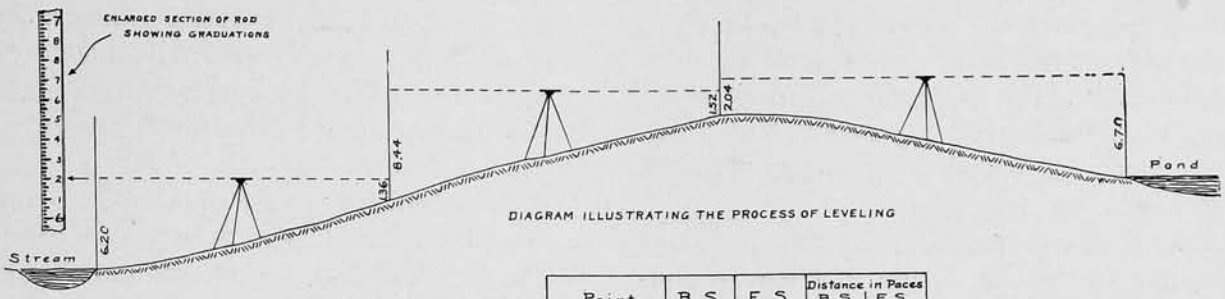

DIAGRAM ILLUSTRATING THE PROCESS OF LEVELING

Point	B. S.	F. S.	Distance in Paces B. S.	F. S.
Water Surface in Stream	6.20		33	
T. P.	8.44	1.36	37	33
T. P.	2.04	1.52	46	39
Water Surface of Pond		6.70		44
Sum	16.68	9.58	116	116
Diff. in Elev.	7.10			

FORM OF NOTES FOR WORK ILLUSTRATED ABOVE

This process is continued until a foresight is taken on the surface of the water of the pond. One should remember that it is necessary to keep the backsight and foresight distances as nearly equal as possible and that it is necessary when setting up the level the last time, to so place it that the sum of the backsight distances will equal the sum of the foresight distances for the entire line of levels. The difference in elevation between the water surface at the stream and the water surface at the pond is equal to the difference between the sum of the backsight and the foresight rod readings, and since the sum of those in the foresight column is the smallest, the pond is higher than the stream.

The carpenter's level can be used more conveniently if it is mounted on a tripod and can be swung about in a horizontal plane. A combined level holder and a tripod head* which permits this motion can be puchased from leading hardware dealers; sights attached to the level will also facilitate the work;

* Both made by the *Stanley Rule & Level Co.*, New Britain, Conn.

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Artificial Light, an Aid to Egg Production

By JAMES E. RICE

Professor of Poultry Husbandry at Cornell University

One of the most sensational developments of modern poultry husbandry is the discovery that by the use of artificial light as an aid to feeding and activity, the distribution of egg production thruout the year can be radically changed. So great is the change and so certain the results when artificial light is properly applied to the right kind of stock in conjunction with proper methods of feeding, that it is destined to revolutionize egg production and the market egg receipts. It will have the double effect of (1) materially increasing the production and hence the market receipts of the fall and early winter eggs and, (2) proportionately decreasing the production and receipts during the spring and early summer months. This will be a benefit both to the producer and to the consumer, since it will have a tendency to distribute the production and prices more uniformly thruout the year. A larger supply of fresh eggs in the fall and winter and less eggs at higher than normal prices in the spring and summer will have a tendency to increase consumption, due to a better quality of eggs and less extremes in the prices.

These changes to be brought about by the use of artificial light, altho important, are likely to be gradual, due to the fact that the great bulk of our egg supply is produced by farm flocks which are kept as a side line. This implies that artificial light will be used extensively at first, mostly by the large commercial poultry producers, who are largely responsible for the supply of fresh eggs during the normal season of scarcity and high prices. The experiments which the College has carried on in the use of artificial light indicate that for the person who is willing to assume the comparatively small amount of extra time and expense of installing a lighting system and who is able to handle it properly, there are several distinct advantages to be secured, namely: a larger proportion of high priced eggs, a larger number of eggs per hen per year, a smaller amount of feed and other expenses required to produce a dozen eggs, and better general health of the stock.

This statement would look like a case of "having your cake and eating it too." In a sense this is true, but artificial light, properly applied, helps the fowls to eat more naturally and to produce more uniformly and efficiently thruout the year. The hen in our north temperate climate under natural conditions is much like an automobile running on low gear up a long steep hill and then racing down on high gear, as compared to the same machine moving at a moderate speed on a level road over smooth, easy grades. When the nature of the hen and the mechanism of the automobile are understood, the accuracy of the comparison is understood. The hen is by nature a native of a tropical country where the nights and the days are of essentially equal length, and where the temperature permits fowls to live in the open air the year round. In domestication in the north she is kept under unnatural conditions, and in all the centuries under domestication she has adapted herself to her environment—to climate, food, and close confinement—by changing her habits instead of her nature. Instead of changing her digestive system to fit a long, cold fifteen-hour night, with its long span of inactivity between supper and breakfast, she has preferred to follow the line of least resistance; that is to say, she stopped laying, tucked her head under her wing, and waited for spring to come, which was the right and sensible thing to do under the circumstances, since self-preservation is the first law of nature. In this she does not differ materially from the woodchucks and

(Continued on page 28)

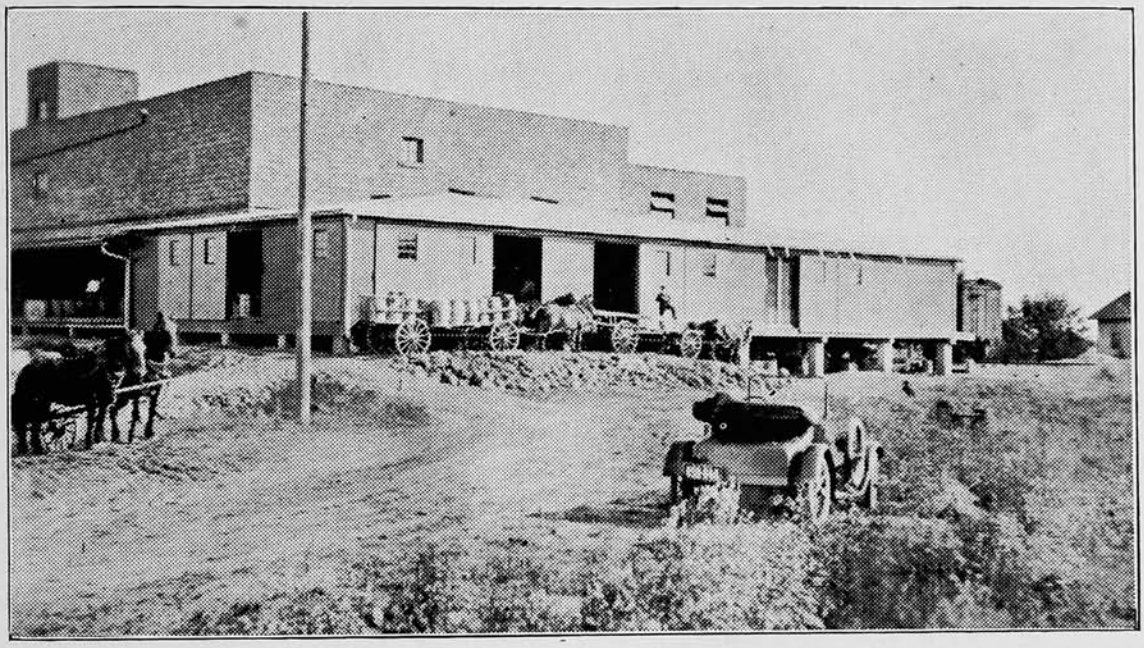
The Central Packing House Associations

By NELSON R. PEET, '10

County Agricultural Agent of Niagara County

Editor of Cornell Countryman, 1909-10

THERE are one hundred and seventy-six fruit growers in western New York who have united themselves in the seven central packing house associations within the last few years. Four of these were organized under the auspices of the Niagara County Farm Bureau during the past season. All of them have been incorporated under the new membership corporation law, and late in the summer they federated into one county association known as the Niagara District Fruit Growers Cooperative Association, Incorporated. These associations have packed centrally or sold cooperatively approximately three-fourths of a million dollars worth of fruit this year, including one hundred thousand barrels of apples, seventy-eight thousand bushels of peaches, as well as pears, grapes, and other fruits.



Central Packing House of Ransomville Cooperative Association; 50 x 100 ft.; 1 Trescott grader used; capacity 450 to 600 bbls. per day; 1700 bbls. of apples packed; cost of house, $2500.00

During the past twenty-five years numerous attempts have been made to put the fruit business on a more systematic plan, but almost without exception these attempts have been concerned with trying to increase the price which the fruit would bring and forgetting all other conditions. In every case where an attempt has been made to "beat the game" on selling, there has been a dismal failure left as the tomb stone of this idea. In organizing the central packing house associations, the fruit growers of Niagara County felt that their fruit had been bringing all it was worth as it was then packed, and they accordingly organized to deliver a better grade of goods. It is also interesting to note that they have felt the selling would largely take care of itself if the fruit was properly packed.

Some of the ideas which the growers had in mind in organizing these associations are well worth mentioning.

Confidence of Consumer

Keen visioned fruit growers have watched with dismay and considerable

chagrin the lack of confidence in the growers on the part of the distributing trade and the consuming public in western New York apples, peaches, and other fruits which were put up in closed containers. Very possibly it is true that the pack of the fruit has not been getting poorer and poorer, but it is true that the packs of our competitors have been getting better and better so that a discriminating public has been gradually giving its trade on fruit to those sections of the country which pack their fruit in such a way that some confidence is warranted to the consumer of what is inside of the barrel before it is opened. It is true that the fruit which has captured this trade is almost without exception packed in central packing houses.

Uniform Grade

Those who were instrumental in starting the central packing house movement did not assume as one of their ideals that they were going to put up in all cases a better grade of fruit. There are many growers in western New York who now put up a very good pack of fruit, and they were the growers whom it was good judgment to get into the packing house associations. Those who were fathering the plan did hold out as an inducement that it was their hope to put up a uniform pack. In the past, fruit, especially apples, have been packed by each grower as the buyer who purchased the apples desired to have them packed. It is almost axiomatic that there have been as many packs or grades of fruit as there have been different buyers. This has resulted in a most chaotic condition which not even the apple grading law has been able to entirely systematize. In order to secure this uniform grade, each grower who is a member of a central packing house association brings his fruit to the packing house just as it comes from the trees. The association hires a manager who employs the help to grade the fruit to standards which are set by the association before the picking season. In fact this year all of the associations got together and agreed to a common standard so that the fruit in all seven associations was packed to the same grade.

Use of a Brand

The fact that such a large quantity of fruit was packed to a uniform standard

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Central Packing House of Olcott Growers Cooperative Association at Burt, N. Y.; 40 x 70 ft.; capacity 400 to 550 bbls. per day; storage cellar in basement; loft for baskets; cost $4000.00

Cooperation Among Plant Pathologists

By H. H. WHETZEL

Chairman of the War Emergency Board of American Plant Pathologists

Professor of Plant Pathology at Cornell University

SCIENTISTS, in general, are noted for their individualism, their isolated manner of conducting their work, and their almost complete lack of team work in the solving of their problems. The workers in the field of agriculture have proven no exception to this rule. We preach cooperation to the farmer and refuse to practice it ourselves. We approach large problems like a horde of rats attacking a large cheese and often dissipate our efforts in rending each other. In fact, the rats are more likely to dispose of the cheese than we of the problem. We stake off a claim, often the entire problem, and then for want of time, facilities, or capacity, we fail to work it out but deliver isolated bits of doubtful value or of little immediate worth. We delude ourselves with the idea that we are thus promoting the solution of the problem. The fact is that we are usually delaying it.

Cooperation and coordination are the foundations of all progress, biological, social, political, industrial, or scientific. Democracy is but another name for cooperation in government, and it will prove quite as laudable and effective in scientific endeavor. So rare is it to find two or more scientific workers uniting in the solution of a problem, that it challenges our immediate attention and elicits our wondering comment.

Cooperation has been the world's slogan during the past four years, and today we behold the peoples of the earth launching the most gigantic project in international cooperation that mankind has ever undertaken. We all realize, too, that only one thing can materially interfere with the success of the undertaking, and that is national selfishness. Consider for a moment some of the failures in cooperative undertakings to which you have been a party or with which you have been well acquainted. You must admit that the fundamental cause of failure has been the personal selfishness of one or more of the individuals concerned therein. Shall we admit that this also has been the chief obstacle to cooperative undertakings among scientists in the past?

Scientists, while generally admitting that cooperation is desirable and profitable for other men or other fields of endeavor, are skeptical of its efficacy in their own case. They seem inclined to consider themselves a class apart, and they have been too much "apart" for their own good, the good of their profession, and the progress of the world. Many of them hold that cooperation is either impossible or undesirable. That it is neither, has been amply and repeatedly proven during the fateful years thru which we have just passed. For never before have scientific men so justified the high esteem and confidence in which they are held by the laity (and by themselves) as during the world war, and never before have they so frequently and effectively cooperated among themselves.

Because of its vital importance to the agriculture of this country, I may be permitted to set forth in its barest outlines a piece of cooperative undertaking planned and carried thru during the past year by American plant pathologists.

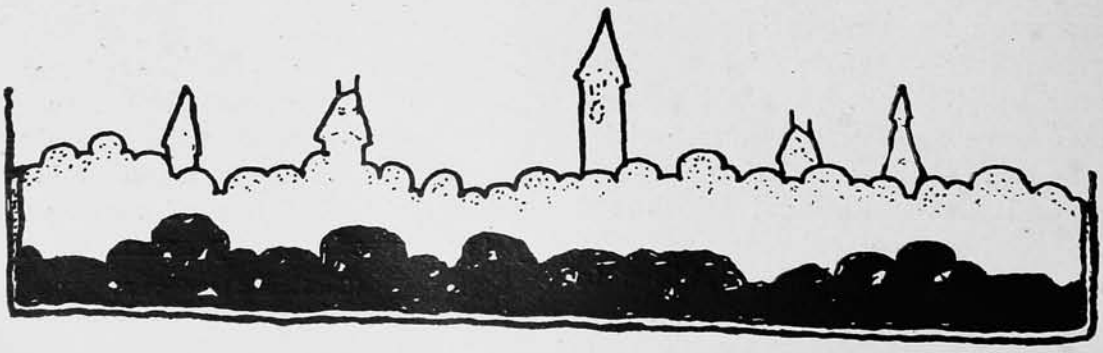
Desiring to bear most effectively their share of the country's burden in the prosecution of the war, they appointed in January, 1918, a War Emergency Board of eight commissioners. This board was charged with the duty of bringing about cooperation and coordination in the efforts of plant pathologists to speed up crop conservation thru

(Continued on dage 36)

Greetings

WE are now resuming our normal college work, many months sooner than we had expected. We have passed thru a trying and glorious time—glorious in that our students and our institutions in common with the entire nation have been privileged to play an important and effective part in this war for the protection of the liberties of the world. These years of war have revealed to many minds with an unexpected vividness the immeasurable value of the higher education for men and women and the high place of colleges and universities in the affairs of the nation. The trained mind has come to the top. As we return to our teaching and to our studies there should be a new incentive for diligent work and superior scholarship. The privileges of the University student should be unmistakably clear. As we welcome our old students back and many new ones for the first time, we invite them all to the fullest realization of the opportunities that await them here.

February 1, 1919. *A. R. MANN, Dean.*



A Method of Judging Fowls for Egg Production

As Formulated at the Judging School Held at Cornell University, July 1-6, 1918, and Approved by The American Association of Instructors and Investigators in Poultry Husbandry

IN order to lay well, a bird must have a sound body and be vigorous and healthy. Vigor and health are shown by a bright, clear eye, a well set body, a comparatively active disposition, and a good circulation. Further, the bird must be free from physical defects such as crooked beak, excessively long toe nails, eyelids that over-hang so that the bird cannot see well, scaly leg, or anything else that would keep the bird from seeing or getting an abundance of food.

Loss of Fat Due to Laying

A laying fowl uses up the surplus fat in the body, especially the fat from the skin, and in yellow skinned breeds this loss of fat can readily be seen by the loss of the yellow color. The different parts of the body tend to become white, according to the amount of fat stored in the body and the amount of circulation of blood thru that part. These changes occur in the following order:

HIGH PRODUCER

1. Full, bright, stiff, waxy comb and wattles.
2. Thin face.
3. Pale color of beak, eye-ring, earlobes, face.
4. Full earlobe.
5. Bright, round eye.

LOW PRODUCER

1. Small, hard, dried, scale covered comb and wattles.
2. Fat face.
3. Yellow color of beak, eye-ring, earlobes, face.
4. Shrunken earlobes.
5. Dull, snaky eye.

The vent changes very quickly with egg production so that a white or pink vent on a yellow skinned bird generally means that the bird is laying, while a yellow vent means a bird is not laying. It should be remembered, however, that all yellow color changes are dependent on the feed, coarseness of skin, and size of bird: a heavy bird fed on an abundance of green feed or other material that will color the fat deep yellow will not bleach out nearly as quickly as a smaller or paler colored bird.

The eyering, that is, the inner edges of the eyelids, bleach out a trifle slower than the vent. The earlobes on Leghorns and Anconas bleach out a little slower that the eyering, so that a bleached earlobe means a little longer or greater production than a bleached vent or eyelid.

The color goes out of the beak, beginning at the base, and gradually disappears, finally leaving the front part of

GOOD LAYERS

1. Vent pale, large, full and moist.
2. Pelvic bones widespread.
3. Skin soft and flabby.

POOR LAYERS

1. Vent yellow, small, hard and puckered.
2. Pelvic bones blunt, not widespread.
3. Body full, hard plump.

POOR LAYERS

1. Shanks yellow.
2. Shanks full, hard, round in the back.

GOOD LAYERS

1. Shanks pale.
2. Shanks thin, and soft in the back.

the upper beak. The lower beak bleaches faster than the upper but may be used where the upper is obscured by horn or black. On the average colored, yellow skinned bird, a bleached beak means heavy production for at least the past four to six weeks.

The shanks are the slowest to bleach out and hence indicate a much longer period of production than the other parts. The yellow goes from the scales on the front of the shanks first and finally from the scales on the rear. The scales on the heel of the shanks are the last to bleach out and may generally be used as an index to the natural depth of yellow color of the bird. A bleached out shank usually indicates heavy production for at least fifteen to twenty weeks.

The yellow color comes back into the vent, eyering, earlobes, beak, and shanks in the same order that it went out, only the color return is faster. A vacation or rest period can sometimes be determined by the outer end of the beak being bleached, and the base being yellow. All color or pigmentation changes should be observed by daylight.

A laying hen has a large, moist vent showing a dilated condition and a looseness as compared with the hard, puckered vent of a non-laying hen. The whole abdomen is dilated as well as the vent so that the pelvic arches are widespread, and the keel is forced down away from the pelvic arches so as to give large capacity. The more eggs a bird is going to lay the following week, the greater will be the size of the abdomen. The actual size is, of course, influenced by the size of eggs laid and by the size of the bird.

Heavy production is shown by the quality of the skin and the thickness and stiffness of the pelvic arches. Fat goes out from the skin and body with production, so that the heavy producers have a soft velvety skin that is not underlaid by layers of hard fat. The abdomen in particular is soft and pliable. The sternal processes are very prominent and are generally bent outward. The thicker and blunter the pelvic arches and the greater the amount of hard fat in the abdomen, the less the production or the longer time since production.

One of the finer indications, but yet one of the most valuable in picking the high layer is the fineness of the head and the closeness and dryness of feathering. The head of a high layer is fine. The wattles and earlobes fit close to the beak and are not loose and flabby. The face is clean-cut. The eye is full, round, and prominent, especially when seen from the front. The high layer is trimmer; that is, the feathers lie closer to the body, and after heavy production the oil does not keep the plumage relatively as sleek and glossy but the plumage becomes worn and threadbare.

The comb, wattles, and earlobes enlarge or contract, depending on the ovary. If the comb, wattles and earlobes are large, full and smooth, or hard and waxy, the bird is laying heavily. If the comb is limp the bird is laying only slightly, but not at all when the comb is dried down, especially at molting time. If the comb is warm it is an indication that the bird is coming back into production.

When a bird stops laying in the summer she usually starts molting. The later a hen lays in the summer, or the longer the period over which she lays, the greater will be her production, so that the high producer is the late layer and hence the late molter. The length of time that a hen has been molting or has stopped laying can be determined by the molting of the primary feathers. It takes about six weeks to completely renew the primary feathers next to the axial feathers and an additional two weeks for each subsequent primary to be renewed.

A good layer is more active and nervous and yet more easily handled than a poor layer. A high layer shows more friendliness and yet elusiveness than a poor bird. A low producer is shy and stays on the edge of the flock and will squawk when caught. A high producer one year is, generally speaking, a high producer in all other years. The above method should be applied at the end of the laying year.

The Farm Seed Catalog

By O. W. DYNES

Instructor of Farm Crops at Cornell Uuiversity

In ordering seeds from a catalogue, a person does not take in consideration that the glowing descriptions if not unreliable at least are exaggerated. The author, aside from pointing out the shortcomings of the seed catalogues, offers several good suggestions which he thinks would make them of greater value than now to agricultural knowledge.

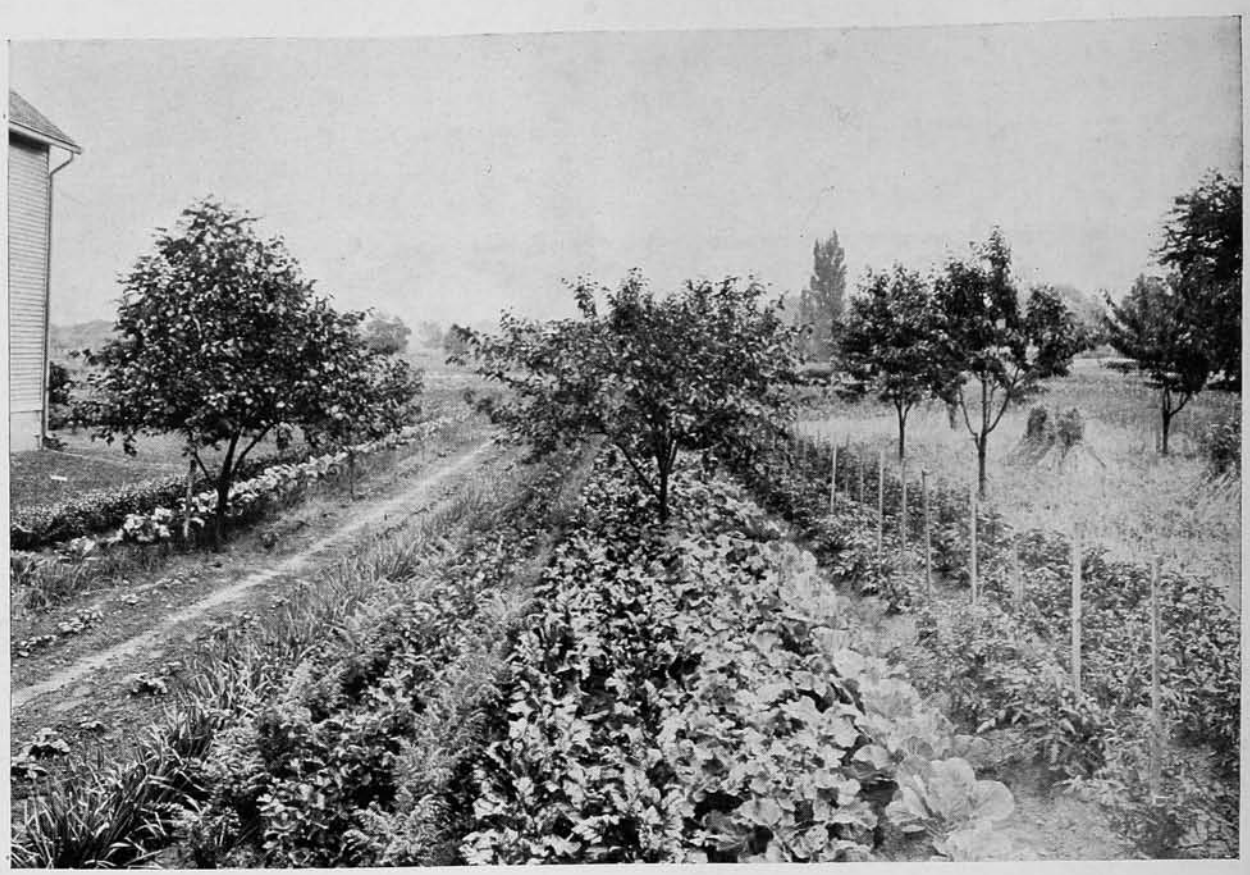
THE farm seed catalog plays an important part in the dissemination of agricultural information to the American farmer. This information is not always reliable and frequently works at cross purposes with the instructions of agricultural colleges and experiment stations. To a certain class of farmers it is doubtless true that the flamboyant illustration and extravagantly worded descriptions of some well known retail seed houses are more effective, even tho often misleading, than the station publication or extension circular.

The retail farm seed house is an older institution in the United States than the agricultural experiment station, and cooperation between the two is often noticeably lacking. Both attempt to serve the farmer, but oftentimes the advice of a dishonest seedsman will nullify the teachings of the disinterested agricultural teacher or experimenter. Here are a few isolated statements from a popular seed catalog regarding speltz (properly emmer). "The feed crop of your dreams—a veritable gold mine to every grower—seems to have no climatic limitations—by sheer merit it has blazed a trail of distinction from coast to coast—it flourishes under positive neglect—grow speltz and be prosperous." The bold colorless statement of fact presented by the experiment worker that emmer has a very limited but important usefulness in portions of the western states has little effect when matched against the glowing rhetoric of these wonderful (mis) statements.

Few seed houses attempt to limit the sale of seeds to regions to which the plants are adapted. Sub-tropical plants like teosinte are enthusiastically recommended for states along the Canadian boundary with statements of astonishing yields reported from the Valley of the Nile or the Island of Haitai. General observation and experimental evidence show that the proper selection of a corn variety depends upon its somewhat limited regional adaptation. Seedsmen are well aware of this fact but often fail to supply this information to prospective customers. The advertising and sale of certain kinds of grain that in farm practice cannot survive the competition of other sorts is all too common. This is what a certain seedsman says about his particular variety of hulless barley. "It is the most prolific fat and health producing food for hogs, cattle, and poultry extant today. For fattening purposes, it is worth from one and a half to two bushels of corn and yields from sixty to eighty bushels to the acre." All of which is interesting if it were only true. From this same seedsman comes the following appeal to the patriotism of the American farmer. "The essential duty of every farmer is to grow Billion Dollar Grass. It is one of the most tragic things in life to see farmers, intelligent farmers, carrying on their struggle, their infinite labors, their everlasting toil, fruitlessly —because of misdirected inclinations and prejudice when nature beckons them to untold prosperity, joy, and happiness by providing that wondrous of hay crops —Billion Dollar Grass."

Occasionally, seedsmen will weave a shroud of mystery around the origin of certain seeds they are exploiting, but this method of increasing sales is becoming less common because it often acts as a boomerang. Who has not heard of the

(Continued on page 44)



The Farm Garden in New York State

By A. THOMPSON

Instructor of Vegetable Gardening at Cornell University

A GOOD, all-season farm vegetable garden is the exception rather than the rule, even in the best farming section of New York, yet no other similar sized piece of land on the farm yields as much profit and satisfaction as the garden. A well-kept garden is a pleasure to the whole family, but especially to those members of the family who have to answer the eternal question: "What are we going to have for dinner?" Not only is it possible to reduce the cost of the family's food by having a good garden, but the satisfaction of having a plentiful supply of fresh vegetables at hand, regardless of the market, cannot be measured in dollars and cents. Farmers often argue that it is cheaper to buy vegetables than to raise them, but they forget to take into consideration the time it takes to drive a mile or several miles to the market to buy them. Very few farmers live near enough to a city to have the advantage of a market, and it is well-known that country stores do not keep fresh vegetables. Whether or not vegetables can be bought more cheaply than they can be raised, it is true that on far too many farms vegetables make up a small part of the diet. It is sometimes claimed that men working on the farm do not need vegetables in the diet to the same extent that office men do. Granted! But what of the women and children, especially the children? Men working on the farm may get along on a diet of salt pork, potatoes, and bread, but such a diet is certainly not the best kind for children.

Vegetables and fruits furnish a large part of the essential salts so necessary to the well being of the human system, so that the value of vegetables in the diet is a great deal more than the mere food value or money value. The need of tonics and other medicines in the spring is due largely to the lack of vege-

tables and fruits in the winter diet. If more succulent food were available, less money would be spent in doctors' fees and for medicine.

Fresh vegetables from the home garden have not been subjected to exposure on the market and are not liable to infection. Many vegetables lose their characteristic flavor within a few hours after gathering. Sweet corn, beans, peas, lima beans, and asparagus deteriorate so rapidly that it is impossible to get the highest quality unless these vegetables can be cooked soon after gathering them. It is a noticeable fact that families that have had a good garden and know its value always find time to care for it, while those families having had no such experience fail to appreciate the garden. The home garden is worthy of greatly increased attention by New York farmers.

The size of the garden depends upon the number of persons to be supplied and the character of land and vegetables desired. One-fourth to one-half acre is sufficient for a family of six and should produce enough vegetables for use throughout the year, with the exception of potatoes which are usually produced in the field. However, where land is plentiful, it is advisable to have twice as large an area as is needed for vegetables and to have one-half of it each year planted to a soil improving crop. The garden should be located near the house for convenience to the housewife and preferably of a loamy soil with a south or south-east exposure.

Plan and Arrangement of the Garden

No plan and arrangement that has ever been worked out is satisfactory under all conditions, and no one can form a plan that will exactly suit everyone else. However, a few suggestions may be of help. In general, a garden that is to produce all the vegetables needed for the family should be long and narrow with the rows running the long way. There should be no paths across the rows but a turning space kept at the ends. If the area is small, the rows might be short or run across the garden and the garden cultivated by hand. The writer believes it is more economical to do the work by hand after the land is prepared than to use a horse. With a hand cultivator or wheel hoe, a man or boy can cultivate what needs to be cultivated at any one time in about the same length of time it would take to get the horse and cultivator ready for work. Then too, in a small garden too much space is taken up in turning a horse.

Seeds for the Garden

The seeds for the garden should be at hand considerably in advance of the planting season. Secure catalogues from reliable seedsmen, and after making a plan of the garden, select the varieties and quantities of each kind of seed needed.

The following are the approximate quantities of seed that should be purchased for a garden which is to supply vegetables for a family of four.

Bean:	
Bush Lima	1 pint
Pole Lima	1 pint
Snap	1 to 2 quarts
Beet	4 ounces
Cabbage:	
Early	1 packet
Late	½ ounce
Carrot	1 ounce
Cauliflower	1 ounce
Celery	1 packet
Corn, Sweet	1 to 2 pints
Cucumber	1 ounce
Eggplant	1 packet
Kale	2 ounces
Lettuce	½ ounce
Onion Sets	4 to 6 quarts
Peas, garden	4 to 6 quarts
Parsley	1 packet
Parsnip	½ ounce
Radish	1 ounce
Salsify	1 ounce
Spinach	½ pound
Squash:	
Hubbard	1 ounce
Summer	1 ounce
Tomato:	
Early	1 packet
Late	¼ ounce
Turnip	2 to 3 ounces

It is not supposed that any family will

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THE CORNELL COUNTRYMAN

FOUNDED 1903 INCORPORATED 1914

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

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Home Economics Editors

GERTRUDE SAMPSON RUTH NYE

ITHACA, N. Y., FEBRUARY, 1918

AGAIN *The Cornell Countryman* resumes publication. We regretted beyond words the necessity of suspending last fall. But the times were such that the successful consumation of the World War demanded the concentrated efforts of the entire nation. We felt it hypocritical to continually preach patriotism and "do your bit" without following out our own precepts. So *The Countryman* locked up its office and entered the service of the Government. We did not succumb to the trials and troubles then confronting every agricultural college publication, but rather did we succumb to patriotism. We were not slackers.

However, some few words of apology are needed for those few months of inactivity. We trust that the issues yet to come will fully satisfy and please our readers, and in some manner compensate for those lost issues. We sincerely thank all our friends for their kind words and assistance, and we hope that the future holds for every one years of Prosperity and Peace.

THE number of cooperative associations increases more and more every year as their value becomes more fully realized. Older ones are being stimulated and new ones formed, often where cooperation formerly was thought impractical if not impossible. Professor Whetzel explains on page 13 what cooperation may accomplish among scientists, and Nelson R. Peet, page 11, what it may accomplish among fruit growers.

The greatest gain to the fruit growers is the confidence of the public gained in his product, due to correct packing. The individual farmer can not pack well; he does it poorly. The time must surely pass when the scrawny apples are put in the middle of the barrel where they are not seen until the barrel is opened and unpacked. That may be all right when they are so labeled, but when they are not it is poor business. The fruit grower must see to it that the fruit is packed and labeled in a manner which is reliable and which truthfully represents his product, or otherwise he does both himself and his crop a great injustice. New York apples have the flavor, and if the farmer will give them half a chance they will do the rest. Western farmers and fruit growers have the spirit of cooperation, why not New York?

PRICES obtained for farm produce the country over these past few years can not continue. Formerly the selling price in the fall was on a higher level than the cost of supplies. Now there will be an exact reverse of the case, and the crops will be sold at a lower level than the spring prices. Naturally lower net returns will result. That will occur until conditions readjust themselves.

The reason for all this is obvious: the entire cultivated surface of the earth will

again be used for producing food to meet the needs of 1920; the entire world's shipping will again be free to aid in the distribution of this food; the war forces are being demobilized and currency is bound to be deflated.

This drop in prices will not occur immediately, however. The federal commission sent to Europe to study the world's food supply reported that Europe must be fed from America's supplies until her own 1919 crops are harvested. The commission also confirmed that "crop conditions and prospects in the principal countries of the world justifies the statement that for the staple food and fiber products grown in the United States, such as wheat, meat, sugar, cotton, and wool, there will prevail a strong demand and that prices will probably continue steady and at a high level for a while."

These facts should help determine the planting in 1919.

IT is a more serious mistake than is generally realized to keep the pigs in cold and wet quarters. Under these conditions half the corn fed to them is lost. That means out of every two hundred bushels, a hundred are wasted or $175 when corn costs $1.75 a bushel.

When the pigs are given a warm bedding and some protection against the cold, they will soon fatten up. If they are cold and uncomfortable less food will be converted into fat as the body heat must be maintained, and if the conditions are very unfavorable even a loss of fat may occur.

THE COUNTRYMAN announces the resignation of W. C. Eldridge, the return of E. B. Sullivan and A. J. Masterman to the staff and the election of Ruth Nye, '20, of Petersburg as Home Economics Editor.

NOVEMBER 18, 1918, was the death day of Andrew Dickson White, the first president of Cornell, and the man who not only gave more freely than any one else to the University but always kept its well-being uppermost in his heart. From the time when as a freshman in the little college, rude in architecture but lovely in surroundings on the shores of Lake Seneca, he ever dreamed of a university worthy of the commonwealth and of an education, a force in the community. Cornell, he planned, was to be a realization of his dreams, and he did unto his utmost that it would be such. Such a foundation did he lay for the University and for us.

There could be no better ideal for us to have than the character and life of Andrew D. White, his clear cut mind, his passion for learning, his never-failing industry, his true combination of scholar and gentleman. Words are inadequate things with which to express our admiration. Below is a portion of a letter which shows the regard prominent men hold for him, our first president. The letter is a note of congratulation on his seventieth birthday sent to him when ambassador to Berlin by the President of the United States.

. . . . . As a politician, as a publicist, and as a college president you have served your country as only a limited number of men are able to serve it. You have taught by precept, and you have taught by practice. We are all of us the better because you have lived and worked, and I send you not merely my warmest well wishes and congratulation but thanks from all our people for all that you have done for us in the past.

Faithfully yours,

(Signed) Theodore Roosevelt.

When college opened this fall questionnaires were distributed among the seniors to obtain a report of what kind of work they had been doing during the past summer. As a result it was found that no one had been idle, and no matter how hard the work, it had been really worthwhile. Even the girls who stayed at home took over the management of the homes either wholly or in part. Most of these were on farms, and the smallest family recorded numbered six. Girls living on farms often were what they termed "handy-men" to take the place of some man who had left for the war. Not to be outdone by those who had the advantage of living on a farm, were those girls of whom we have heard so much, the farmerettes.

Cornell University had a unit with its headquarters consisting of a vacant farm house and four tents about a mile and a half from Ithaca on West Hill. Farmers came in at about seven o'clock in the morning for these girls, who, equipped with overalls, large hats, and lunch baskets, went out to the farms to hoe, weed, or pick berries. The girls made friends among many of the farmers' families and were given a picnic by these friends at Enfield Falls. Every Cornell farmerette declares she has never had a better time than when she was "farmeretting." If necessary the camp will run next year and already many farmers have promised to support it in case it does continue.

Work in Community Kitchens and as Pupil Dietitians seemed to be most popular. The conservation work was at its height then and the administration needed many workers, and these girls did a real, patriotic work, especially in canning and drying fruits and vegetables. Some also gave demonstrations and lectures on the saving of sugar and wheat, and on the use of wheat substitutes. The pupil dietitians assisted in making menus, ordering, cooking, setting up trays, and making desserts for hospital diet kitchens. Their days were long and hard, starting at six-thirty or seven o'clock in the morning and working until six-thirty or seven in the evening, with two hours off at lunch and one afternoon a week vacation. As the only pay they received was room and board, the work certainly must have been worth while to claim so many enthusiasts.

There were many girls who did clerical work while still others waited table or worked in munition factories, but the work described above was the most popular. The obvious fact about the reports is that the girls no longer care for a vacation of all pleasure but prefer to feel they are accomplishing something.

Miss Martha Van Rensselaer, associate head of the department of home economics at the New York State College of Agriculture, was given a leave of absence March 1, 1918, at the request of Mr. Herbert Hoover, to take charge of the Division of Home Conservation in the United States Food Administration. This leave of absence was later extended to January 1, 1919. While she has returned to her regular duties in the university, she still remains a member of the Food Administration Staff while it is in existence. Miss Van Rensselaer is also a member of the Executive Committee appointed by Mr. Hoover to act in his absence in Europe upon Food Administration questions.

The Division of Home Conservation included the organization of conservation work with the women in the United States and supervision of material for publication as a guide to housekeepers in planning their meals according to the rules of the Food Administration.

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Campus Notes

Eastman Stage Endowed

Mr. A. R. Eastman of Waterville, who for the past few years has been supporting an agricultural speaking stage, has recently endowed it by presenting the College with three thousand dollars worth of Liberty bonds for the purpose. This will increase the prizes somewhat over those of former years so that the first award will now be one hundred dollars and the second twenty-five dollars.

As a result of recent try-outs the following have made the stage, which will be held during Farmers' Week as usual.

P. L. Dunn, '19—Rural Organization.

D. G. Card, '19—Problems of the Young Man Farmer.

Miss C. Leach, 19—Rural Schools.

W. Measday, '19—Reclaimed Land for Returned Soldiers.

C. Johnston, '19—Keeping the Boy on the Farm.

F. H. Bond, '22—Dairymen's League.

New Short Courses

On February 24 two special new courses for persons outside of the College will begin. One will be a six day school for commercial beekeepers, the other a month's course in cheese making and ice cream manufacture. Tuition is free in both courses to residents of New York state.

At the beekeepers' school, Dr. E. F. Phillips, George S. Demuth, and George H. Rea of the U. S. Bureau of Entomology; E. R. Root, editor of "Gleanings in Bee Culture," and several prominent New York state beekeepers will be the instructors. This course, given in cooperation with the U. S. Department of Agriculture, has been carefully organized and will deal with practical problems of the apiary. Similar courses were given in California during November and December and were very successful.

The course in cheese making and ice cream manufacture is open to all those who have had some experience, either in the winter short course of the College or in actual practice. Instruction and practice will be given in the making of several kinds of cheese, such as cottage cheese, baker's cream cheese, neufchatel, pimento and club cheese as well as in making ice cream, sherbert, and ices on a commercial scale. In the ice cream work, hand and power driven freezers will be operated. Of the latter type use will be made of those using ice and salt as a freezing agent and of those using mechanical refrigeration. Application for entrance in the course should be sent to the Dairy Department, State College of Agriculture, Ithaca, N. Y.

The Tractor School

The College of Agriculture is offering two schools of three weeks each, the first from January 13 to February 11, and the second from February 17 to March 8. Because of the lack of laboratory space, these schools are limited to twenty-four students each. They are given by the department of rural engineering, under the direction of Assistant Professor Robb and Mr. Fairbanks, and are designed primarily for the practical instruction of tractor operators. The work is given in two lectures daily, and two practice-periods of three hours each. It covers the running, overhauling, and making of repairs, and adjustments, such as valve-

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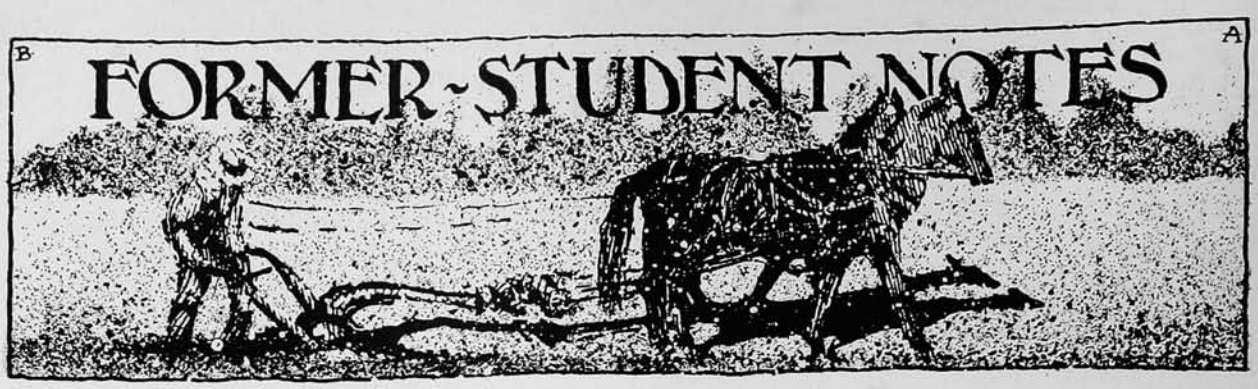

Former Students Attention

All former students of the Regular, Special, or Short Courses and also members of the Faculty of the College of Agriculture, are cordially invited to an Informal Reception and Supper on Tuesday of Farmers' Week at the Home Economics Auditorium at 6 P. M.

The speakers are to be President Schurman and Dean Mann. The reception is being arranged by the following committee: Professor Montgomery Robinson, Chairman; R. A. Mordoff, Professor E. E. Barker, and E. V. Hardenburg.

Allen D. Honeywell, ex-'19, of the College of Agriculture, was killed Saturday, January 18, when the aeroplane he was driving fell into the sea at Pensacola, Florida. Honeywell left Cornell and enrolled in the Naval Reserve Force April 9, 1917. He was stationed at Newport, Rhode Island, until April, 1918, when he was accepted for the Naval Reserve Flying Corps and sent to the ground school at the Massachusetts Institute of Technology, Cambridge, Massachusetts. When he finished his work at the ground school, he was sent to Pensacola and commissioned as Ensign in September, 1918. He was twenty-one years old at the time of his death.

In the college "Honey" was well known and loved. He was a member of the "Ag" Glee Club and Sage Choir. Early in January he visited Ithaca while he was on furlough, and said at that time that he intended returning to school next fall and was anxious to take up again his work on the Hill.

Thus, another of Cornell's sons has fought the great battle, and given his all for the glory of his country and Alma Mater, and in the days to come these men will not be forgotten, but their names will live forever as those of heroes.

'90, B. S.—Pierre A. Fish, head of the department of physiology of the College of Veterinary Medicine, was recently commissioned a major in the Veterinary Corps, U. S. Army.

'00, B. S.—Louis C. Graton is professor of economic geology in the Harvard Engineering School.

'08, B. S. A.—Edwin Earle, Jr., is president of the Farm Powder Company of Salisbury, North Carolina.

'09, B. S. A.—Professor K. C. Livermore, of the department of farm management, spent his last summer's vacation on a six-thousand mile auto trip thru the central West. The purpose of his trip was to study farm conditions and methods in that region, and to secure illustrative material for the teaching of farm management work here.

'09, B. S. A.—E. B. McCloskey is connected with the Soils Improvement Committee of the National Fertilizer Association. His address is the Munsey Building, Baltimore, Maryland.

'11, M. S. A.—E. H. Thomson, who is acting chief of the office of farm management, U. S. Department of Agriculture, expects to go on the home farm near Delhi in the spring.

'11, B. S. A.—A. L. Thompson, formerly in the farm management department of the college, was one of the first men in this country to make a statistical study of the cost of milk production. He is now operating one of the largest milk distributing companies in Washington, D. C.

'11, B. S. A.—Carlman F. Ribsam was married on September 19, 1918, to Miss Marie Maloney of Philadelphia. They are at home at 20 Dean Street, Trenton, New Jersey.

'12, B. S.—Edward L. Bernays recently left for England as a member of the U. S. Press Mission to the Peace Conference. He had been working in the foreign section of the Committee on Public Information since the early part of the war.

'12, B. S. A.—E. P. Smith is manager of the Chenango County Farm Bureau, with his headquarters at Norwich.

'12, Sp.—T. E. Milliman is now Assistant State Director of Farm Bureaus, with an office on the second floor of Roberts Hall. He has the supervision of fifteen counties of the state in their Farm Bureau work. His former position as manager of the Orange County Farm Bureau is filled by L. D. Green, '14.

'13, A. B.; '14, B. S. A.; '17, M. S. A. —Leon E. Cook is an associate professor of vocational education at the North Carolina State College of Agriculture. His address is 125 Woodburn Road, Raleigh, North Carolina.

'13, B. S. A.—George W. Kuchler, Jr., is managing a farm near La Grangeville, on which he is specializing in fruit. He has a good herd of registered Berkshires as well.

'13, B. S.—P. B. Barton, who has been farming in Westchester County, has accepted a position as teacher of agriculture in the high school at Castile.

'14, B. S.—Harold K. Rulison is a second lieutenant in the Infantry Reserve Corps.

'14, B. S.—Announcement has been made of the marriage of Francis West Wardle, '14, to Miss Bertha Louise Miller on September 2, last. The ceremony was performed at the home of the bride's parents, Mr. and Mrs. William Emery Miller, Medway.

'14, B. S.—R. R. Jansen, having been discharged from the Army, has been elected teacher of agriculture at Lowville High School.

'14, B. S.—Roy N. Harvey, who has been connected with the Texas State College of Agriculture, is now teacher of agriculture in the Moravia High School.

'15, B. S.—Miss Francis DeMaris Edwards was married to Herman Clock Smith of Ithaca on July 6, last. Mr. Smith is now overseas with the Expeditionary Forces.

'15, B. S.—Wayne H. Darrow is agricultural agent for Floyd County, Texas.

'15, B. S.—Announcement has been made of the engagement of Ross L. Hoag of Deposit, to Miss Ruth Demoney. Hoag is in France with the 102nd Engineers while Miss Demoney entered Cornell as a freshman last fall.

'15, B. S.—Lieutenant H. S. Gabriel was cited for bravery in the last drive of the war. He is now with the Army of Occupation in Germany.

'15, B. S.—J. C. Hurley, who has been teacher of agriculture in the Moravia High School, is now an instructor in animal husbandry at Syracuse University.

'15, B. S.—Roy Olney has resigned his position as teacher of agriculture at Belleville, and is now in the same work in the Trumansburg High School.

'15, B. S.—R. B. Titus, who has been teaching agriculture at Westford, is in charge of the agricultural department of the Wyoming Seminary.

'15, B. S.—E. F. Hopkins, who has been in the Research Division of the Chemical Warfare Service of the Army, is back in Ithaca doing research work for the Department of Plant Pathology. He put in fourteen months in Washington on war gas investigations. He was married in September, 1917, to Miss Hilma Berkholz, '15.

'15, B. S.—Miss Helen T. Blewer is teaching homemaking and chemistry in the Oswego High School. Her address is Mapleville Farm, Oswego.

'16, B. S.—Frederick Spiegelberg, Jr., has been overseas since November, 1917, as a lieutenant in the Aviation Section of the Signal Corps.

'16, B. S.—Miss J. Kathryn Francis is in Mt. Carmel, Pennsylvania, where she is supervisor of the domestic science department of the public schools.

'16, B. S.—Leslie Brown was commissioned on July 15 a second lieutenant in the U. S. Marine Corps.

'16, B. S.—Miss Helen Spaulding is

engaged in organizing a forestry department for the city of Flint, Michigan.

'16, B. S.—J. Curry Hill has been managing a two-hundred-acre farm at Jefferson Valley.

'16, B. S.—Miss Ruth L. Cleves is a manager of a cafeteria in Washington, D. C., for the American Red Cross.

'16, B. S.—William Carver is in Washington, D. C., with the Research Division of the Chemical Warfare Service of the Army, working on war gas investigations.

'16, B. S.—H. E. Bremer is superintendent of the Cow Testing Association of the State of Vermont. His address is Montpelier, Vermont.

'16, B. S.—Gertrude Button was married on July 13 to Lieutenant Merriam G. Lewis, at Lawrenceville, Va.

'16, B. S.—W. D. Chase is manager of the Seneca County Farm Bureau. His headquarters are at Romulus.

'16, B. S.—R. C. Parker is manager of the Suffolk County Farm Bureau. His address is Riverhead, Long Island.

'16, B. S.—H. J. Evans is manager of the Nassau County Farm Bureau. He lives at Mineola, Long Island.

'16, B. S.—Lieutenant Newton Chauncey Rogers, formerly reported missing in action, is now reported by the War Department as having died in Germany, date and cause unknown, notice of his death having been dropped within the American lines from a German airplane.

'16, B. S.—Announcement has been made by Professor and Mrs. H. F. Button of Farmingdale, Long Island, of the marriage of their daughter, Gertrude MacCartney, to Lieutenant Merriam G. Lewis of Lawrenceville, Virginia, on July 13. Mrs. Lewis is continuing her work as county home demonstration agent at Emporia, Virginia.

'16, B. S.—P. R. Young has left his position as principal of the intermediate school at Burnt Hills to take up the teaching of agriculture at Highland.

'16, B. S.—W. B. Cookingham is teaching agriculture at the Theodore N. Vail School of Agriculture at Lyndonville, Vermont.

'16, B. S.—Max Abell, formerly an instructor in farm crops, is at the Marine Flying School at Jamaica.

'16, B. S.—L. G. Knapp is at Camp Travis, Texas, having received the commission of Captain, U. S. A.

'16, B. S.—L. A. Zimm, Lieutenant in Heavy Artillery, is at Fortress Monroe.

'17, B. S.—Alice Van Scoy was married on March 27 at Candor to Lieutenant Addison B. Crandall who has just returned from France. Mrs. Crandall is continuing her work as Junior Extension Specialist in the Department of Home Economics at Cornell.

'17, B. S.—Elizabeth M. Abbuhl was married on June 30 last to Dr. Don A. Boardman.

'17, B. S.—Lloyd B. Seaver was a second lieutenant in the U. S. Air Service.

'17, B. S.—The announcement has been made of the marriage of Alice Brewster, '17, to George C. Porter on September 25 at Cornwall-on-the-Hudson.

'17, B. S.—Alice Blinn is extension instructor in the department of home economics at Cornell. She is also assisting in editorial work.

'17, B. S.—Anna Bristol was married to Stanley B. Hall on May 30 at Waverly, Mass. Mr. Hall is at Camp Devens.

'17, B. S.; '20—Miss Helen Lurinda Adams and Harry Griswold Chapin were married on October 1, last. They are living at Watkins where Chapin is connected with the Farm Bureau.

'17, B. S.—Miss Helen May Brewster of Cornwall and George C. Porter were married on September 25. They are making their home at Upper Lisle where Porter is manager of a four-hundred-acre dairy farm.

'17, B. S.—Charles F. Cochrane is manager of the Ulster County Farm Bureau.

'17, B. S.—Ensign Leslie Brown is married and living in New York City.

'17, B. S.—H. E. Allanson is Assistant Director of Extension at Virginia Polytechnic Institute at Blacksburg, Virginia.

'17, B. S.—Miss Marjorie L. Sewell is a special worker with the Y. W. C. A. in New Jersey.

'17, B. S.—A. W. Gibson is managing an estate at Petersburg, Virginia.

'17, B. S.—A. H. Brooks is in the nursery business with his brother at Monroe.

'17, B. S.—Lowell L. Andrus died of influenza at the Great Lakes Training Station, Chicago, Illinois.

'17 and '18, B. S.—Announcement is made of the engagement of Sergeant-Major Douglas S. Dilts and Miss Edith M. Rulifson of Cortland. Miss Rulifson was formerly home economics editor of the *Countryman.*

'18, B. S.—Esther Grimes is training for nursing at the Philadelphia General Hospital, Philadelphia, Pa.

'18, B. S.—Lillian Stevens is in Ithaca in charge of the new cafeteria on the Heights.

'18, B. S.—C. H. Gilman, Lieutenant of Aviation and last stationed at Camp Lee, Virginia, has received his discharge and accepted a position as food chemist at the factory of the Nestles Food Company in New York.

'18, B. S.—H. A. Gordon has won an ensign's commission in the U. S. Navy.

'18, B. S.—Girard Hammond is working in the offices of the Dairymen's League, 303 Fifth Avenue, New York City.

'18, B. S.—Miss Marcia Grimes is assistant emergency home demonstration agent for Onondaga County. Her address is in care of Mrs. Gillette, 305 E. Kennedy Street, Syracuse.

'18, B. S.—J. Brachin Kirkland is instructor in charge of farm practice work in the College of Agriculture.

'18, B. S.—Glenn W. Sutton has been traveling in Wisconsin and Minnesota, mapping new roads for the automobile blue book.

'18, B. S.—James L. Strong is running a farm at Turrin.

'18, B. S.—Miss June Brown is teaching chemistry, biology, and sewing in the Savannah High School.

'18, B. S.—George Turner Dibble of Lima was married on September 2 to Miss Alice Frances Braumiller, a nurse in the Student Infirmary, University of California.

(Continued on page 56)

Leveling for Drainage Purposes

(Continued from page 9)

the tripod legs can be made by anyone familiar with the use of a carpenter's tools. A cheap and yet satisfactory leveling rod can be made by tacking or glueing a strip of rod ribbon** to a narrow board. If one has a carpenter's level, the other parts for this outfit will cost from three to five dollars.

If better instruments are desired a substantial level and rod may be purchased for about twenty-five dollars. With this level and rod one can do work that is satisfactory for many of the smaller drainage problems; it will also be found very convenient in laying out stable floors and foundations for buildings.

** *Chicago Steel Tape Co.,* Chicago, Ill., and most makers of surveying instruments.

Artificial Light, an Aid to Egg Production

(Continued from page 10)

squirrels and many other animals. Not being able to migrate to more favorable environments like some of her distant bird relatives, and not being able to change her clothes to conform to the season's styles as many of her animal companions and human friends find it possible to do, she simply makes the best of it and "grins and bears it." She hibernates unless her progressive owner gives her the normal light conditions of spring during the dark winter months. The owner could accomplish this either by transferring the hen in the fall of the year to a more congenial southern climate where the nights are shorter, as in Florida, which some persons have done with success, or less expensive and more practical, by providing enough light either in the evening or in the morning, or both. The hens can then see to eat and work. The time between meals should never be over ten to twelve hours, so that the available feed and water supply is brought within her digestive range. She is thus permitted to get sufficient exercise to enable her to be warmed up from the inside by

A SERVICE CONTRACT

Every Oliver tractor plow fulfills a service contract—secures the fullest efficiency from the tractor that pulls it: does the quality of plowing that makes the most productive seed bed.

Because Oliver tractor plows combine correct scientific plow theory with practical, tested principles of everyday plowing they are recommended by agricultural engineers and farmers the world over.

Oliver Chilled Plow Works

Plowmakers for the World

Rochester New York

muscular exertion, which in turn appears to increase the appetite, good health, and to induce greater production.

The hen millennium has not yet arrived, but it is a good deal nearer than it was a few years ago when man, with all his boasted pride, could not make a hen lay when eggs were selling at a dollar per dozen, but contented himself with telling how many eggs he made his hens lay during the spring of the year when the conditions were right. Hens could not help but lay. True, in some instances, a few wise and industrious poultrymen having superior hens have been able to work out a combination of hatching and correct methods of feeding and housing which materially overcame some of the natural hen handicaps to winter egg production. But the proper use of artificial light is a wonderful aid even under these conditions. The place, however, where the most marked results are seen, is in the more rapid development of late maturing pullets and hens which under normal conditions, would not have laid until toward spring. Here the difference in production, due to the use of artificial light, is truly surprising. Here, also, is where the largest profits are to be made by aiding the hens to lay the eggs in the fall and winter months when they are normally the highest in price, instead of boarding the hens until spring, only to get the same eggs when they are cheap. Then, moreover, nearly as many eggs are produced in the spring as if they had not laid during the fall and winter. Those which have ceased to lay in the spring after a long winter of heavy production, can be sold on a higher priced market than was available for the same fowls in the previous fall.

Nevertheless, all of the problems in the use of artificial light to increase egg production are not yet solved. For the present, at least, one should hesitate to apply in large amount the lights to the breeders very far in advance of the hatching season. This and the best method of feeding in connection with lighting, the best time, method, quantity, and most desirable form of illumination to use are under investigation at the

present time. The results of these investigations will soon be published in an early issue of the Countryman and in extension bulletins by the College. Meanwhile more light on a dark subject, which is just entering the dawn, is needed.

Central Packing House Associations

(Continued from page 12)

led to the adoption and use of a brand with which all packages which conform to the standard were labeled. Many individuals in the past have used their own mark or brand. As soon as it becomes known they usually secure a premium for their fruit on those markets where it is known. The larger the quantity of fruit packed under one brand, the wider will that brand be known and the more general will be the premium which it will command.

Quarter Inch Sizing

Another ideal which the growers of Niagara County have had in mind is the quarter inch sizing of apples and peaches. This means that they have in mind the sizing of their fruit in such a way that no package will contain fruit which varies more than a quarter of an inch in size. They have believed that the reason western apples are so much in demand is not primarily because they are packed in bushel boxes, but because they are uniform in size. The proprietor of a restaurant who buys apples for baking must have them all the same size or there is apt to be fault finding among his customers. The proprietor of a little fruit stand buys western apples because he knows just how many there are in a box, and he knows how much he must sell each apple for in order to make a profit. Aside from these inducements in favor of quarter inch sizing, there is the argument that the old style of packing apples with all sizes in the barrel makes a most unattractive package, the large apples making the little ones look small, and the small ones making the large ones look coarse. Quarter inch

sizing of fruits is impossible on an individual farm except in those cases where there is a large quantity of fruit produced.

Labor

It is reasonable to assume that labor is more available in the village or at the railroad station where a central packing house normally will be built than on the individual farms. It is also reasonable to assume that greater efficiency of labor will develop where each person does just one thing and gradually becomes highly skilled at that one operation. This factor has largely been responsible for the passage of the cobbler shop and the development of the shoe factory. There are many communities in the fruit growing section of western New York which have been watching these organizations with keen interest, and there are many which will probably take some action along similar lines this summer. We can not urge too strongly that some communities get started immediately. The Farm Bureau offers a most excellent organization to do this work, not because the Farm Bureau Manager will do the work; but because the Farm Bureau organization provides a machinery thru which the growers themselves can work.

One of the first steps to be taken is to find out the facilities at the loading station where a building can be purchased or rented, or where one will have to be built. It is usually advisable to build these adjoining a cold storage plant for very obvious reasons. When the cost of the building has been ascertained, prospective members of an association should be approached, and this is a matter requiring considerable care. The number of members will depend on the size of the building available and the amount of fruit which each man normally provides. It might be well to mention as a guide on this matter that it has been the experience in Niagara County that a building 50x100 feet and equipped with one mechanical sizer, will handle from four to six hundred barrels of apples a day, and will turn out during a season approximately twenty thousand barrels of apples and fifty thousand

From One Anvil

—there has developed a city of factories that ring today with the noise of many anvils.

At the one anvil, eighty years ago, John Deere built the world's first steel plows.

Back of the building of these plows were original ideas of design and construction that brought success from the start. The world liked John Deere plows and continued to like them.

From the one anvil in a little shop there grew a great plow factory. Around this factory there grew a group of other factories, each devoted to the manufacture of a particular class of farm tools for the John Deere line. And each of these tools for years has rivaled the great John Deere plows in point of worth and popularity.

Long life and continued growth in any line of manufacture depend mainly upon simple honesty—upon holding rigidly to the rule of quality first. Time has fully tested each and every John Deere tool and has given it Prestige—Time's badge of quality and success.

And Time's verdict today will be the verdict in the future so long as mankind gives to quality the recognition that is its due. Each coming year will see, as the years in the past have seen, continued growth of the great industry that was started eighty years ago when John Deere honestly and painstakingly put superior quality into the plows that he made in his little shop of one anvil.

JOHN DEERE, MOLINE, ILLINOIS

bushels of peaches. The cost of such a building built of wood, as shown in the picture of the Ransomville Association's building, is approximately $2500.00. The mechanical sizers and other equipment will probably total another thousand dollars.

Cooperative Selling

The key note of this work in Niagara County has been central packing and not cooperative selling. At last the growers have put the horse before the cart and have united to put up a standard, uniform, reliable, "the-same-all-the-way-thru" pack. The matter of cooperative sales is of secondary importance. However, the fact that they have a standard pack and a quantity of it makes cooperative selling very possible and quite advisable. Cooperative sales will probably need several years of development to be a big success in the east. The time is now right for central packing. The growers of Niagara County are always glad to hear of another loading station which desires to start a packing house. Each new association makes their own that much stronger. Niagara County growers have already gone into several of the surrounding counties to tell of what they have done.

Cooperation Among Plant Pathologists

(Continued from page 13)

disease control. Like every one else, they sought to answer the call to get together, to pull together. The pathologists of the country, some two hundred and fifty strong, responded almost to a man. The country was divided into six districts with a commissioner in each. Canada joined, making seven, and the eighth commissioner represented the Federal pathologists. A series of conferences, one in each district, was held to which all pathologists in that area were invited. The attendance varied from twenty to sixty. Practically every institution in which agricultural work

is conducted responded by sending one or more representatives. The problems of most general and pressing importance were considered and discussed. Every bit of information published or unpublished, every idea, indeed every "hunch" that might contribute to the solution of the problems were freely put before the conference. The spirit of every meeting was: all your cards on the table, every one of them, faces up. And the workers responded in a manner most astonishing and most gratifying. The individuals interested in a given problem constituted themselves a project committee, elected a leader from among their number and at once laid plans for united attack upon the problem to be solved. By the coordination of district projects thus launched, the Board effected the organization of general projects of wide application and special importance in the national emergency. Space forbids even the enumeration of the more important of these. The Board issued a mid-year report in which these are detailed and will soon distribute a final report of the year's work.

As illustrative of what was accomplished, I may be permitted to mention two of these undertakings. Workers from fifteen states and from the federal government planned and carried thru cooperatively a most extensive series of investigations on cereal seed treatment with the result that in one year we have virtually agreed upon a single, simple, safe, and most effective method of general application for the control of the oat smuts. This method, the so-called dry formaldehyde treatment, may now be recommended with confidence wherever oats are planted. Not only is it effective, but simple and cheap and as nearly fool-proof as possible. The grain may be treated at a cost (including materials and labor) of less than three cents per acre. Under the old system, twenty years would have been required to accomplish what has been effected in one. Was this not worth while? Have not we, both plant doctor

and farmer, profited thereby? Cooperation did it.

Another case was of a different sort. The potato crop was (and is) of vital importance to the nation. Evidence indicated that heavy losses are suffered yearly from two diseases of which little was known, and that largely fragmentary, scattered or unpublished. The Board brought together in Buffalo in August, 1918, over thirty of the potato pathologists of the United States and Canada for the consideration of these diseases. In a conference of two days' duration these thirty pathologists in free and open exchange of facts and ideas made more progress toward the solution of the difficult problems of leaf roll and mosaic than would have been accomplished by them in five years of individual reflection in the solitary confinement to which they are accustomed to sentence themselves. Definite projects were organized, leaders chosen, and plans for cooperative attack were made for next year. Before they parted, a concise summary of our knowledge to date of these diseases was prepared. This was distributed to all plant pathologists of the country within a month.

These are but outstanding examples of what cooperation among groups of scientific men has accomplished and argue well for what may be expected in the future. That the spirit of cooperation has been stimulated and strengthened among us is reflected in the continuation of this Board under a name more appropriate for days of peace but with the same purpose and the same ideals, namely the stimulation and development of cooperative research and undertaking among the plant pathologists of this continent. As the Advisory Board of American Plant Pathologists, it is made a permanent feature of the organization known as the American Phytopathological Society, of which Dr. G. R. Lyman of the U. S. Department of Agriculture is the new chairman.

The Farm Garden in New York State

(Continued from page 19)

desire to grow all the vegetables listed, nor will all families require the same amount of any crop, but the estimates given will be a guide. For ordinary requirements the entire supply of seeds of snap beans, peas, beets, sweet corn, lettuce, and radishes should not be planted at one time, but successive plantings should be made at intervals of two to four weeks, so that a fresh supply of vegetables may be had thruout the season.

Varieties of Vegetables

In selecting varieties for home use, quality should be given first consideration. The following varieties of the various vegetables are considered to be among the best:

Beans, string or snap—Stringless Greenpod, Wardwell's Wax, Refugee.

Beans, Lima — (bush) Henderson's Bush Lima; (pole) Early Leviathan, King of the Garden.

Beets — Crosby's Egyptian, Detroit Dark Red.

Cabbage—(early) Jersey Wakefield, Copenhagen Market; (medium) Enkhyizen Glory, Succession; (late) Danish Ballhead, Drumhead Savoy.

Carrot — Chantenay, Oxheart, Danver's Half Long.

Cauliflower—Dwarf Eyfurt.

Celery—Golden Self-Blanching, Winter Queen.

Corn—sweet—(early) Golden Bantam; (medium) Semour's Sweet Orange; (late) Evergreen, Country Gentleman.

Cucumbers—White Spine, Davis Perfect.

Lettuce—Grand Rapids, May King, Big Boston.

Eggplant—Black Beauty, New York Improved.

Onions—(green onions) Silver Skin, White Portugal; (for mature bulbs) Globe Danvers, Southport Yellow Globe.

Peppers — Chinese Giant, Bullnose, Ruby King; (hot) Cayenne, Red Chili.

Peas — (early) Nott's Excelsior, Gradus, Thomas Laxton; (late) Telephone, Champion of England.

Radishes—French Breakfast, Scarlet Globe, White Icicle.

Spinach—Savoy, Bloomsdale.

Tomatoes—(early) Earliana, Bonny Best, Chalk's Jewel; (late) Stone, Globe.

Turnips—White Milan, Purple Top; (rutabaga) Improved American, Breadstone.

The Farm Seed Catalog

(Continued from page 17)

wheat discovered in the tomb of an Egyptian mummy or the corn uncovered among the ruins of the Moundbuilders? The fact that the power of germination in these seeds exists a few years at best was lost sight of in the claim of several thousand years of existence wherein the seeds had lain dormant. The element of romance appears in the following headlines of a farm seed catalog. "The seed of mystery brought by a sea gull." "Best dry weather producer in existence." "Opportunity knocks at your door with sledge hammer blows."

It is fortunate for the farmer who trusts to seed catalog information that not all are of the above type. I have a catalog before me of a western seed house. Its cover design is a marvel of the illustrator's art. The book is well illustrated with photographs, not fanciful sketches. Descriptions are brief and to the point. Special attention is paid to the history and origin of varieties, and no extravagant claims regarding yields are made. Prices are extremely reasonable.

This seed firm keeps in close touch with experimental work in the neighboring states. For years, it has carried on research work of its own and, as an instance, by means of hybridization and selection has developed several desirable varieties of corn. Special attention is paid to the adaptation of varieties to climatic conditions, and the customer is given the limitations of the variety as well as its good points. It is an agreeable surprise to find this seed firm actually quoting figures on the compara-

tive water requirements of corn varieties.

The need of standardizing varietal nomenclature is very apparent on the perusal of the average farm seed catalog. Despite its faults, however, it represents a real contribution to our agricultural knowledge. Much good to the farming interests of the country would result if greater cooperation existed between the colleges of agriculture and experiment stations and the commercial seed house.

The Farm Home

(Continued from page 22)

The Division included an experimental kitchen where substitutes were tried and recipes formulated both for small quantity and large quantity cooking. The staff of food specialists was added to the Division for this purpose. In connection with the laboratory for large quantity cooking, a cafeteria was organized to furnish meals to the Food Administration staff. The cafeteria for several months has furnished twelve hundred meals daily. In addition, there were two trained nurses on the home conservation staff to administer to the emergency needs of the staff.

The Division of Home Conservation had a representative in each state called a home economics director, who had charge of the work of women in the state as it related to home conservation. The home economics director was a member of the staff of the State Food Administrator and was usually a trained home economics woman and connected with the State College.

Campus Notes

(Continued from page 23

timing, engine testing, and ignition principles.

The work of the first week consists of overhauling the machines as an owner would do on the farm and replacing badly worn or broken parts. The second and third weeks are given to mechanical

principles and adjustments, the finer replacement work, and driving practice on the roads with a load. For the practice work the students are divided into squads of four each. In this way, each man has an opportunity to become familiar with more than one make of tractor. The tractors used in the school are those which the State Food Commission loaned to farmers the past summer. Thus the students are working under actual service conditions—on machines which have seen active duty in the field.

Both the schools thruout the state and those at the College are free to residents of New York State.

The "Ag. Library" has long been overcrowded and we are glad to learn that plans are under consideration to remove the plant physiology laboratory to other quarters, thus leaving space for the expansion of the library.

Dr. Knudsen who has been in the Y. M. C. A. service in France for over a year, is now back at his work in the department of plant physiology. Mr. Benson is now in Washington at the Bureau of Plant Industry.

Different members of the department of rural engineering have been lecturing thruout the country: Mr. J. L. Strahan before the American Society of Agricultural Engineers at Chicago, Illinois, Dec. 31, 1918, on the subject of "Barn Roof Design"; Assistant Professor Robb on "Drainage" before the New York State Agricultural Society at Albany, January 15; and Professor H. W. Riley on "Tractors and Farm Machinery" at Columbia University January 17.

At the ninth annual meeting of the American Farm Management Association, held in Baltimore, Maryland, on January 8, 9 and 10, Cornell was well represented. Professor K. C. Livermore of the department of farm man-

agement department is the secretary-treasurer of the Association. Professor G. F. Warren, of the same department, talked on "Some After-the-War Problems in Agriculture." Professor M. C. Burritt, of the extension department, was one of the leaders of a discussion on "Constructive Criticisms of Extension and Demonstration Work in Farm Management, Based on Apparent Results to Date." H. B. Munger, '12 B. S., of the department of farm management of the Iowa State Agricultural College, gave the report of the committee on investigations, and F. A. Pearson, '12 B. S. A., now of the department of dairy husbandry, University of Illinois, talked on "The Principles Involved in Fixing the Price of Milk." Mr. Pearson's investigations of economic problems in the dairy industry of Illinois have been very useful in the adjustment of Chicago milk prices. Frank App, who took graduate work at Cornell and is now in the agronomy department of the New Jersey Agricultural College, spoke on "General Crop, Dairy, Truck, and Potato Farms in New Jersey." D. S. Fox, '13 B. S., now of the agronomy department at Pennsylvania State College, participated in a discussion of "Economic Studies of Farm Tractors." Mr. Fox, during the past summer, made an economic study of tractor operation in Pennsylvania.

At this meeting the name of the organization was changed to The American Farm Economic Association.

One of the best of the Farmers' Week exhibits is the model of a country school house and grounds which is in the plant propagation greenhouse. The interesting fact about this object lesson in good taste and economy is that the original of the model exists in this state, and the community owning it was helped to choose and make use of native trees, shrubs and ground cover material by the extension agent of the department of landscape art. The school house occupies a plateau flanked on the southeast

by a hillside of hemlocks and pine and separated from the woods by a shallow brook in an open glen. Near an evergreen thicket to the northward the brook breaks into a cascade and the glen into a moss-covered gorge.

The new Bausch and Lomb balloptican outfit in the head-house lecture room is one of the most welcome acquisitions of the department of floriculture. More than a hundred lantern slides have been collected and lectures are given interest by these means.

The New York Federation of Horticultural Societies and Floral Clubs will be entertained by the department of floriculture at its meeting on Tuesday, February 11.

The Cornell Foresters met in their club room on the evening of January 7 for the first time in eight months. The "frosh" soon had a crackling red blaze going in the fireplace, and the old time "pep" came back with a bang. Professors Hosmer, Collingwood, Chandler, Adams, and Mr. Guise each made a few remarks. Professor Wright, of the zoology department, an old friend of the Cornell Foresters, gave an enthusiastic address, dwelling chiefly on the relations between students and professors in forestry as well as in other courses. Elections for the current term were as follows: President, C. W. Ten Eick, '20; Vice-president, R. R. Zilevitz, '20; Secretary, A. S. Hertzig, '21; Treasurer, G. H. Peters, '21. After the appointment of new committees, the business meeting adjourned for a social evening.

The eleventh annual Veterinary Conference, which was held in James Law Hall for two days, beginning Thursday, January 16, was the largest and most successful one ever held here. There were nearly four hundred visitors from all parts of the state, and the speakers included Commissioner C. S. Wilson, and John W. Adams, of the University of Pennsylvania.

The Cornell unit of the Reserve Officers Training Corps has moved its headquarters from the old Armory on Central Avenue to the new State Armory which was occupied during the war by the Aviation Section of the Army.

During the past summer the farm management department, under the direction of Mr. C. P. Clark, conducted a statistical survey of a part of Tompkins County. The purpose of this survey was to estimate the changes in the agricultural situation in the county as well as on he individual farms. The work covered a part of the same territory that was covered by a similar survey in 1908, making a valuable comparative record of agricultural conditions.

A joint meeting of the Western New York Horticultural Society and the New York State Fruit Grower's Association was held at Rochester January 15-18. At this meeting the two organizations were merged into the New York State Horticultural Society. The keynote of the meeting was co-operation, and there were several interesting reports from men who have been directly concerned with co-operative enterprises among farmers and fruit-growers. Senator Gore of Oklahoma, chairman of the agricultural committee of the Senate, was one of the speakers; Professor Chandler, of the pomology department, gave a talk on "The Effect of the Severe Winter of 1917-18 on the Fruit Industry and Its Lesson for the Growers."

There are several new members of the Home Economics staff.

Miss Lulu Graves is giving very interesting courses in Diet and Disease. Before coming to Cornell, she was for some time doing metabolism work in Chicago and in the Lakeside Hospital at Cleveland. Miss Graves is also president of the American Dietic Association and editor of the Dietic Department of "The Modern Hospital."

Former Student Notes

(Continued from page 28)

'17, B. S.—Stanley H. Sisson has been on the U. S. S. Wainwright operating in foreign waters. He has a grade of lieutenant.

'17, B. S.—Lewis E. Walker was married to Miss Mary Cummings of Sayre, Pennsylvania, on August 12, last. He is managing the home farm near Waverly.

'17, B. S.—Lieutenant L. V. Windnagle was in Ithaca early in January on his way home from a year's service with the Aviation Corps in Italy. His address is 1068 East Taylor Street, Portland, Oregon.

'17, B. S.—William Maier, who has been teaching agriculture at the Lake George High School, is now in the same work in the Chazy Consolidated School at Chazy.

'17, B. S.—Franklin Brown is employed by the Nestle's Food Company as a chemist.

'18, M. S.—E. C. Auchter, who was formerly at the University of West Virginia, has accepted a position as head of the department of horticulture at Maryland State College.

'16, B. S.—C. L. Thayer has returned from six months in the service and has resumed his instructorship in floriculture.

'18, B. S.—E. F. Artschwager is assisting in plant physiology.

'18, D. V. M.—H. J. Metzger has been discharged from the Veterinary Corps of the Army and is at his home at Groton. He expects soon to start practising as a "vet."

'18, B. S.—Miss Maxime E. Montgomery is supervisor of homemaking in the Vocational School, West Sunbury, Pennsylvania.

'18, B. S.—Miss Miriam C. Jones is dietitian in the Akron City Hospital, Akron, Ohio. She recently completed a three months' training course at that institution.

'18, B. S.—Joseph Herr is studying the parctical points of dairy and fruit farming on a farm near Lockport. His address is in care of H. O. Aiken, R. F. D. 3, Lockport.

'18, B. S.—James J. Barr is managing a 150 acre farm for his father at Narvon, Lancaster County, Pennsylvania. It is mainly an orchard and poultry farm.

'18, B. S.—Ensign J. L. Rothwell, U. S. N. R. F. C. of Bayshore, Long Island, was in town January 22. Rothwell has seen active flying service in France and Italy.

'18, B. S.—Esther Royce is assistant county home demonstration agent in Monroe County, her office being with the Farm Bureau in Rochester. Last summer Miss Royce assisted Anna Kerr who was home demonstration agent in Seneca County.

'18, B. S.—Stanley J. Angell is managing his father's farm at Mt. Upton.

'18, B. S.—Miss Ivalo B. Hugg is teaching chemistry in the Oneida High School, Oneida.

The new instructor in institutional management is Miss Maude Sanford who was the manager of the cafeteria of the B. F. Goodrich Rubber Co. in Akron, Ohio.

Miss Helen Mousch is the new assistant professor in the foods department. Miss Mousch was formerly head of the food department at the Iowa State College, Ames, Iowa, for three years before coming to Cornell.

The principal speakers on the program of the big Semi-Centennial celebration this spring will be Charles E. Hughes, Governor Alfred E. Smith, and President J. G. Schurman. These men will speak at the formal exercises on Friday, June 20, and John R. Mott, '88, will deliver the Baccalaureate Sermon on Sunday, June 22.

The proposed athletic program includes a varsity boat race with Annapolis and a baseball game with Penn, both of which will take place on Saturday, June 21.

This commencement, the 50th in the history of Cornell, will be celebrated on June 20, 21, and 22 with ceremonies that will prove interesting and impressive to anyone who has ever attended Cornell. The Semi-Centennial celebration as originally planned was to have been held last October, the 50th anniversary of the opening of the University. A committee under the direction of Colonel W. H. Sackett, '75, composed of trustees of the University, together with a committee of Associate Alumni had prepared an extensive program including a football game with Penn, and a huge pageant in the New Armory.

The entry of this country into the great war caused the abandonment of the plans, but with the signing of the armistice, the work of the committees began again and the present plans are the result of their work.

The Kermis play, "The Field of Honor," was written by E. B. Sullivan, '18, who recently returned to college from service as First Lieutenant of Battery D, Seventy-third Field Artillery. Each year it is planned to give a prize for the best play offered by a student of the New York State College of Agriculture. This year none of the manuscripts submitted was deemed worthy of the prize, and it was thought that the program, so auspiciously started last year with Russell Lord's play, "They Who Till," would have to be abandoned.

With little time to complete the play, Mr. Sullivan undertook to write one so that the sequence of these student productions might not be broken. His play proved acceptable to the Kermis committee; rehearsals were started at once, with scarcely enough time to assure a finished production. It has meant untiring effort on the part of all who have had a part in the preparation, and particularly on the part of Professor George A. Everett, who has acted as coach.

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In short the *FRICK—12-25—3 Plow Kerosene Tractor* is a better investment for the user than any other size or type of tractor made.

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Motor—4 cyl., 4 cycle, 900 r. p. m. valve-in-head, 4 in. bore, 6 in. stroke.

Drawbar—12 H. P., pulls 3-14 in. bottoms in stiff work.

Brake Horse Power—25 H. P.

Ignition—Kingston high tension magneto with impulse starter.

Carburetor—Kingston, burns kerosene or gasoline; Bennett air cleaner.

Cooling—Water cooled, Perfex radiator, centrifugal pump.

Clutch—Expanding friction shoe type with 3 in. face.

Transmission—Selective type, 2 speeds forward, one reverse.

Bearings—Roller bearings thruout excepting main axle which is babbitted.

Capacity Fuel Tank—20 gallons.

Belt Pulley—13 in. diameter, 7 in. face.

Speeds—Forward 2 3-10 miles per hour, and 3 8-10 miles per hour. Backward, 2 miles per hour.

Weight—5800 pounds.

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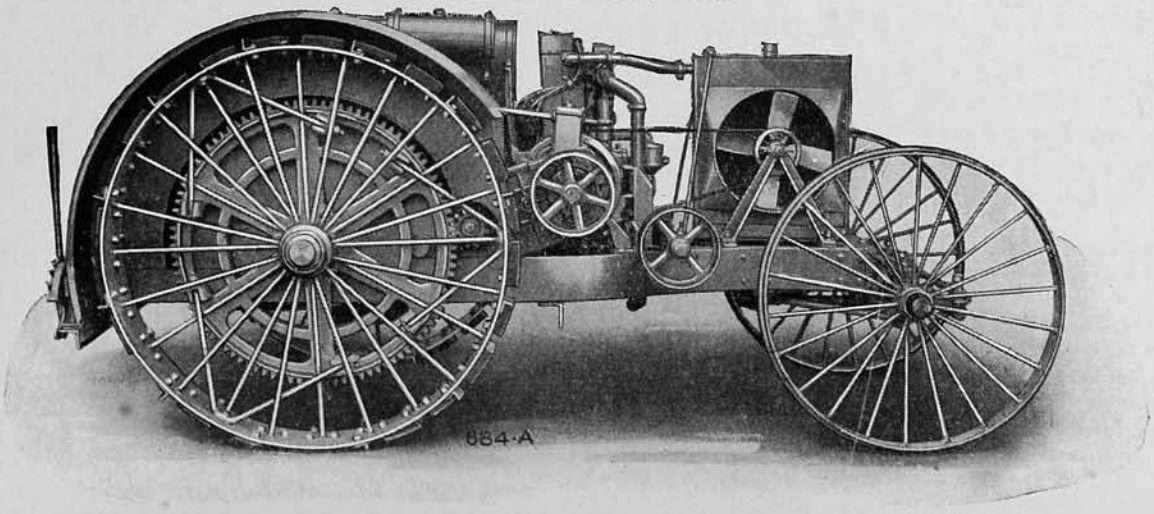

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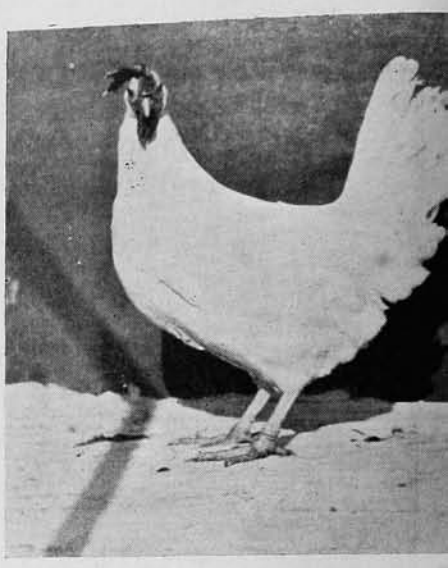

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The descendants from these have vigor to stand heavy production and still have reserve energy to produce strong offspring; they weigh 4 to 5 pounds, are broad and flat on back over the thighs, deep bodied, full breasted, nice white plumage, lay large chalk fancy white grade eggs.

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Mated to Cockerels from Hens with 180 Eggs or Better

Day-old Chix--Schedule

These prices are for 1st grade outside of special matings

		100	500	1000
March 15	10000 Chix	$25	$120	$210
April 7	12000 Chix	25	120	210
April 29	14000 Chix	25	120	210
May 21	14000 Chix	22	110	190
June 11	10000 Chix	20	90	175

Prices on very extra special matings; also 4—6—8-week chicks upon request. Hatching eggs $10 to $50 per 100. Learn about our 10 original line. Send 3c for logue, giving prices and valuable information.

R. S. Moseley, Mgr., Sunny Crest Co., East Aurora, N

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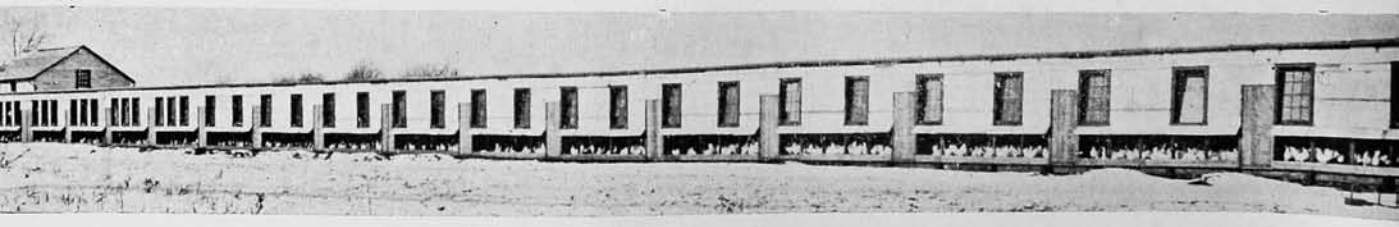

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Very Highly Digestible

A FEED
Low in Digestibility

What Do These Piles Mean?

THEY are intended to impress upon you how important a thing the digestibility of feed is. Because too many men, usually those who can least afford to pay for poor choices, are influenced in their feed buying by the size of the bag.

Every dairyman must know, surely, that his cows can make milk from only that part of their feed which they can digest, and cannot make milk from the part they cannot digest.

Why is it, then, that dairymen don't pay more attention to *the per cent digestible* of the feed than they do, and less attention to how feeds compare in apparent bulk?

Suppose you are at your feed store to buy feed. The dealer shows you two piles of two different kinds of feed, and each pile weighs a ton. But one kind is nearly all digestible and the other is not.

You can't tell much about how they compare in digestibility by looking at them. . . .

But you certainly can by feeding them. There's a heap of difference in the amount of milk you get.

You naturally would expect to get the most milk from the Buffalo Corn Gluten Feed, because it is so highly digestible, and you know all the time that it's only the digestible part of feed that makes milk.

The next time you go for feed, tell your dealer you want the best there is.

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NEW YORK CHICAGO

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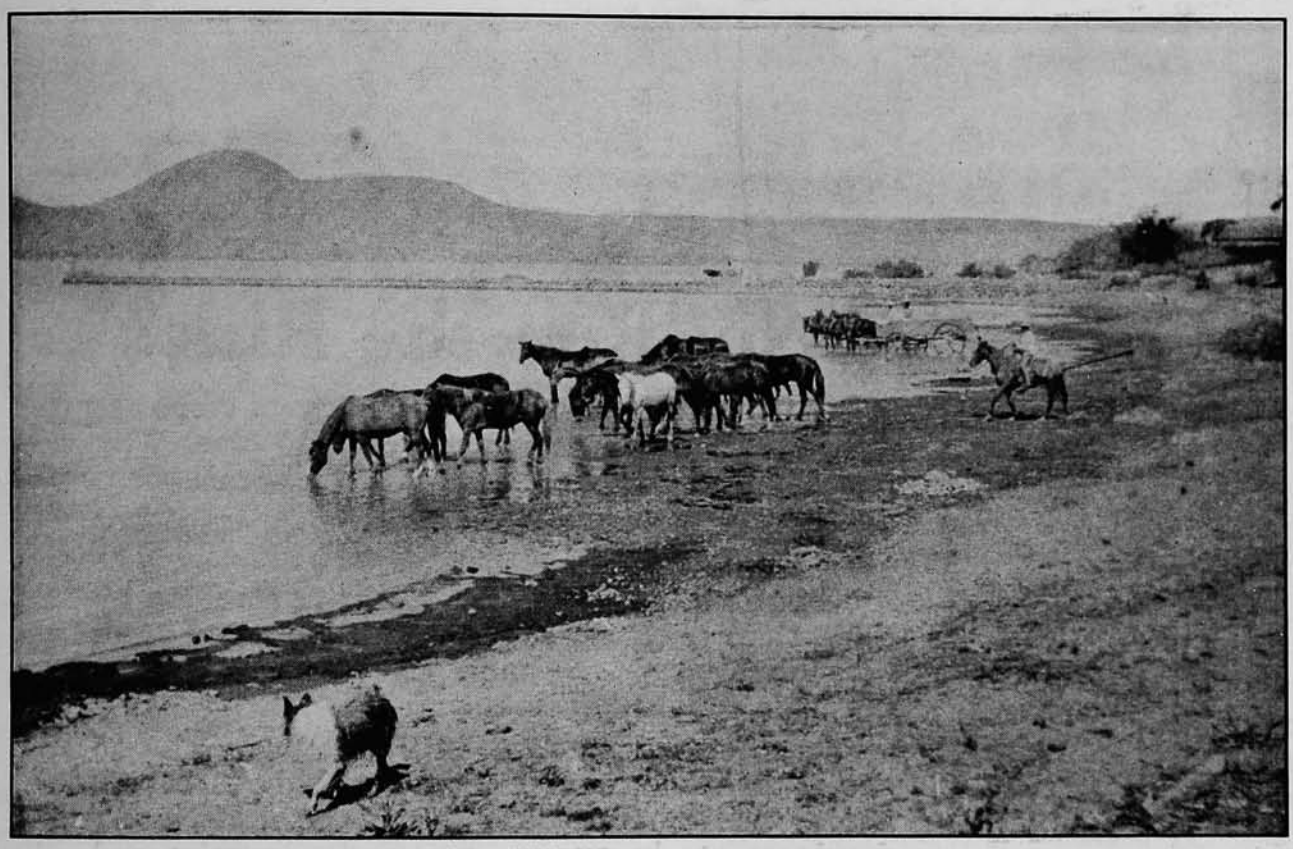
VOL. XVI NO. 2 1919 PRICE 25 CENTS

THE CORNELL COUNTRYMAN



MARCH

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By consistent spraying, avoid the peril of bad years due to bugs, worms, scale and blotch.

Guard against expensive delays in spraying by using Deming time-tested equipment; our 40 years of specialized pump knowledge frees you from the high cost of "experimenting."

Send for the Deming 1919 Catalog. The 16 outfits there illustrated meet every kind of spraying need. The illustrations show you the latest, safest developments in pumps, accessories, nozzles and spray-guns. Gladly sent free on request.

Ten cents (stamps or coin) will bring you 80-page guide book on spraying, spray mixtures and when to spray.

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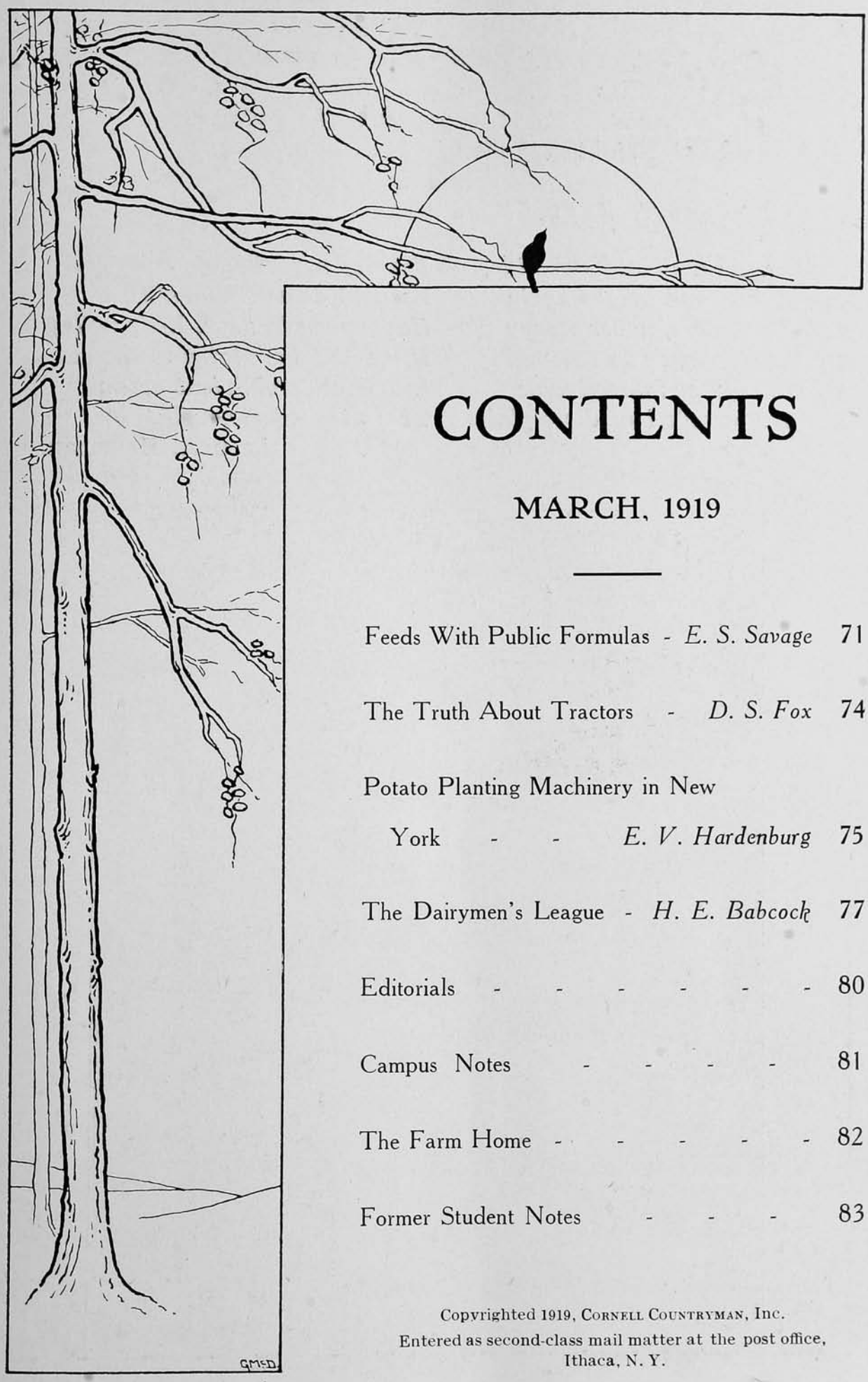
HAND AND POWER PUMPS FOR ALL USES



CONTENTS

MARCH, 1919

Entered as second-class mail matter at the post office, Ithaca, N. Y.

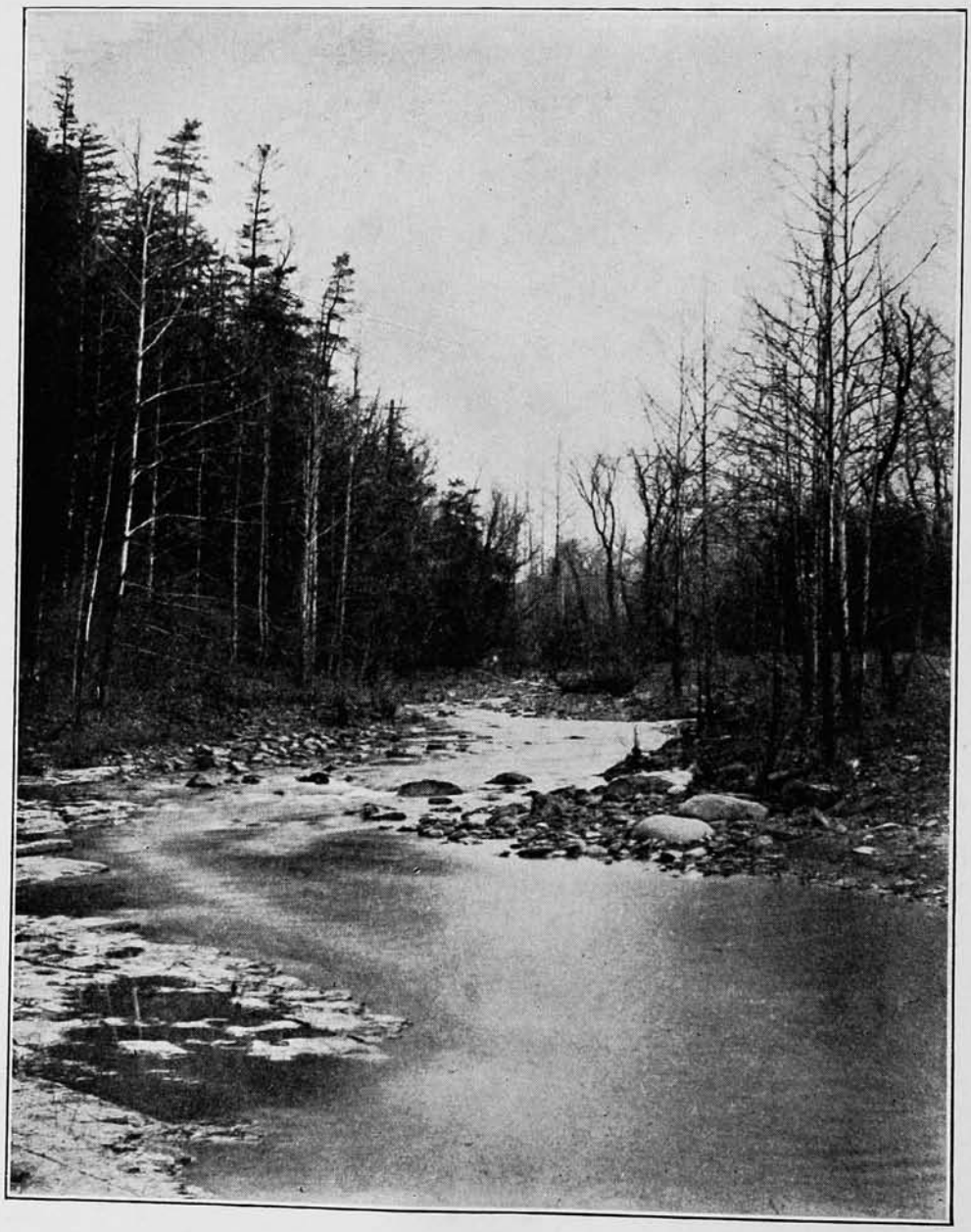
NATURE'S PARADOX

Freely flowing, brightly glowing,
With the sun upon its breast,
Winds the stream adown the valley,
Bright with many a blossom dressed;
Halting never, gliding ever
To its final ocean rest.

Into shade and into sunshine,
Dark anon and bright again
Slip its waters, never weary
Of their journey to the main;
Of their quest interminable
For the ocean's boundless plain.

Type of peaceful life and quiet,
I would go as tranquilly
Unperturbed adown life's valley
From the mountains to the sea,
Into death's oblivient ocean
There to rest eternally.

Leon A. Hausman.



THE CORNELL COUNTRYMAN

Vol. XVI ITHACA, N. Y., MARCH, 1919 No. 2

Feeds With Public Formulas

By E. S. SAVAGE

Professor of Animal Husbandry at Cornell University

THERE seems to be a demand on the part of farmers for ready-mixed feeds. As this demand has increased, manufacturers have taken advantage of it, and there are now on the market a very large number of manufactured feeds for horses, dairy cattle, hogs, and poultry. Each manufacturer has always taken the stand that if he kept his formula secret, he would have an advantage over his competitors. Our feed laws up to the present, except in very few states, have demanded nothing with respect to these manufactured feeds more than that the manufacturers state the names of the ingredients and guarantee the minimum percentage of protein, the minimum percentage of fat, and the maximum percentage of fiber.

Along with the demand on the part of the farmer for ready-mixed feeds and with the willingness of the manufacturers to supply this demand, another very great factor has come into the business. Many products of value have been manufactured from the cereal grains, from which there has arisen a large number of by-products, some of very high value and others of little or no value. A great many manufacturers have taken advantage of the use of a manufactured feed as a vehicle by means of which the by-products of low feeding value could be worked off at a higher price than these by-products would bring if sold separately.

This has gone so far that it is very difficult indeed for a farmer to judge of the quality of a feed solely from the statements required in most states by law.

For many years the writer has been working upon methods of obtaining brands of ready-mixed feeds on the market, the formulas of which should be public so that a farmer would know when he was purchasing the feed, not only what it contained but also the percentage of each ingredient. In a lecture before the American Feed Manufacturers at Chicago in May, 1914, the writer made the statement that the feed manufacturer who would put on the bag, or on the tag accompanying the bag, the exact formula according to which the contents of the bag was mixed would have a very great selling and advertising advantage over his competitors. No manufacturer was willing to do this. Therefore the effort to work with the manufacturers to bring this about was dropped. At that time the writer considered very carefully the question of having the formulas of the feed required by law to be printed on the tag. This idea was given up because there seemed to be no way of enforcing such a requirement. As will appear later in this paper, the authorities of New York State having the inspection of feeds in hand have swung back to this means of attempting to control the evils of manufactured feeds.

When it was found that no feed manufacturer was willing to take the bull by the horns and publish the formula in a public way, it was determined to try to bring this about by means of farmers' organizations themselves. While this phase of the subject was being considered, the New York State Grange entered into a contract with the New York State Grange Purchasing Agency at Olean to buy and sell farm necessities. The writer decided that it would be well to interest the New York State Grange Purchasing Agency in having manufactured ready-mixed feed which could be distributed among the farmers of New York. The principle was that the formula of this feed should always be a public one. The New York State Grange Purchasing Agency was willing to cooperate with the College of Agriculture in adopting a formula, with the result that there was manufactured and distributed by the New York State Grange Purchasing Agency a feed sold under the brand name, "Cornell Dairy Feed." This feed was first manufactured according to Formula No. 10 of the New York State College of Agriculture. It is not necessary to give the first formula adopted.

At a later date the New York State Grange Purchasing Agency went out of business, and Godfrey & Sloane, Inc., of Olean, as successors to the New York State Grange Purchasing Agency, continued to manufacture "Cornell Dairy Feed." The College of Agriculture has continued to cooperate with this firm in helping them to get good formulas. "Cornell Dairy Feed" is now manufactured according to Formula No. 11 of the New York State College of Agriculture.

Cornell Dairy Feed. Formula No. 11

100 lbs. wheat bran.
100 lbs. barley feed.
400 lbs. hominy.
400 lbs. oilmeal.
400 lbs. gluten feed.
200 lbs. 36% cottonseed meal.
400 lbs. ground oats.

This feed is guaranteed to contain 20% protein, 6% fat, and not to exceed 9% fiber.

A little later it seemed desirable to Godfrey & Sloane to sell a high class dairy feed with molasses. The College of Agriculture furnished Formula No. 12 for this purpose. This feed is called "Cornell Dairy Feed with Molasses." The guarantee is the same as that of "Cornell Dairy Feed."

Cornell Dairy Feed with Molasses Formula No. 12

100 lbs. wheat bran.
100 lbs. barley feed.
100 lbs. hominy.
400 lbs. oilmeal.
400 lbs. gluten feed.
300 lbs. 36% cottonseed meal.
300 lbs. ground oats.
300 lbs. molasses.

In the spring of 1917 the Dairymen's League decided to have manufactured for its members a ready-mixed dairy feed with a known formula. The League asked the College of Agriculture to cooperate with it in the same way as has been the practice of the College in cooperating with all manufacturers. As the result of this work, there was put on the market "Dairymen's League Dairy Feed." It has been necessary to write for the League three formulas, Formulas No. 20, No. 21, and No. 22. It is not necessary to write out these formulas in detail, because at the present time the "Dairymen's League Dairy Feed" is not being manufactured and distributed. This is due to the fact that the Dairymen's League has had all that it could do to take care of the sale of the milk of its members. The League has not had the time to develop an organization for the manufacture and sale of feeds.

In 1918 the New York State Grange Exchange was formed with headquarters at Syracuse. As soon as the Exchange was well established, it was decided to manufacture a ready-mixed dairy feed. This feed is known as the "Grange Exchange Dairy Feed" and is manufactured according to the New York State College of Agriculture's formula No. 100. The guarantee for

this feed is 20% protein, 4% fat, and not to exceed 9% fiber.

Grain Exchange Dairy Feed

Formula No. 100

100 lbs. wheat bran.
300 lbs. ground oats.
400 lbs. gluten feed.
200 lbs. ground barley.
400 lbs. corn feed meal.
300 lbs. oilmeal.
300 lbs. cottonseed meal.

Therefore, there are now being manufactured and distributed in New York State three feeds manufactured according to formulas furnished and approved by the New York State College of Agriculture. These three feeds are "Cornell Dairy Feed," "Cornell Dairy Feed with Molasses," and "Grange Exchange Dairy Feed." Thus it is possible for any farmer who wishes to purchase a ready-mixed feed to buy a feed with a known formula. The price of these feeds with known formulas compare favorably with feeds of like character having secret formulas.

Rules and Regulations for the Manufacture and Sale of Animal Feeding Stuffs in the State of New York

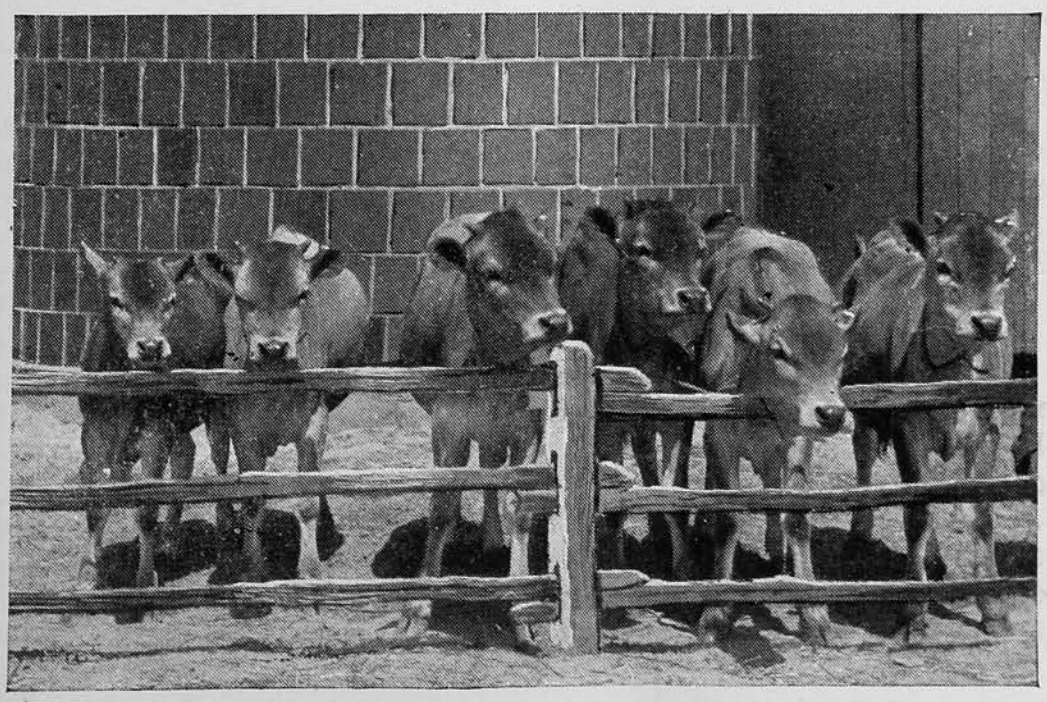
During the past year the New York State Food Commission has established a bureau of animal feeding stuffs and put Dr. E. H. Porter in charge of this bureau. Dr. Porter and his assistants made a study of the situation and came to the conclusion that additional regulations having the effect of law should be put into effect thru his bureau to aid in the control of the quality of manufactured feeds sold to farmers in this state. As a result of this work of Dr. Porter and others, the New York State Food Commission, on November 25, 1918, adopted the following rules and regulations:

RULE 1. The materials herein below listed, being of low feeding value, and the use of one or more of them in the manufacture of concentrated commercial feeding stuffs and the sale in New York State without a statement of the amount of such materials contained therein having resulted in unfair practices and unreasonable and excessive prices, the sale of concentrated commercial feeding stuffs in New York State containing one or more of such materials is hereby made subject to the rules herein contained.

Damaged feeding material reduced in feeding value or rendered unwholesome.

Mill, elevator, boat or other sweepings or dust.
Buckwheat hulls.
Cottonseed hulls.
Peanut hulls.
Peanut shells.
Rice hulls.
Oat hulls.
Corn cobs, ground.
Cocoa shells.
Clipped oat by-product.
Ground or unground hulls, screenings,

(Continued on page 90)



The Truth About Tractors

By D. S. FOX, '13

Assistant Professor of Agronomy at the Pennsylvania State College

AN economic study of tractors was made last summer by the Division of Farm Management of the Pennsylvania State College. The object of the study was to secure data as to the actual cost of tractor operation under farm conditions and to study the conditions that affect the cost of operation.

Description of farms studied. The survey was conducted in central and southeastern Pennsylvania. The farms studied had an average of 123 acres of crops, or nearly twice as many as the average farm for the region studied. The size varied from 41 to 278 acres of crops. The type of farming was largely general. The topography varied from level to hilly. The soil was rather heavy loam. On several of the farms there were rock outcrops that were a more or less serious menace to plowing.

Cost and life of tractor. The average cost of the 54 tractors was $959. There was a wide variation in the cost of different makes of the same horsepower due to a difference in quality. There was also a wide variation in the cost of the same make and horsepower due to the general increase in prices. The average value of the 54 tractors was $794. This represents the average investment for the year studied.

The average estimated life of the tractor was 8.1 years. The range of the estimates was 3 to 15 years. The average tractor had been used 1.5 years. None in the study had been used more than 4 years.

Cost of Operation

The cost of operating the tractor was considered under three headings, Fuel cost, Labor cost, and Overhead or Other cost.

Fuel. The average fuel cost for all tractors was $119.44 or $2.36 per ten hour day. The fuel cost for the gasoline tractors was $3.32 per ten hour day and $2.06 for kerosene tractors. The approximate cost was $.12 for kerosene and $.25 for gasoline. In starting the kerosene tractors, about $.02 worth of gasoline was consumed per day. The fuel was delivered to the farm in all but four cases.

Labor. The operator's labor was estimated to be worth $.25 per hour. The average cost of operating the tractor 50.6 days was $126.48. The amount of work done by the tractor varied from 15.3 days to 117.8 days. For each ten hour day, one hour was consumed in filling with fuel and water, oiling and adjusting, and nine hours in actual work. The kind of work done is shown in the following table. About 40 per cent of the total work was belt work. This is probably above the usual demands of the eastern farmer. In addition to the wood sawing and feed grinding found on most eastern farms, these farms had an abundance of corn stalks to cut or shred and in many cases owned a small thresher.

Table 1. Kind and amount of work done per tractor, 54 farms, Pennsylvania, 1917-18.

Total tractor work	31.0
Total belt work	19.6
Total custom work	9.0
Total work	50.6

Overhead Cost. The overhead cost includes all other costs such as repairs, oil, labor, interest, depreciation, and use of buildings.

The item for repairs was small on most farms as the tractors were new. Repairs costing $100 or more were reported on four farms. The highest was $150. The average cost of repairs was $24.36.

All farmers used cylinder oil and hard oil, and many used a heavy oil for the gears. The average tractor used 54.4 gallons of cylinder oil or a little over

(Continued on page 96)

Potato Planting Machinery in New York

By E. V. HARDENBURG

Instructor of Farm Crops at Cornell University

ONE of the principal items in the cost of potato production is that of planting the crop. Until the advent of mechanical planters, it was necessary to open the furrow, drop the seed, distribute the fertilizer, and cover the seed as successive operations. Hand planting is still in vogue in European countries where human labor is relatively cheaper and per capita land area relatively smaller, but the rising cost of labor augmented by war industries has resulted in a constantly increasing use of mechanical potato planters in this country. On the basis of the practice of about 1300 potato growers in New York, approximately 75 per cent of the acreage in our four principal potato areas is planted by machine planters, the remaining 25 per cent being planted by hand. The same proportions are approximately true for Wisconsin, while in Michigan considerably less than one-half of the acreage is machine planted.

A Type of Potato Planter That Seems to Fulfill All Requirements as a Labor, Time, and Money Saver for This State

The extent to which potatoes are planted by machine is determined by such factors as: (1) size of potato acreage per farm; (2) cost of labor; (3) desirability of planting in checks or in drills; and (4) prevalence of stone or stumps in the field.

Machine versus Hand Planting

A study by the writer of comparative costs of machine and hand planting on 360 potato farms in Steuben County in 1912 revealed the fact that machine planting is the more economical on farms producing five acres or more of this crop. The figures in the first table show the

Method	Per cent of farms so planting	Labor cost per acre	Machine cost per acre	Total cost per acre
Hand	79.6	$2.68		$2.68
Machine	20.5	$1.57	$ .40	$1.97

prevalence of the two methods and their comparative cost in Steuben County.

It is often claimed by advocates of the two-man planter that better yields are the result of the more perfect stand possible from this type, and that there is the further advantage of no possibility of injury to seed pieces, which sometimes occurs with the one-man type. The results from the use of both types on 635 potato farms in four potato sections of New York prove with but one slight exception, that for Long Island, the yields per acre were higher in the case of the crops planted with the two-man planters. The differences in average yield per acre of 10 to 15 bushels for three of these regions cannot be attributed to a larger amount of seed planted, because the rates of planting were almost identical.

These figures show machine planting to be cheaper than hand planting by 71 cents per acre. However, the fact that about two-thirds of the growers in this region prefer to plant in check-rows on account of greater ease in weed control by cross cultivation, precludes any conclusion that it is always desirable to plant by machine. Mechanical planters are not equipped to plant in check-rows.

Aside from the more obvious advantages of saving in labor cost, there are several other advantages in the use of machine planters. No extra labor is necessary for marking out rows, because the marker is carried by the planter. Nearly all planters carry hoppers equipped to distribute the fertilizer in the row at the time of planting. The fact that the seed piece is dropped into moist soil and immediately covered, precludes any possibility of drying in the open furrow, as is too often true with hand planting. Somewhat straighter rows are also to be expected from machine planting.

Two-man versus One-man Planters

Several brands of mechanical planters are now on the market but only two distinct types have so far been evolved. One of these requires but one man to operate, the seed pieces being automatically picked from a hopper by picker hooks on a rotary reel and delivered into a boot which guides it into the furrow. Such a planter is often referred to as a picker planter. The other type requires two men for operation, the seed pieces being automatically delivered onto a horizontal revolving disc which is sectioned to accommodate pieces singly. As the pieces are thus carried toward the aperture for delivery into the furrow, the second man sees to it that one and only one piece is carried in each section. By virtue of the extra man, there should be no missing hills in the resulting stand of potatoes unless there is dormant or diseased seed.

With the use of fairly large seed pieces and the planter in good working order, the one-man planter may give almost as good results as the two-man planter; also its initial cost is usually somewhat less than that of the platform type. In the second table are shown the comparative costs, life and depreciation of the two types on 67 farms in Steuben County in 1912.

Type	Average initial cost	Average life in years	Average annual depreciation
Platform	$67.33	15:3	$ 4.68
Picker	60.11	13:5	4.70
Average	$64.41	14:5	$ 4.69

From the weight of evidence available to date, it appears that the use of potato planting machinery is increasing rapidly in New York along with other labor-saving devices, and that to a slight extent the results from the two-man or platform type seem to justify the present predominance of this type in regions of New York outside of Long Island.

The Dairymen's League

Its Early History, Some of its Accomplishments, and Present Problems

By H. E. BABCOCK

Assistant Professor and State Leader of County Agents

IN Orange County where the Dairymen's League movement started, credit is generally given to O. W. Mapes—sometimes known as "Mapes, the Hen Man"—of Middletown, Orange County, for originating the idea of the Dairymen's League in its present form. In June, 1903, at an Orange County Pomona Grange meeting, a resolution had been adopted to appoint a milk committee to consist of a member from each subordinate Grange. This committee was appointed, and articles of association were drawn and the constitution and by-laws adopted under the name of "The United Dairymen." Three years later at another Orange County Pomona Grange meeting, a resolution was introduced by Milton Lane providing for the appointment of another committee to confer with the New York Milk Exchange for the purpose of securing representation in this then acknowledged price-making body for market milk in New York City. This committee consisted of Albert Manning, Charles H. Tuttle, Jesse Bull, George Hyatt, and John Y. Jerow. The committee conferred with the Borden Company on September 4 and met a committee from the Exchange on the afternoon of the same day. After this conference the secretary of the Milk Exchange committee advised the Dairymen's committee that they could not legally confer on prices with a committee of the Grange, which represented all branches of agriculture, and had no authority as an organization to sell milk for the dairymen.

Grange Fathers the Movement. At this point, Mr. Mapes made his suggestion of the League in its present form. With some changes the plan was recommended by the milk committee to the Orange County Pomona Grange. On March 6, 1907, it was adopted, the Pomona Grange undertaking to father the movement until 500 signatures were secured. In this preliminary organization only 10 cents of the 25 cents per cow was collected, as it was deemed useless to proceed further unless at least 500 dairymen would endorse the movement. It was agreed that, if this number of subscribers could be secured, a temporary organization would be formed.

In December, 1906, Mr. Manning was elected Master of the Orange County Pomona Grange and thereby became the ex-officio member of the milk committee. He then appointed Past-Master John Y. Jerow as chairman—thereby keeping the same committee on the job. The necessary 500 subscribers had already been secured thru the efforts of Granges in Orange, Ulster, and Sullivan counties in New York State, and in Sussex County in New Jersey. On August 24, 1907, at a meeting in Middletown a temporary organization with 691 members, controlling 14,719 cows, was organized. This meeting divorced the association from the Grange. A constitution and by-laws were adopted under the name of the "Dairymen's League." In this temporary organization, it was provided that when 50,000 cows were secured, a permanent organization should be formed.

The League Incorporates. On September 2, 1907, it was voted to incorporate under the laws of the State of New Jersey, and Albert Manning was chosen secretary. The articles of incorporation were filed at Trenton, New Jersey, on October 4, 1907. Active organization was undertaken under the direction of the secretary, and the territory was extended as fast as funds and men to organize were available. In 1910, the 50,000 cows necessary to form the permanent organization had been secured, and on June 29, 1910, a meet-

ing was held at which delegates were present from fourteen counties in the states of New York, New Jersey, and Pennsylvania. By-laws were adopted and the following officers were elected: John Y. Jerow, president; W. D. Haggardy, vice-president; Albert Manning, secretary; and L. M. Harden, treasurer. On August 4, 1910, the first meeting of the board of directors was held in Middletown, New York.

League Grows Rapidly. By 1913, subscriptions had been received for over 100,000 cows, and by September, 1914, the number reached was 187,526. Several attempts had been made during this time by the officers of the League to secure a conference with milk distributors in order to gain recognition in establishing the price to be paid to producers. The stronger the organization became, the less cordially were suggestions from its officers received. By the fall of 1914, the situation became tense and diplomatic relations with the dealers neared the breaking point. Cool heads, realizing the task before the League, advised making progress slowly and so the whole efforts of the officers were aimed at building up the organization.

In 1916, rumors began to creep in from Illinois of the success of the Chicago milk producers in their struggle to obtain fair prices from the large companies in that district. This stimulated the League membership to a renewed interest in their own organization, and meetings of the directors were held in May, June, and July, at Albany, Syracuse, and Middletown. Finally, Mr. W. J. Kittles of Chicago was invited to address the League members. He did this at two meetings. His forceful and eloquent presentation of the Chicago success aroused the farmers in southeastern New York. An equally determined group sprang up in Chenango County, led by H. J. Kershaw, now a member of the League executive committee.

The board of directors instructed the executive committee, composed of R. D. Cooper, F. H. Thompson, Frank Sherman, and President Jerow and Secretary Manning, ex-officio members, to formulate plans whereby the farmers could establish the price they should receive for their milk. The New York State Department of Foods and Markets was made the selling agent, with the reservation that all contracts for the sale of milk were to be executed by the executive committee. A popular campaign to arouse interest was opened up with a state-wide meeting which was held in Utica on September 6 and attended by approximately one thousand dairymen. League secretaries were stimulated to collect assessments of 25 cents a cow, and dealers were notified that they could buy their milk from the Executive Committee of the Dairymen's League, which had taken up its office with the Department of Foods and Markets at 204 Franklin street, New York City.

The 1916 Strike. Few dealers took advantage of the opportunity to buy milk previous to October 1, and as the result, on that date, which was Sunday morning, most of the farmers who had consigned their milk to be sold by the League executive committee, ceased to deliver it. The supply in New York City grew less and less, until by the following Thursday scarcely ten per cent of the milk from the normal source of supply was being received in the city. The dealers attempted in every way to wear out the dairymen and force them to sell their milk as individuals. Milk was shipped into New York City by dealers from Chicago, Indianapolis, Cleveland, Pittsburg, Philadelphia, Boston, Colebrook, New Hampshire, Auburn, Maine, and points in Canada. After a fourteen days' battle, which saw the elevation of R. D. Cooper, chairman of the executive committee, to the presidency of the League, the dealers recognized the League and bought their milk from its executive committee.

Dairymen's Success Far Reaching. The success of the dairymen in this initial effort to sell collectively stimulated all branches of agriculture in the state. It also seemed to give a new life to movements for the development and improvement of agricultural conditions.

This has been remarked upon again and again by rural merchants, bankers, extension specialists, and others interested in country life.

Since its success in 1916, the League has increased its membership rapidly, has put into force the collection of one cent a hundred on the milk that is sold thru it—which has provided it with ample funds—and has established a well-equipped headquarters in New York City.

Useful During the War. During the war, the organization proved useful not only to dairymen but to milk distributors and to consumers. Thru its officers, it kept constantly in touch with the Food Administration and gave it reliable advice on the milk situation. The policy of the League as to prices during the war was to keep them down to the lowest possible point consistent with maintaining production. This point was held to be the cost of production plus a fair profit. In figuring the cost of production, the much discussed Warren Formula was used, and the prices as to feed, labor, and the like, were gathered thru disinterested agencies. The fairness of this method appealed to most Food Administration officials appointed to handle the milk situation, and while it took a long fight to establish the cost of production basis, the League finally won out at the closing months of the war.

Dealers Try to Break League. With the close of the war, government control of milk was discontinued. A move was promptly made by the New York City Milk Conference Board, with the apparent cooperation of certain New York City officials, to break up the League as an organization. This fight lasted during a great part of January, and after interference by Governor Smith, was finally settled in favor of the League. It demonstrated again the ability of dairymen to stick together, and again greatly stimulated the cooperative spirit among farmers in the state.

Future Problems. From the fall of 1916 to the present time, the Dairymen's League has amply justified its existence as a protective agency for dairymen and has demonstrated its ability to function effectively along this line. Beyond furnishing protection, however, it has as yet done but little to solve the milk situation. This is recognized by practically everyone interested in the League. The next move, therefore, will undoubtedly be something along the line of the conversion of the League into a Milk Marketing Association. Experience gained in the two disagreements with the dealers proves conclusively that to meet them on anywhere near equal grounds, dairymen must own the shipping stations and the facilities, such as cans, for shipping milk.

Experience in the monthly price setting during the last two years has also proven that the surplus milk question must be handled by the League itself, if it is to secure the maximum returns for its members. By "surplus" is meant that milk which is not used in New York City as market milk but which must be manufactured into some dairy product. Dealers claim that they lose money on surplus milk. The dairymen are unable to meet their arguments. The solution is to remove the surplus from consideration, sell the milk distributors what market milk they need, manufacture the surplus, and prorate the returns.

A Milk Marketing Association large enough to handle the supply and its surplus for New York City will be the largest cooperative marketing organization ever formed. Three years ago, such an organization would have been nothing more than a wild dream. Today, under the protecting influence of the Dairymen's League, it can be put across to the ultimate advantage of both producer and consumer.

THE CORNELL COUNTRYMAN

FOUNDED 1903 INCORPORATED 1914

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

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Home Economics Editors

GERTRUDE SAMPSON RUTH NYE

ITHACA, N. Y., MARCH, 1919

IT is said that after a war a period of depression follows, and evidently this period of depression has extended even to the College of Agriculture. We believe that this is primarily due to a very noticeable lack of that vague, intangible thing called "college spirit." We miss that feeling of college pride and that spirit of unity for which the college is justly famous. As a concrete example, simply review the matter of elections on February 17. Approximately eighteen per cent of the student body voted at these elections—a rather accurate indication that only eighteen per cent of the students are interested in keeping up the college activities.

It is true that most of the students have an unusually heavy program this year; but, nevertheless, let us all get together and work hard to bring back that college spirit. Then when we have another "Ag. Get-together" or any college activity, instead of eighteen per cent, let us have a hundred per cent backing by the students.

THERE is need for legislative action to establish a definite building program for the new College buildings. That the need is decidedly urgent, the Alumni of more recent years can readily say, and for the further growth and unhindered development of our departments, the Plant Industry Building should be built at once.

This building will house the departments of Plant Pathology, Botany, and Plant Breeding.

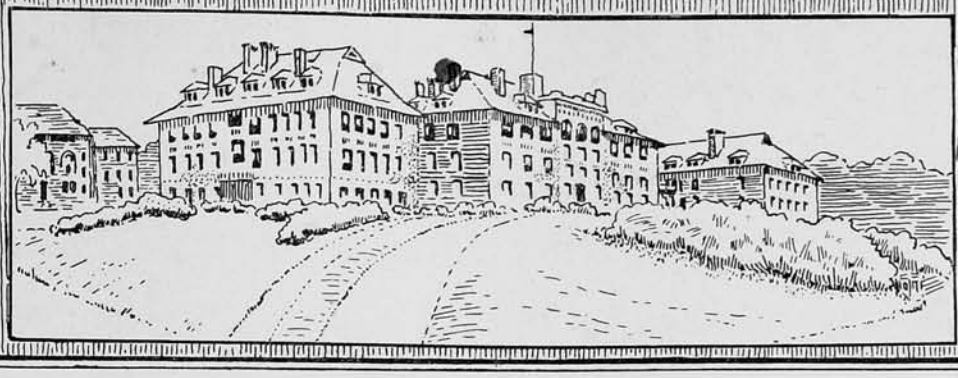
At the present time, the Plant Pathology Department has its quarters in the basement of Bailey Hall in rooms that resemble the ancient catacombs. The light is poor, the ventilation merely incidental, and conveniences entirely lacking. The laboratory requires constant use of the microscope, all of which must be done under artificial light. The departmental library is underneath the auditorium in a place scarcely large enough for a man to turn around in.

The Department of Botany is crowded in the made over attic of the Agronomy Building. As nearly every student in the College of Agriculture must study Botany at some time or another, a great deal of laboratory space is needed, but under the present conditions little is available.

The case of the Plant Breeding Department is different; its present quarters are ideal but unfortunately are needed by Forestry, for whom they were originally built. So the Plant Breeding Department must go elsewhere.

The plan of the Plant Industry Building provides for a building two hundred and seventy feet long and composed of a central portion with two adjoining wings. The plan already has been prepared and approved by the state architect before the heavy war expenses of the last two years came up. But that much is done. Now the trustees are asking for the erection of the central portion at once, and a bill appropriating $350,000 for this purpose is now before the legislature.

CAMPUS NOTES



On February 15 John Lemuel Stone, '74, of the department of farm practice, New York State College of Agriculture, retired from his position on the staff of the College. His retirement comes as a reward for long, faithful, and effective service.

John L. Stone was born July 6, 1852, near Waverly, in the township of Abington, Lackawanna County, Pennsylvania. He entered Cornell University in 1870 by examination and registered as a special student. His chief teachers were Professors Caldwell, Prentiss, and McCandless, the latter being succeeded by Professor I. P. Roberts in 1873. He was graduated in 1874 with the degree of Bachelor of Agriculture. After graduation he returned to the home farm and entered into partnership with his father.

John L. Stone came to Ithaca at the direct invitation of Professor Roberts to act as his assistant. According to official records he served as assistant from 1897 to 1903; then as assistant professor from 1903 to 1907; and as professor since 1907 to the date of his retirement. On coming to Cornell he taught a short time as the associate of "Uncle" John W. Spencer, until he had his first real touch with New York farmers during the sugar beet harvest of 1897. All later developments in extension activities were the result of his observations of actual needs, particularly in connection with the growing of beans, buckwheat, potatoes, and alfalfa. His bulletins on beans and on buckwheat were the first of their kind published in this country.

(Continued on page 104)

The Twelfth Annual Farmers' Week at Cornell closed February 14 with a total registration of over forty-three hundred visitors. It was the largest registration ever recorded for Farmers' Week, the former record being 3448 in 1917.

It was after the Christmas holidays when the Kermis Committee decided it was possible to present a play this year as usual. Announcement was made and a competition opened to undergraduates, but no satisfactory material being received, it seemed probable that the usual program must be abandoned. At this juncture E. B. Sullivan, '18, returned from the service and proposed to write a play, "The Field of Honor," within a week. He submitted the manuscript on time, and it was accepted immediately. Then followed two weeks of rehearsal under the supervision of Professor Everett, to whose untiring coaching the success of the production is due.

The "Field of Honor" deals with a problem which occurred in hundreds of farm homes after the United States entered the war. "Bob" Stone, a farmer's son, found he must choose between enlisting in the army or staying on the farm where also he could serve his country, but in another way. The first course seemed the only one for a red-blooded American, but the other course appealed to his cold reason and his love for his father. His first impulse to enlist was overcome, and he stayed at home but was soon drafted

(Continued on page 102)

Hints on Choosing Textiles

By BERTHA E. TITSWORTH

In order to guard against the textiles of inferior quality, a general knowledge of the manufacture and adulteration of textile fibers is necessary; and such knowledge will enable the housewife to obtain better value and better satisfaction for the time, money, and energy expended.

Tests for Cotton Adulteration. Chemicals used in bleaching and in stamping designs on cotton fabrics often weaken the fiber to such an extent that cloth may become almost worthless if it is allowed to lie on the shelf for some time before being used. This is more likely to be true of cheap grades of cotton, since less care is used in their manufacture than in the manufacture of fine cloths.

When cloth that has been adulterated is held to the light the meshes are seen to be filled with sizing.

If sizing has been used to a great extent, a piece of cloth rubbed briskly will show white powder.

If cloth is thoroly boiled for a few minutes the filling will dissolve out.

Boiling and rubbing will remove the calendered polish from the so-called linens and mercerized cottons.

If a sample that is thot to have been weakened by the action of bleaching chemicals is torn, its weakness will be easily detected.

Linen Adulterations. Damasks and dress linens often contain large percentages of mercerized or calendered (an imitation of mercerized) cotton. It is difficult to distinguish between the two when they are starched and well finished, so that the buyer is often deceived.

Tests for Adulteration. Linen threads break with an uneven, pointed end, whereas cotton threads break with an even-tufted end.

If cotton and linen fabrics are briskly rubbed between the fingers, the surface of the linen will be smooth, while the surface of the cotton will be rough owing to the many ends of short fibers.

A drop of olive oil, or any similar oil, may be placed on a sample of cloth to be tested and the cloth laid between two blotters. If the cloth is linen the spot will be translucent; if it is cotton the spot will appear opaque.

Wool Adulterations. Since the demand for raw wool greatly exceeds the supply, various means are used to adulterate the fabrics. Many of the wool garments on the market today are made of shoddy, which consists of odds and ends obtained from the factory, the tailor, and the rag-picker—almost any wool fiber, long enough to have two ends, is used in making woolens. The use of shoddy makes it possible for the supply of woolen goods to be as large as it is today. If new wool alone were used, the supply of materials would be so far below the demand that many persons would have to go without warm woolen clothing.

The objection to the use of shoddy is that often materials sold for high prices and supposed to be of new wool are made for the most part from old, short wool, and the customer is not receiving what he asks and pays for. Besides, the materials made from a large percentage of shoddy are not so durable as those made from new wool, altho they are as warm as, if not warmer than, those from closely woven new wool.

Cotton, treated to appear like wool, is

(Continued on page 106)

'88, B. S. A.—G. D. Brill, who taught agriculture in China after leaving Cornell and was later manager of the farm of the late Seth Lowe, is now manager of a large farm in New Jersey.

'90, B. S.; '96, M. S. A.—L. C. Corbett, horticulturist of the Bureau of Plant Industry, U. S. D. A., lectured on Thursday of Farmers' Week on "Some Vegetable Problems in New York State."

'98, B. S.—H. H. Albertson was back for Farmers' Week and told the "compet" of the old days when Morrill Hall was the home of the College of Agriculture. Mr. Albertson is the owner of peach orchards at Burlington, New Jersey.

'99, B. S.—Herman E. Clark is engaged in mining in Nevada, but his permanent address is still 5 Central avenue, Rochester, New Hampshire.

'04, W. C.—W. L. Markham, who was an instructor in the department of dairy industry in 1908, and has lately been manager of the Erie County Farm Bureau, has gone to Des Moines, Iowa. Mr. Markham and W. W. Warsaw, who was formerly assistant professor of soil technology at the college, have formed the firm of Warsaw and Markham to sell the Wheat tractor thruout Iowa and Illinois.

'05, B. S. A.—C. A. Rogers, who was formerly a professor in the department of poultry husbandry, gave a number of lectures during Farmers' Week. He is now running his poultry farm at Bergen.

'05, B. S.—R. C. Simpson is engaged in business with his father in the Simpson Nurseries, Monticello, California.

'06, B. S.—Gilbert H. Tucker gave a talk at the college during Farmers' Week. He is now vice-president of the State Agricultural Society at Albany.

'08, Sp.—D. W. Working, who did work in the department of plant breeding in 1908, stopped off in Ithaca for a few days while on his way to Arizona where he is to be director of the state experiment station.

'08, B. S.—G. W. Bush returned to the Hill for Farmers' Week. He is agent in Oneida County.

'09, B. S.—G. W. Meyer is running the home farm at Ovid Center.

'10, B. S.—N. R. Peet, who is now county agent for Niagara County, was back on the Hill for the Farmers' Week conferences.

'10, B. S.—R. J. Shepherd is engaged in general farming on the old homestead near Batavia.

'11, B. S.—H. N. Humphrey was in town as a Farmers' Week guest. He is agricultural agent in Steuben County.

'12, B. S.—H. B. Knapp is director of the State School of Agriculture at Cobleskill.

'12, B. S.—Professor John Bently, Jr., of the forestry department is on leave of absence. He is touring thru the western states, visiting the national forests and experiment stations.

'12—Edward L. Bernays is now in Paris. He is doing work with the Committee on Public Information, of the Peace Conference.

'13, B. S.—B. H. Frary has a farm of one hundred and thirty acres near Homer. He is in the dairy business, and also raises potatoes and cabbage for the market.

'13, B. S.—A. C. Fraser has returned to his position as instructor in the department of plant breeding. He had been in the service for over a year as a sergeant major attached to the headquarters company of the 36th Field Artillery stationed at Camp Anderson, Alabama.

'13, B. S.—F. C. Smith has been appointed extension specialist in poultry. He was until recently county agent in Allegany County.

'13, B. S.—J. M. Hurley is agent in Washington County.

'13, B. S.—George C. Supplee is now in the employ of The Dry Milk Company. He is also director of the research laboratory which is located at Adams. After graduation, Mr. Supplee assisted and instructed in the butter laboratory and later in the bacteriological laboratory. During this time he was registered for the Ph. D. degree which he earned in December, 1918. While in the service of Cornell University, Dr. Supplee inspected the manufacture and packing of butter for the Navy Department at Troy, Pennsylvania, 1913; Meridale, 1914; Ferndale, California, 1915; New Era, Michigan, 1917; and Albert Lea, Minnesota, 1918. He leaves the teaching profession for commercial activities well equipped in both the science and practice of handling dairy products.

'13, B. S.—Burr Carleton Copley was married to Miss Marion Louise Lowry on August 10, 1917. A daughter was born on December 12, 1918. Copley has been managing the York Brook Farm at Canton, Mass., for the past three years. During the past year the business has been under his supervision, the owner being in France.

H. D. Phillips, '14, has returned to his desk in the department of rural economy after having seen a year's service with the 309th Field Artillery.

'14, B. S.—Eugene Irish has been reported in recent casualty lists as missing in action.

'14, B. S.—F. E. Rogers is Farm Bureau agent in Wayne County. He attended the Farm Bureau Conference during Farmers' Week.

'14, B. S.—J. W. Peck is manager of the Farm Bureau in Ontario County.

'14, B. S.—J. R. Teall, who is county agent in Onondaga, was present at the Farmers' Week Reunion.

'14, B. S.—S. Bertrand Johnson is with the French High Commission, Fifteenth and M Streets, Washington, D. C.

'14, B. S.—Mr. and Mrs. J. Sellman Woollen announce the birth of a daughter, Elizabeth Wilson, on October 12, 1918. Their address is Tracey's Landing, Md.

'14, B. S., '15, A. B.—Captain and Mrs. Robert W. Nix, Jr., announce the birth of a son, Robert Williamson Nix III. Captain Nix is at Camp Kearney with the 21st Infantry.

'14, B. S.—H. A. Chadderdon: The Countryman is in receipt of the following abstract of a citation received by Mr. Chadderdon who was with the Headquarters Intelligence Section, Division 1, and is now in the Army of Occupation:

Headquarters, First Division,
American Expeditionary Forces,
December 24, 1918.

To Private Harold A. Chadderdon:

I wish to express my deep appreciation of the loyal and efficient service which you have rendered to this Division and to your Country during the past year.

You have accepted your lot willingly, suffered dangers and hardships uncomplainingly, and added your bit to the defeat of the enemy.

That you may have a happy Christmas and that each succeeding one may bring you added pleasure and prosperity, is my sincere wish.

Thos. R. Gowenlock, Major, G. S., U. S. A., A. C. of S., G-2.

Mr. Chadderdon's company was one of the first to reach enemy territory. His present address is Co. C, First U. S. Engineers, A. E. F.

'14, B. S.—H. L. Hanford has purchased a dairy and general farm of one hundred and sixty acres northeast of Ithaca, near Etna.

Sooner or later you will buy a

DE LAVAL

CREAM SEPARATOR

If you have any use for a cream separator, it's only a question of time before you buy a De Laval.

Many buy a De Laval to start with and so avoid a lot of "separator grief."

Others buy one, two or three different machines before they finally learn by experience that "the best is the cheapest" and get a De Laval.

That's why, in the older dairy sections where separators have been in general use for many years, you'll find most of the machines are De Lavals.

"Claims" don't mean much to such farmers. They've had lots of separator experience. "Performance" means a thousand times more to them than claims.

They've watched the De Laval "perform" for several decades. They know that it is reliable and they stick to it, just as does the creameryman who is also "separator wise."

Why not be guided by the experience of these men and buy your De Laval "Sooner" instead of "Later?"

Order your De Laval now and let it begin saving cream for you right away. See the local De Laval agent, or, if you don't know him, write to the nearest De Laval office as below

The De Laval Separator Co.

165 Broadway
New York

29 E. Madison St.
Chicago

OVER 2,325,000 DE LAVALS IN DAILY USE

'15, B. S., '16, M. S.—Erford L. Banner is instructing in the department of poultry husbandry, studying for his Ph.D., and doing research work in incubation problems. For the past two years Mr. Banner has been teaching in the Bristol County Agricultural School at Segregansett, Massachusetts, where Mrs. Banner, '15, B. S., organized and started the first home demonstration work in that county.

'15, B. S.—C. E. Young is farming the home farm at Theresa, N. Y.

'15, B. S.—H. M. Stanley, who has recently been discharged from the army, is assisting his brother who is manager of the Cloverland Dairy of Rochester.

'15, B. S.—J. H. Bromley, who was making soil surveys for the department of soil technology, died of influenza last December.

'16, B. S.—Solomon Abelow who is now with the 305th Field Artillery, A. E. F., has received a lieutenant's commission.

'16, B. S.—Gertrude Button was married on July 13, 1918, to Lieutenant Merriam G. Lewis, at Lawrenceville, Va.

'16, B. S.—L. M. Armstrong is the director of agriculture at Dover, Delaware.

'16, S. C.—George Hoyt is now farming at Wheetsport.

'16, B. S.—Stanley Judd is married and is now teaching at Cobleskill.

'16, B. S.—Walter Hanford is now on the home dairy farm at Dryden.

'16, B. S.—C. W. Gilbert is manager of the Greene County Farm Bureau. His address is Catskill, N. Y.

'16, B. S.—Sergeant Edward E. Ludwig took part in the battles of Chateau Thierry, Argonne Forest and Meuse River. He was in the Keystone Division which was cited for bravery by General Pershing. While in France he met Captain Clement L. Speiden '15 and Lieut. Gilbert M. Taylor '16. They had not met since graduation. He reports that they are both well and that they are all anxious to get back now that the war is over. Ludwig's mail address is 701 East Diamond St., N. S., Pittsburg, Pa.

'16—Ensign Leonard F. Hicks, U. S. N. R. F., has been recommended for a promotion to lieutenant junior grade. His address is 140 Nassau St., New York.

'16, B. S.—Captain J. Stanley Babbitt, of the Chemical Warfare Service, is on duty as gas officer with the American Expeditionary Forces. His permanent address is Prospect Park, White Plains.

'17, B. S.—Elbert E. Conklin, jr., enlisted in the tank corps in September and went to France in October. He spent a time in England and was then transferred to the main Tank Training Station at Langres, France. His present address is Casual Co. A., Tank Corps, A. E. F.

Announcement has been made of the marriage of Elizabeth M. Abbuhl ('17, B. S.) to Dr. Don A. Boardman on June 30, 1918.

'17—Sergeant Abraham Shultz has been transferred from Camp Greenleaf, Ga., to the laboratory of the U. S. General Hospital No. 36 at Detroit, Mich.

'17, B. S.—L. A. Zimm is teaching in the State Forestry School at Athens, Georgia.

'17, B. S.—George S. Kephart, who returned February 20 from service abroad, is helping Coach Courtney in the crew-room. "Kep" was varsity coxswain in '16.

'17, B. S.—A. D. Fonda has been discharged from the aviation section of the U. S. Marine Corps, and is back at his home in Fonda.

'17, B. S.—D. A. Johnston has been honorably discharged from the service and at present is in Hopewell, New Jersey.

'17, B. S.—Lieutenant Paul R. Chappel was in town as a Farmers' Week guest for the first time since he enlisted

Why the Farmer's Final Judgment Favors Oliver

One of the important qualifications that all Oliver bottoms possess and which has a great deal to do with their high quality of work is a scouring polish.

The illustration of the polishing shows the extreme care that expert polishers take in putting the finishing touches to an Oliver plow bottom.

The image of the inspector in the bottom furnishes conclusive evidence of the thoroughness of the polisher's work.

Oliver Chilled Plow Works

Plowmakers for the World

South Bend, Indiana

Branches and stocks at convenient points

in the Cornell Ambulance unit in April, 1917. He served at the front as an ambulance driver and with the motor transport corps of the French army and later he obtained transfer to the U. S. Air Service. After receiving training at French and Italian flying fields, he was assigned to the 141st Aero Squadron under the command of Capt. Hobey Baker, and served on the Toul sector as a Chasse pilot.

'18, B. S.—Lieut. R. Glenn Knapp has accepted a position with the Animal Husbandry department of the University. Knapp received primary and advanced flying at Ellington Field, Texas, and went overseas early in the fall of 1918.

'18, B. S.—Miss Dorothy Ashley has set up a Landscape Art office in Washington, D. C.

'18, B. S.—H. C. Carr, former varsity basketball center, was discharged at Camp Hancock where he received his commission of second lieutenant. He was acting as instructor in Machine Gunnery.

'18, B. S.—A. D. Davies is county agent for Lewis County.

'18, B. S.—Charles W. Bolgianno is now the vice-president of F. W. Bolgianno and Co. of Washington, D. C. His home is at 3560 Thirteenth street.

'19, ex.—Jesse O. Creech, first lieutenant in the aviation section of the U. S. Army in France, has been officially credited with six boche 'planes. This distinction makes Creech one of the American "aces."

'19, ex.—A. A. Baker, who left Ithaca with the Cornell unit of the American Field Service in April, 1917, is back at his work in the College. After being discharged from the Field Service in France he enrolled in the U. S. Naval Reserve Flying Corps and served in France, England, and Italy. While stationed at Porto Corsini, Italy, he helped in the bombing of Pola, the Austrian naval base which was later captured by the Allied forces.

Feeds with Public Formulas

(Continued from page 73)

chaff, dust or other inferior cleanings derived from the preparation, cleaning or milling of any seed or grain when separated from the standard product.

Humus.
Peat.
Sphagnum moss.
Ivory nut turnings.
Ground corn stalks.
Flax plant by-products.
Sorghum pulp.
Ground or shredded straw or hay (excepting alfalfa meal.)
Sawdust, cellulose or dirt.
Coffee hulls or chaff.

RULE 2. Each package or container of concentrated commercial feeding stuff containing one or more of the materials enumerated in Rule 1 and offered for sale in New York State, shall have plainly printed on it or on a label or tag attached to it, in addition to and in like form with the statement of the list of ingredients of such concentrated commercial feeding stuff, required by Article 7 of the Agricultural Law of the State of New York, either the number of pounds present per unit of each material named in Rule 1, or the names and total number of pounds per unit of all such materials, or the names and the maximum amount thereof per unit.

RULE 3. Each package or container of a concentrated commercial feeding stuff offered for sale in New York State and containing one or more of the materials enumerated in Rule 1, in which the maximum crude fiber content of such concentrated commercial feeding stuff is 10 per cent or more, or the minimum crude protein content of such concentrated commercial feeding stuff is 9 per cent or less, shall have attached to it a yellow tag on which is printed in red ink the statement required by Rule 2 with type of a size not less than ten point, printers' measure.

RULE 4. Whenever a concentrated commercial feeding stuff containing one or more of the materials enumerated in Rule 1 is sold in bulk in New York State, in place of the label or tag required by Rules 2 and 3, there shall be delivered to the purchaser at the time of the sale a card or paper upon which shall be plainly printed or written the required information in the same form and manner as prescribed for the tag or label required in Rules 2 and 3.

RULE 5. Whenever any dealer in New York State shall mix or manufac-

ture a concentrated commercial feeding stuff to a customer's order, he shall give to the customer at the time of delivery of the feeding stuff a printed or written statement of all of the materials used, and the amount of each.

RULE 6. Provided that in the enforcement of these rules, the presence of any of the materials listed in Rule 1 in a concentrated commercial feeding stuff shall not be considered as within the scope and effect of such rules, if it is a natural constituent of a pure meal used as a component part of such concentrated commercial feeding stuff, or if it is not present in greater quantity than can be prevented by reasonable care in the process of making the various materials used as component parts of such concentrated commercial feeding stuff.

Provided also that none of the following by-product feeds shall be included in the materials listed in Rule 1:

Hominy feed, gluten feed, wheat bran, wheat shorts or middlings, wheat mixed feed, rye bran, rye shorts or middlings, rice polish, rice bran, buckwheat middlings, buckwheat bran, cottonseed meal, linseed oilmeal, peanut oilmeal, dried beet pulp, distillers' grains, malt sprouts, brewers' dried grains, yeast or vinegar dried grains.

The essential points covered by these rules and regulations are:

1—That the maximum amount of a feed or feeds of low value enumerated in Rule 1, which may occur in any given ready-mixed feed, must appear on the bag or on the tag accompanying the bag.

2—If the percentage of crude fiber is 10% or more, or if the minimum crude protein is 9% or less, this information must be printed on a yellow tag in red letters and attached to the bag.

The effect of these rules and regulations will be to cause manufacturers to come more rapidly to the opinion advanced by the writer in 1914, and later, that it is best to make the formulas public. As a direct result of these different sorts of agitation, one firm has taken the plunge and there has appeared on the market a new dairy feed manufactured by the H-O Company of Buffalo known as "Read the Tag Dairy Feed" with the following formula and guarantee:

Read the Tag Dairy Feed

330 to 380 lbs. cottonseed meal.
380 to 430 lbs. corn gluten feed.
380 to 430 lbs. linseed oilmeal.
125 to 150 lbs. molasses.
100 to 200 lbs. corn meal.
100 to 200 lbs. hominy feed.
50 to 150 lbs. ground barley.
50 to 150 lbs. wheat middlings.
15 lbs. salt.
225 lbs. oat hulls and oat shorts.

The guarantee of "Read the Tag Dairy Feed" is 20% protein, 5% fat and not to exceed 9½% fiber. This is the first time, so far as the writer knows, that a company on its own volition has sold a feed with a published formula on the tag. It seems to mark a new era in manufactured feeds.

Having such a formula before him, the farmer has a much better opportunity to judge of the value of the feed which he is buying and he can compute with a reasonable degree of accuracy the total digestible matter in such a feed in order to make a direct comparison with feeds of similar formulas and guarantees.

In the long run the purchase of feeds with public formulas from reputable firms will be sounder practice than the purchase of feeds where the guarantee and names of the ingredients alone are given, and it is hoped that our farmers will continue to work on this question of manufactured feeds and adopt such measures as they may see fit to control any sharp practices which may creep into the industry.

While this article is written with the idea of placing before the reader some of the more recent developments along feed manufacturing, it does not seem best to close without some statement regarding the home mixing of feeds. Those farmers of marked ability who know their animals and study them well will without much doubt continue to select the ingredients of their rations, and buy them separately in order to mix them at home and know they are of good quality. The writer still feels

that it is possible for a manufacturer who is somewhat unscrupulous to put into the ready-mixed feeds ingredients which are somewhat off quality and to cover up this shortage by means of other ingredients and molasses and things of that kind. He can publish the exact formulas, guarantees, and ingredients and all that, and still the farmer will not have as much knowledge regarding the mixture as he will have if he selects the ingredients separately, notes the quality of each of them, blends them according to his best knowledge and belief. It is notable that this practice has become nearly universal with those men who have the best knowledge of the mixtures required to give maximum results in production.

Further, when it is checked up it is usually found that such home-mixed feeds are likely to be somewhat more economical than the ready-mixed feeds purchased in the same market as the ingredients. Therefore, every farmer before he purchases his ready-mixed feed for any given purpose, should carefully consider whether he may not get a mixture as cheap if he will buy the separate ingredients and mix his own ration at home.

The Truth About Tractors

(Continued from page 74)

one gallon per day. The average cost of oil per tractor was $28.55 or $.56 per day.

The item for labor included all extra work on the tractor in overhauling, making repairs, and storing or hauling fuel. The average cost of man labor was $9.34. Interest was charged at 5 per cent on the average value of the tractor. The average charge for interest was $39.72.

The average life of the tractors was 8.1 years. The depreciation, using this life and a junk value of 5 per cent, was computed by the compound interest law with a decreasing function. The

depreciation thus secured averaged $269.10.

An estimate was secured of the farmer of the value of the building or position of the building used by the tractor. A rental charge of 10 per cent was made on the value. The average cost per tractor was $4.83. The total overhead cost per tractor was $376.20. The following table gives a summary of the costs and the total cost.

Table 2. Summary of cost of operation per tractor, 54 farms, Pennsylvania, 1917-18.

Item	Average cost per tractor
Fuel	119.44
Labor—operating	126.48
Repairs	24.36
Oil	28.85
Labor for repairs, etc.	9.34
Interest	39.72
Depreciation	269.10
Use of buildings	4.83
Total	622.12
Cost per day	12.30

Factors Affecting Cost of Operation

The limited number of records has not been sufficient to make a detailed study of tractor operation. The results are thus limited to a few general factors.

Size of farm. The tractor costs least on the largest farms. Small farms not having sufficient work at home did the most custom work and thus reduced the cost. Unless custom work is done the farm should consist of at least 100 acres of crops.

Table 3. Relation of size of farm to cost of tractor operation, 54 farms, Pennsylvania, 1917-18.

Acres of crops	No. of farms	Days of work	Days of custom work	Cost per day
75 or less	13	42.9	17.1	$11.71
76-125	23	49.	7.1	13.17
126-200	5	56.9	5.7	12.20
Over 200	5	61.3	5.1	10.42

Amount of work. There was a direct

relationship between the amount of work done and the cost of operation. There should be a possibility of at least 50 days of work for the tractor if one expects to equal the average of $12.30 per day.

Table 4. Relation of days of work to cost of operation, 54 farms, Pennsylvania, 1917-18.

Days of Work	No. of farms	Cost per day
30 or less	13	$19.97
31-50	18	12.77
51-70	11	11.87
Over 70	12	9.85

Size of Plow. The statement has been made by the U. S. Department of Agriculture that the only reliable way to measure the capacity of tractors is by the number of plows hauled. Of the 54 farms, 19 pulled 2-bottom plows and 26 pulled 3-bottom plows. One farm did not plow with the tractor and the remainder used both 2 and 3 bottoms. As the table shows, the 3-bottom plows are somewhat more economical. However, these tractors were operated more days, and this is probably the chief factor in determining the cost.

Table 5. Relation of size of plow to cost of plowing.

Size of plow	No. of farm	Cost of tractor per acre	Cost of tractor plow per acre	Days of work
2 Bottoms	19	$2.57	$.67	48.2
3 Bottoms	26	2.04	.70	54.1
Av. of all	53	2.33	.71	50.6

Summary. The number of days that the tractor was used had more effect than any other factor. The overhead cost did not vary in the same ratio as the amount of work done; hence, the cost of overhead per day is less on those farms doing the most work.

The operator seemed to have some effect on the cost of operation. The cost per day was $12.82 for hired men, $12.16 for owner, and $10.75 for owners' sons. The son took better care, as a repair bill of about one-half the average shows.

A final test of the tractor's efficiency is measured by the number of horses displaced. On the 54 farms that had been operated before buying the tractor an average of 1.9 horses were disposed of.

Farmers' Week

(Continued from page 81)

off the farm, thanks to the Selective Service Act. He received an appointment, however, to an Officers' School, won his commission and went overseas into the thick of the fight.

During Bob's absence the author makes use of the opportunity to review the farmers' attitude toward the requests of the government. At first they were asked to raise bigger crops, yet the farmers were deprived of the means and the help to do so. Notwithstanding this disadvantage, the American farmer stood loyally by his task and served his country as best he could.

After the signing of the armistice the son came safely home and, of course, became engaged to Mary Barnes, who had been the ward of the Stones. This dramatic episode brought out some good effects.

The plot of the play, while simple, was very appropriate, and for this reason made a "hit" with the audience, who did not lose interest for a moment during the five acts.

The cast was as follows: Mrs. Martha Stone, Mary T. Haines; "Dick" Stone (age 12), Marie Hilledge; Mary Barnes (ward of the Stones), Nellie Davenport; John Stone (the farmer), Harold B. Fuller; Bob Stone (his son, an Ag. student), Jesse T. Van Doren; Livingston Manners (an agriculturist), Ernest V. Sullivan; Jim Greene (mail carrier), J. E. Parsons; Mrs. Sarah Manning (a neighbor), Helen Dates; Mrs. Jane Wilcox (a neighbor), Frances Mathews; Abram Wilcox (her husband), F. S. Howlett; "Joe" Wilcox (their son), A. G. Hancock; Farmerettes—Gladys, Sarah Merritt; Gwendolyn,

Jennie De Martinis; Phyllis, Lois Zimmerman; Marilyn, Gladys Purdy.

The Cornell Foresters added "pep," as usual, to the evening by their clever musical sketch which preceded "The Field of Honor." There were also several selections sung by the quartette composed of C. W. Whitney, E. D. Button, C. H. Meyers, and W. B. Ballard.

The prize of five dollars for the best poster to advertise the play was equally divided between Miss Frances E. White, '20, and Miss Dorothy W. Purdy, '19, whose designs were considered of equal merit. There were six posters submitted in the competition.

The annual Eastman Stage was held this year on Friday evening, February 14, as the last event in the Farmers' Week program. The prizes of seventy-five and twenty-five dollars were awarded to P. L. Dunn, '19, and F. H. Bond, '22. Dunn took as his topic "Big Business" and enlarged upon the need of nation-wide organization and "big business" methods for all interested or engaged in farming. The winner of the second prize, F. H. Bond, spoke on "A Business View of Agriculture," in which he emphasized the advantages and need of advertising and of other business methods.

Campus Notes

(Continued from page 81)

In dealing with the stock-feeding problems of the farmers as they were presented to him thru correspondence, he developed the first bulletin on stock feeding, and the so-called "convenience tables." This bulletin is said to have had the largest circulation of any issued from Cornell; its type is now used in almost all states. In this extenson work he often presented problems for research, and notably gave the impetus to the important work on the influence of legumes on non-legumes, which has been so fundamentally considered by the Department of Soil Technology of the College.

(Continued on page 108)

Hints on Choosing Textiles

(Continued from page 82)

used in large quantities to adulterate wool.

Tests for Adulteration. The ends of broken wool fibers will appear kinky, wiry, and uneven when compared with the even, tufted ends of cotton fibers. Wool fibers pull apart when broken, while cotton fibers snap.

If a match is touched to these fibers, a slow burning of wool and a crisp ball of ash result, with the characteristic odor of burning hair. This should be compared with the brisk crackling of cotton, from which practically no ash results.

Animal fibers dissolve readily in a weak, hot solution of caustic potash, or potash lye. If a sample boiled in this solution is completely dissolved, it is wool. If it is part cotton, the wool fibers will disappear and the cotton fibers will remain.

Silk Adulterations. Silk fiber has the quality of absorbing metallic salts and dyes without appreciably changing the external quality of the material. This interferes with the durability of the silk, and as a result the silk splits or falls apart before it has stood even a reasonable test of wear. The durability of present-day silk falls far short of that of our grandmothers. When rightly treated, the silk fiber is very durable.

Cotton threads are interwoven with silk, especially in sateens, velvets, and brocades, in which they may be entirely hidden.

Mercerized cotton is often used in silk manufacture, and its glossy appearance may easily be mistaken for the fiber that it imitates.

Tests for Adulteration. When burned, a sample of silk will give forth the odor of burning feathers that is distinctive of the animal fibers.

If silk is heavily weighted, the mineral ash will retain the full size and shape of the original sample but will fall apart at the touch.

(Abstract from Reading Course Bulletin, Vol. II, No. 45.)

Campus Notes

(Continued from page 104)

Lieutenant E. W. Lindstrom has just returned from France where he was serving in the American Air Forces. Before entering the army, he was an instructor in plant breeding and had charge of the bean investigations at Perry.

Professor C. H. Meyers recently attended two meetings of the Ontario County Farm Bureau Association, where he discussed with the members the possibilities of improving cabbage seed production. The Ontario County farmers specialize in the production of cabbage seed.

Mr. Phillips of the rural economy department is now working on a bulletin on "The History of the Cooperative Selling Efforts in the Chautauqua Grape District." It will soon be available for publication.

Professor Hosmer of the forestry department attended the meeting of the New England Forestry Congress held in Boston on February 24 and 25. He led the discussion on "State Forestry of the United States."

The department of rural economy has removed from its old offices in the home economics building to larger quarters in the forestry building. The department has recently acquired by gift and collection many new volumes of great value to its library of original sources.

It now has the finest set of sources on the prices of the great staples in this country.

A new department, that of rural organization, has been created with Professor Dwight Sanderson as head and with offices located on the third floor of the animal husbandry building. The present time is especially favorable for the establishment of a new agency of this sort because war activities have aroused community spirit and a new sense of the possibility of better social organization. All leaders of rural affairs are realizing the need of a more adequate knowledge of human nature and a scientific approach to the social organization of country life, and of closer correlation of effort among organizations engaged in rural work.

Professor Sanderson intends to restrict the present activity of the department to courses of instruction and to the investigation of possibilities for service out side of the college. Professor Sanderson will make a complete and specific statement of his plans for this department in an early issue of the Countryman.

The farm management department is conducting two surveys thru the month of March. They are under the direction of Assistant Professor G. P. Scoville and are a study of comparative labor incomes. One covers the five northern towns of Livingston County, and is for the purpose of comparison with a similar survey taken ten years ago. The other includes the fruit region of Niagara County and is the sixth of a series of yearly studies of this territory.

The College of Agriculture has the lead so far in inter-college basketball, having beaten four of the five other teams in the league. The results of the contests to date are as follows:

Jan. 29—Ag. 18; M. E. 13.

Feb. 5—Ag. 34; Law 8.

Feb. 13—Ag. 29; Arts 16.

Feb. 17—Ag. (won by default from Vet.)

The first section of the schedule was completed February 27, but the full schedule of games will carry into the latter part of March.

What Do These Heaps Mean?

THEY represent the difference there is in the digestibility of different feeds. They illustrate the milk-producing value of Buffalo Corn Gluten Feed, with its high average of 1614 digestible pounds to the ton, compared with another feed which runs relatively low in digestibility.

They are intended to impress upon you how important a thing the digestibility of feed is—to emphasize the fact that the cow can make milk from only that part of her feed which she can digest, and can make none from the part she cannot digest.

All dairymen appreciate the importance of this point of high digestibility. But too many men, usually those who can least afford not to get the most out of their money, overlook it when they buy feed.

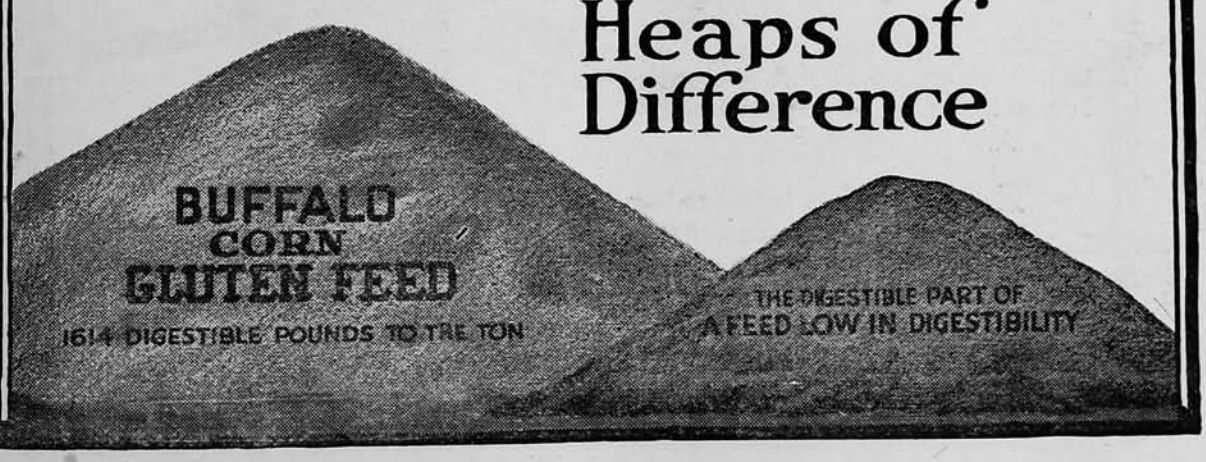
Put your feeding on a digestibility basis. Feed highly digestible Buffalo Corn Gluten Feed, and get more milk.

Write today for sample, feeding formulas, and particulars

Corn Products Refining Company

New York **Chicago**

Heaps of Difference



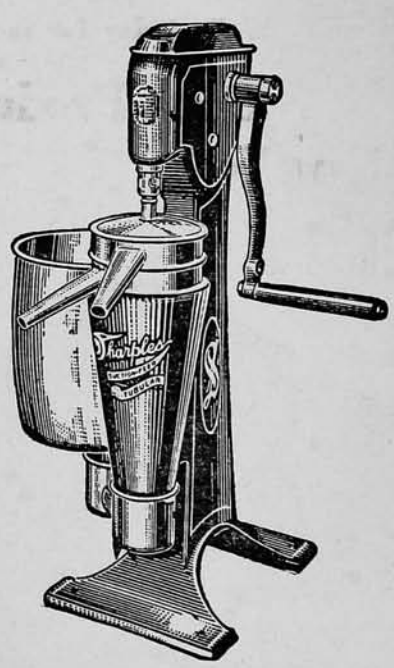
Which Separator did John Brown Buy?

SUPPOSE you were Farmer John Brown and you wanted to buy a separator. You asked several separator manufacturers to send you a **ten word** telegram, stating in the most convincing way, why their separator was the one you should buy. Sharples would only need **five** words: "Skims clean at any speed," and you would not have to ask for anything further.

No other separator manufacturer could put into five words or **fifty** words as convincing an argument as "Skims clean at any speed." They would tell you about the durability of their separator, that it was well-known, that it cost less and everything else **but** the **one** big reason why you need a separator—to get **all** the butterfat out of your milk.

SHARPLES
SUCTION-FEED CREAM SEPARATOR

Sharples **also** has the exclusive advantage of no discs in the bowl; knee-low tank; once a month oiling system; durable construction and, besides, it is the pioneer American Separator. Write for catalog to nearest office.



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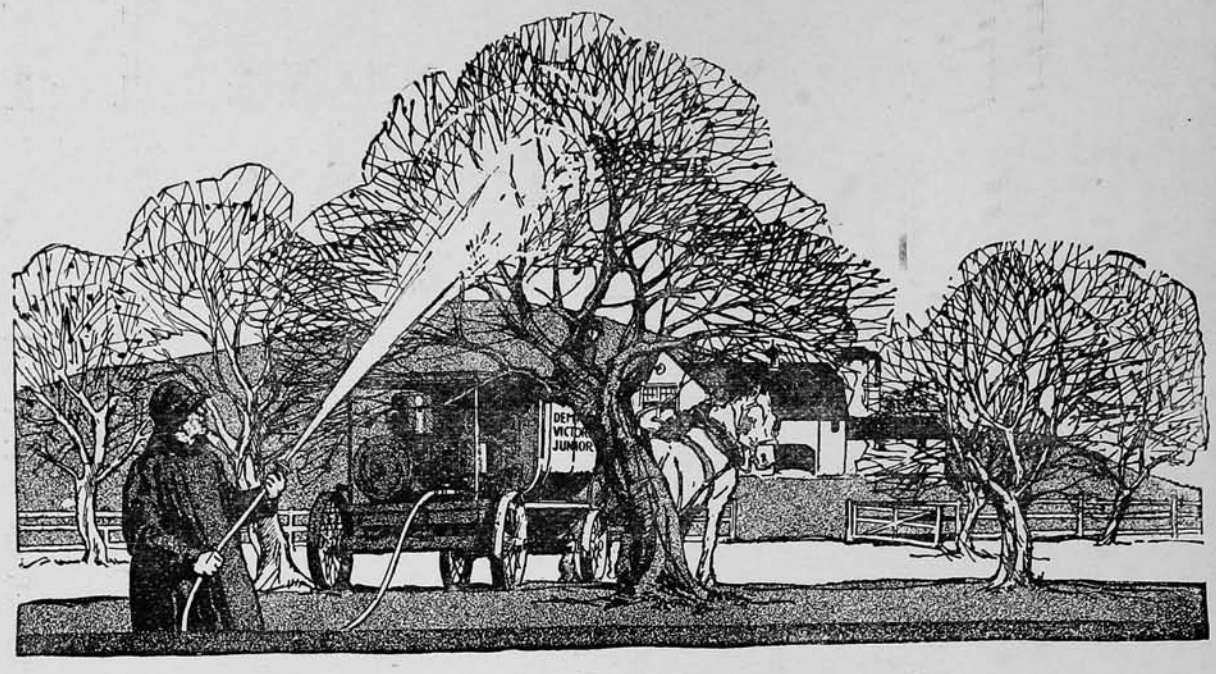

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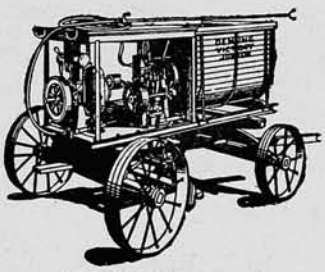

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The lightweight Victory Junior—a powerful sprayer especially adapted to soft or hilly ground—weight, 100 lbs. with empty tank—pressure, 250 lbs.—150 gallon tank

DON'T spend your spraying day in profitless overhauling of an out-of-date or inferior rig. **Get results**—not exercise.

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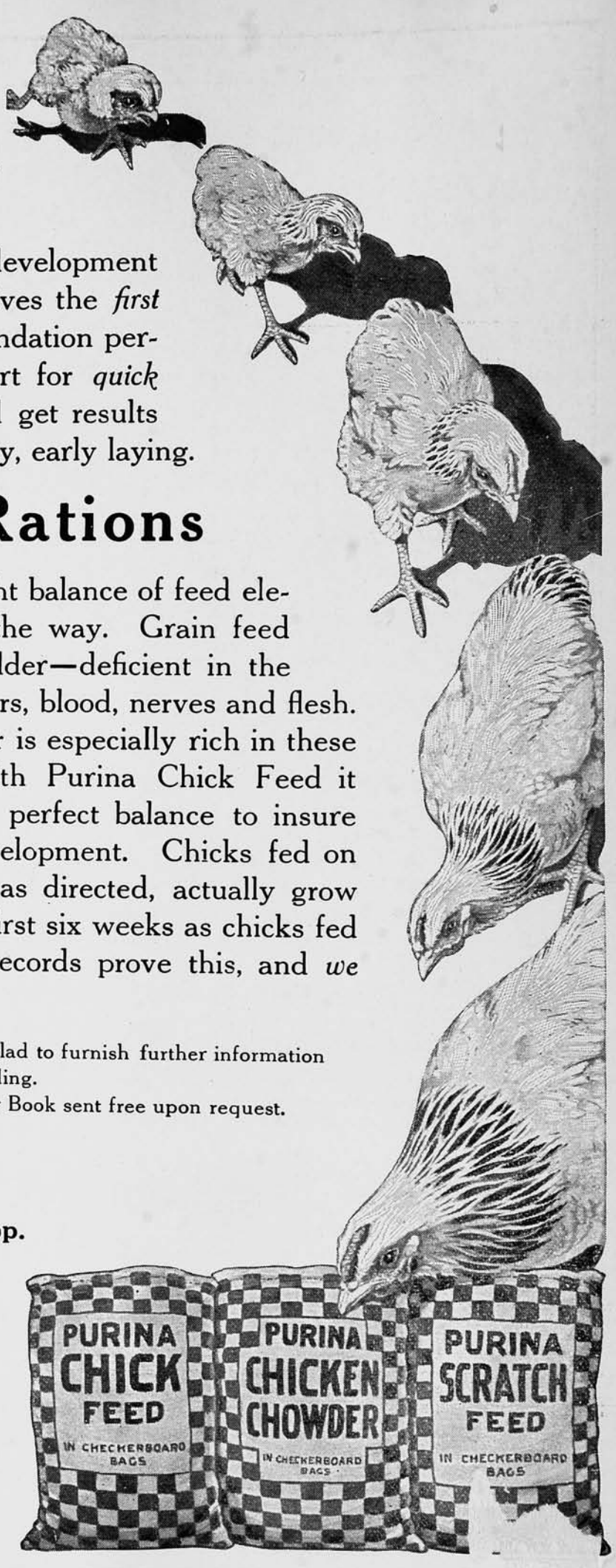

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furnish a chicken the right balance of feed elements for every step of the way. Grain feed alone is a poor body-builder—deficient in the proteins that make feathers, blood, nerves and flesh. Purina Chicken Chowder is especially rich in these elements. Combined with Purina Chick Feed it supplies a complete and perfect balance to insure quick and maximum development. Chicks fed on Purina balanced rations, as directed, actually grow *twice* as fast during the first six weeks as chicks fed a grain ration alone. Records prove this, and *we guarantee it.*

Our research department will be glad to furnish further information and interesting data on poultry feeding.
Write for our 64-page, 1919 Poultry Book sent free upon request.

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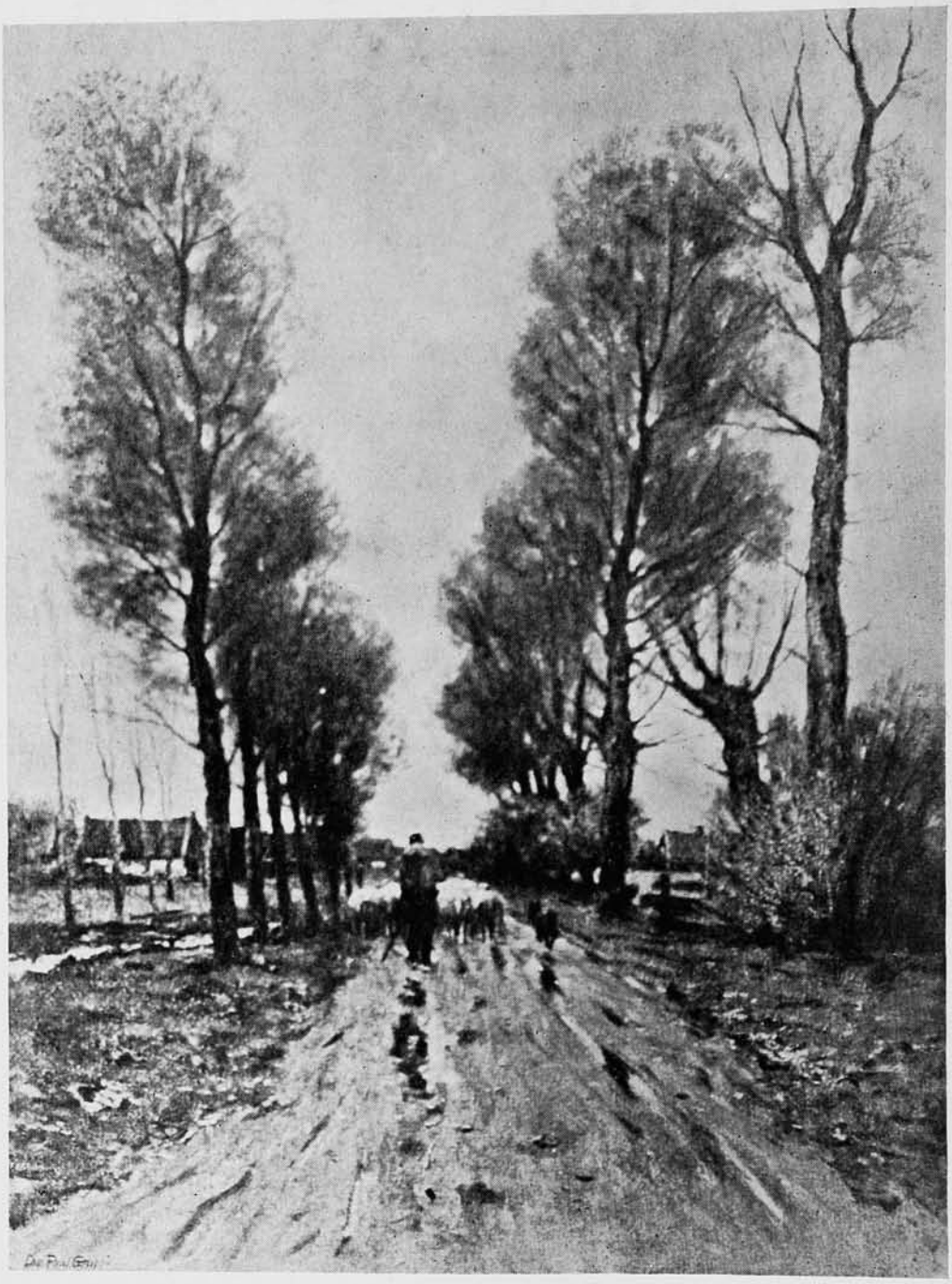

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Reproduced from the painting by Charles P. Gruppe

THE CORNELL COUNTRYMAN

Vol. XVI ITHACA, N. Y., APRIL, 1919 No. 3

Organizing Agriculture as a Business

By E. DAVENPORT

Dean of the Agricultural College of the University of Illinois and Director of the State Experiment Station

Dean Davenport was one of the principal speakers at the recent Farmers' Week at Cornell. He is recognized as one of the leading economists of this country with respect to the business problems of the farmer. In this article he points out that if the farmers as producers were organized in such a way as to do business efficiently with the distributing agencies, their business problems would largely be solved.

THERE are many indications that we of the United States are growing into a new era of agricultural organization and development. Heretofore and for the most part, farming has consisted mainly in getting a home and paying for it by selling on the open market whatever commodities the farmer might be able to produce. To be sure, in many sections, particularly in the West, production has been carried on upon so large a scale as to constitute a money-making enterprise almost from the beginning. But even so, farming has been intensely individualistic.

Farmers have long associated themselves for various purposes, mainly educational, by which is meant the exchange of experience and the discussion of the application of scientific principles to the business of agriculture. Meetings and associations of this kind have vastly multiplied in recent years, corresponding closely to the development of the agricultural colleges and the results of investigation as obtained by the experiment stations.

Following this impulse we have had state and local associations for farmers' institutes, for fairs, and for expositions, and we have had all kinds of specialized associations, such as horticultural societies and dairyman's and stockman's organizations, not to mention pedigree associations for every one of the fifty or more recognized breeds of livestock.

The chief purpose of all these organizations has been the increase and refinement of production thru the practice of better methods, and under their impetus we have been moving gradually away from pioneer farming to the self-sufficing sort, to the more or less finished agriculture which we may expect to enjoy under the settled conditions of a well-developed country.

The financial side of farming first came to the front a half century ago, contemporaneous with the organization of the Grange, when it seemed to farmers generally that much could be gained by cooperative buying. The principle is undoubtedly sound in so far, at least, as the farmers are not served by the

ordinary channels of trade. For example, it cannot be said that farmers have yet been even fairly served either by the fertilizer or the seed business of the country, having suffered at these two points thru a system of adulteration not far removed from the criminal; and as matters are going now, farmers are nearly as ignorant of what they buy in the form of stock feed as of what they have been taking in the form of fertilizers and farm seeds.

In respect to securing these commodities, therefore, the farmers have felt obliged to cooperate, tho strangely enough the energy of cooperation has been expended more along the line of ordinary merchandise than in correcting some of the special evils under which the farmers suffer. It is probably true that farmers cannot afford to combine for the purchase of groceries or other commodities which ought to be kept by the local merchant, and the general business of catering to the farm trade should be so improved as to make it unnecessary that the farmers should be obliged to combine for the purchase of standard commodities of any kind.

The farmer as a business man is much more a seller than a buyer. Outside of fertilizers, seed, and stock feed, he buys few things that are not purchased by other classes of people. He does produce for sale, however, a tremendous tonnage of all sorts of food that must make its way by all sorts of routes to the farthest corners of the world. Production by the individual farmer is for the most part a small business, but the distribution of the food stuff of the world is big business. One of our difficulties is that farmers as producers are not organized in such a way as to do business most advantageously with the distributing agencies, which of necessity must be highly capitalized and strongly organized.

The western fruit growers were the first to discover that in order to market farm products advantageously at any considerable distance, local associations must be formed. If food production could be as well organized for business purposes as are the fruit producers of our western slopes, it is unquestionably true that farming would be more profitable to the individual and food would be cheaper to the consumer.

The system of county farm bureaus now being organized in all the states of the Union, and these in turn combining into some sort of state federation or association, seem to constitute the best basis yet devised for developing agriculture from the business point of view. Heretofore and for the most part, farmers' organizations of a business nature have been limited to narrow lines, such as apples, grapes, milk, butter, cheese, Shorthorns, Jerseys, Holstein-Friesians, and so forth. This form of organization is tremendously effective in certain directions and for certain purposes, but in many respects the geographical unit promises better than the industrial unit for the purposes of business organization.

If the people of a whole county can agree upon developing certain specialties in that county, they are in a way to do business with large concerns, not so much upon the speculative as upon the contract basis; and this is the basis upon which agriculture ought to come to rest at the earliest possible date and to the greatest possible degree.

The Smith-Lever funds were appropriated by Congress as one among many efforts toward realizing a general agricultural development. I do not suppose the promoters of the plan had in mind a definite procedure. If so, it is not expressed in the terms of the act. It is therefore left for each state to develop its own method, and doubtless the conditions in the different states will determine to a large extent the form of development which this new movement should take.

It general, it seems to the writer that it is hardly worth while to multiply mere educational organizations among farmers or to use for a purpose already fairly well served such widespread and powerful organizations as the farm bureaus are capable of becoming. The college

(Continued on page 140)

American Potash in Crop Production

By ELMER O. FIPPIN

Extension Professor of Soil Technology at Cornell University

THE coming of the war forced the making of a national experiment in fertilizing the soil. It cut off the supply of European potash and after the first year caused its practical elimination from fertilizer. Before the war, potash made up a large percentage of all complete fertilizers. That large percentage of potash was put there by two things: first, the ease with which a concentrated potash salt in the form of muriate of sulfate could be introduced, and second, by an aggressive selling propaganda pushed by the German Kali Syndicate.

In view of the large amount of potash present in normal soils, the need of so much potash in most of the complete mixtures was frequently questioned by members of experiment stations and college staffs. At the same time, their experimental data was inadequate to demonstrate the exact limits of the value of potash in the fertilizer for different soils, crops, and methods of soil management.

Potash is valuable for two principal reasons. The first and most prominent of these is to make possible the formation of starch. The potato being the most starchy of common plants, it would seem natural that a lack of potash should be promptly apparent in that crop. In the same way, vegetables in general would seem to be more susceptible to its lack than grain crops. It also has a bearing on the formation of proteid materials and its lack might be expected to appear in the legume crops. Experimental data available is a suggestion of that fact.

Need of Potash Slow to Appear

During the first year without potash, scarcely any change in crop yields was reported. Naturally, it had been most used on those crops of highest acreage value, namely, the vegetable and such special crops as tobacco.

The second year an increasing number of complaints came in, chiefly from vegetable growers on Long Island and the New England and Coastal Plain districts where the soils are most siliceous and lowest in total potash. In that year—1917—a questionnaire was sent to all members of the State Vegetable Growers' Association, bearing upon the effect of the lack of potash in the fertilizer. The observations indicated that the lowest percentage in the reduction of yield was corn with 15% and lettuce, 16%. The highest was tomatoes with 35%, the next onions 37%, potatoes 35%, and cabbage and celery 24 and 22%. Firmness as well as yield were also indicated in such crops as onions, cabbage, and lettuce.

In 1918 an increased number of reports of poor condition of vegetable crops came in, particularly from the potato growing districts of Maine, Long Island, and Virginia.

Indications of "Potash Hunger"

The lack of potash, so-called "potash hunger," expresses itself at first in shortened leaf petals and partially curled, bronzed, crinkled leaves of smaller size. Later, about the time the tubers have well begun to set, the plants go down with lesions on the stems, and a general dying of the tissues occurs, similar in gross outward appearance to blight.

Some irregularity appeared in the soil condition under which this trouble occurred. Sometimes it was associated with different types of soil. Variations from row to row were traced to the presence of windrows of potato tops plowed under. This organic vegetable matter resulted in a normal growth. In other areas, the normal growth of spots was traced to waste—cabbage leaves or rotten potatoes or some other source of vegetable matter that had been incorporated with the soil. Wherever manure

Increase in Value of Crops Produced by Different Fertilizers

Fertilizer	NEW YORK	PENN.	OHIO	
			Twenty Years	
	Total increase in value of 9 crops including 6 of hay and 3 of grain	35 yrs. corn, oats, wheat, clover. Net gain in value of crops per rotation	Corn, oats, wheat, clover, timothy. Increase in value	Potatoes, wheat, clover. Increase in value
Phosphorus	$ 6.99	$14.31	$16.52	$10.99
Potash	20.63	5.36	5.73	7.18
Nitrogen and Phosphorus	38.02	25.75	31.34	15.87
Phosphorus and Potash	19.60	33.60	24.69	20.91
Nitrogen and Potash	50.30	2.17		
Nitrogen, Phos. & Potash	66.61	33.94	39.28	22.27

had been used, even in small amounts within a year or two, the potato plants made a normal growth. Then, too, a few farmers had carried over fertilizers containing potash and this was pieced out with fertilizers lacking in potash. Where the potash fertilizer was absent, the weakened and diseased condition of the plants appeared in every row. Many observations in different regions have led farmers as well as college men to identify a condition of so-called "potash hunger," commonly attended by the diseased condition known as Phoma. By some the diseased condition is looked upon as merely the attack of weakened or dead tissues by common decay organisms usually present in soil. The weakened condition of the plant induced by the lack of potash may be conceived to open the plant to the attack of these soil organisms, which in turn cause premature breaking down of the tissues.

Field Experiments With Potash

For several years an experiment with fertilizer on potatoes has been conducted by the New Jersey Experiment Station at Elmer with the following results. The amount of fertilizer used was 1600 pounds.

The average increase was fifty-three bushels, apparently due to potash. It is

(Continued on page 140)

Milking Machines

By ROBERT S. BREED

Bacteriologist at the New York Agricultural Experiment Station, Geneva

A COMMON inquiry reaching the Experiment Station during recent months has been, "Do you advise the purchase and use of milking machines on dairy farms?" This question is frequently accompanied by another: "If so, which of the machines now on the market do you regard as the most successful?"

The first question can be answered by referring to a recent circular issued by the Station (Circular No. 54). It begins with the statement that milking machines may be of great service on farms where twenty or more cows are kept. None of the machines now on the market are sufficiently fool-proof to justify the more positive statement that they are of use on such farms. Certain difficulties, either in mechanical operation or in keeping them clean, make it impossible to succeed with any of them unless more than ordinary care is given to their operation and maintenance. It is a waste of money for anyone to install a machine unless he is prepared to operate it so as to make it a success.

In purchasing a machine careful investigation as to the merits of the machines offered should be made, as the labor shortage has caused machines to be placed on the market whose value has not been demonstrated. Many companies, however, which have tried to make sure that they had a valuable article before placing it on general sale, have maintained dairy farms upon which they have tested the merits of their machines under practical conditions. A few companies have also realized that a machine milker, to be a success, must be more than a mechanical success and have employed experts to aid in devising simpler and more sanitary construction; but there is no evidence to show that some of the companies now selling machines have sought expert advice on this point. Therefore it is not surprising to find companies using unsuitable metals or alloys in the construction of their machines. For example, a common fault in machines recently placed on the market is to find aluminum used in places where it readily corrodes, and to find the selling agents recommending that dairymen use washing solutions or chemical disinfectants which are corrosive agents of this metal. Only the most resistant alloys or metals should be used for pails, pulsator, and teat cup parts. Nickel, silver, block tin, or heavily nickeled or tinned parts are as satisfactory as any that have come to our notice. Brass is unsatisfactory as it readily blackens and is always a difficult metal to keep brightly polished.

In view of these conditions, the dairyman who is thinking of buying a machine is justified in asking a third question before purchasing, namely, "How successful are practical dairymen with milking machines?" From the testimonials furnished by selling agents one would gather that milking machines are a success in the hands of every farmer; but it is worth noting that many of the testimonials are written within one year after machine milkers are installed and that inquiry will show that machine milkers are frequently discarded. In spite of the recent enormous increase in the sale of milking machines, it is probable that a careful census of the State would show at least one discarded outfit for each two that are still in operation.

An opportunity to study the success of the average dairyman with machine milkers in a restricted area has arisen at the Station during the past five years thru cooperation with the City of Geneva in milk inspection work. During this time seventy-four farms have supplied milk for sale in the city. Machine milkers were installed on sixteen of these farms at the beginning of or during this period. Only nine of these outfits are

still in operation. At least three of the nine have not yet been in operation for two years. No one type of machine has enjoyed a monopoly of the troubles, for out of the six types used on these sixteen farms, machines of four types have been discarded because of dissatisfaction, and the other types have only just appeared in the field. These figures may in a way be said to measure the success which the dairymen of Geneva have had in the mechanical operation of machines. But this is not the whole story.

Since samples of milk have been examined weekly since February 1, 1915, it is possible not only to compare the quality of the milk received from different hand and machine-milked herds, but occasionally, where machines have been installed or discarded during the period, to compare the quality of hand and machine drawn milk from the same herd. Very early in the work it became clear that the excessive bacteria counts which were found in about 17% of the cans examined were frequently associated with the use of milking machines.

In the majority of cases, all of the cans of milk from a farm where milking machines were in use showed approximately the same numbers of bacteria, this condition being more nearly invariable in the case of cans of milk of the same age. The bacteria present in microscopic preparations of the milk were rarely of the lactic acid type, being rather of miscellaneous types which occurred in masses of irregular size. So typical is the picture presented in microscopic preparations of milk drawn thru improperly cleaned milking machines, that the mere examination of samples of milk taken as received in Geneva has caused the inspection authorities to believe that milking machines were in use in the case of two dairymen sending milk to the city for the first time. Later this suspicion was confirmed.

The following figures from the milk inspection work speak for themselves. During 1918, 4,706 cans of milk have been examined of which 1,423 came from farms where milking machines were in use. An unsatisfactory rating was given to 594 cans because they contained bacteria in excess of 1,000,000 individual bacteria per c. c. Of these cans, 58 per cent came from the farms where milking machines were in use, altho only 30 per cent of the milk examined had come from these farms.

The 42 dairymen who have delivered milk more than nine months during 1918 have been arranged in a list in order of their success in delivering milk free from excessive numbers of bacteria. The highest position occupied by any one of the six men using machines was 15, while the others ranked 31, 35, 39, 41, and 42 in the list. Some cans of unsatisfactory milk were delivered from the best of these farms.

During all of this inspection period, members of the Station staff have endeavored to give the men using machines such help and advice as they could, hoping that it would be possible for the dairymen to make as good a showing with the operation of their machines as has been made at the Station. Numerous bacteriological tests have been made on these farms and the dairymen shown as far as possible the exact source of their difficulty, and the methods of cleaning used at the Station have been explained. The users of machines have also suffered some financial loss thru the return of sour milk or milk with bad flavors and tastes. But the above record shows that these things did not secure the results desired.

There appear to be several reasons for the failure to secure good results. In a large number of cases the dairymen failed to follow instructions; in fact, it cannot be said that any one of them consistently followed methods of cleaning as efficient as those used in the Station dairy. This, in many cases, was due to the fact that the machines were operated by an indifferent and inefficient grade of labor; but, in other cases, it was due to the lack of proper facilities for caring for the machines. Some failed to provide large enough crocks for the sterilizing solution used in disinfecting the teat cups and tubes, or failed to provide or care for these solutions according to di-

rections, or neglected other important matters. None of them had adequate facilities for heating the abundant supply of water necessary for rinsing after each milking. All were prone to listen to the advice of the selling agents, some of whom were guilty of reporting that it was a simple and easy matter to clean machines, that they could be cleaned by sucking cold water thru them, that the tubes would keep sweet if merely hung on a peg between milkings, that the cups ought not to be taken apart for cleaning, that some commercial disinfectant was better than the methods recommended by the Station, or other like statements.

But the blame does not rest entirely with the dairymen or with the selling agents, for trouble was experienced from the first because of the faulty and unsanitary construction of machines. In many cases teat cups or other parts of the machines were made of metals which corroded when brine, or brine and chloride of lime, were used as sterilizing agents, and nearly all were found to be unnecessarily difficult to clean, in that little attention had been given by the manufacturers to keeping surfaces smooth and free from cracks in which dirt accumulates.

There was indication in several cases that there was leakage of the foul condensation water present in the vacuum line into the milk pail, and few of the machines seem to be constructed with sufficient protection against this. One of the most difficult points in the construction of sanitary milking machines has been to provide a means of completely separating the milk from the current of air which brings the milk from the udder to the pail and which at the same time effectively prevents a return of the foul condensation water that accumulates in the vacuum pipe lines. Careless or inexperienced operators of several of the machine milkers under observation frequently drew milk into the air line or vacuum tank, thereby producing a very foul and unsanitary condition.

Unless the conditions described are corrected by immediate and vigorous action, the users of milking machines may suddenly find themselves confronted with edicts from city health authorities forbidding the sale of milk which comes from farms where machine milkers are in use. For many years some of the leading men in charge of the inspection work for the medical milk commissions have frowned upon the use of machines on certified farms. While machines have recently appeared on a number of New York State certified dairies because of the labor-shortage and some certified milk producers are enthusiastic concerning them, a consultation with inspection authorities who have had experience with the difficulties in the operation of machines will show that they are unanimous in failing to become enthusiastic over their indiscriminate use in certified dairies.

These facts will surprise many persons who regard milking machines as a great success because they aid in producing clean milk, i. e., clean in the sense that it contains little or no visible dirt or filth. However, if we regard microscopic masses of bacteria as dirt, then much of the apparently clean milk drawn by machine is very dirty indeed.

The recognition of the fact that New York State dairymen already have an investment in milking machines considerably in excess of $2,000,000, which may be very largely lost because of the inefficient operation and later discarding of this equipment, has caused the agricultural extension authorities at the State College of Agriculture to plan for milking machine schools at which instruction in the care and operation of milking machines will be given. The State Experiment Station is very glad to give such aid as is possible in making these schools a real help to dairymen using machines or who are planning to install them.

"Glista Ernestine" of the College herd has made five seven-day records above thirty pounds of butter. So far as it is known, there is but one other cow in the world that has done this, Segis Fayne Johanna.

Two Farm Necessities

By G. F. WARREN

Professor of Farm Management at Cornell University

THE problems of the reorganization of civilization are the great questions of the day, and two of the greatest needs in rural development are roads and high schools. Probably no other deficiencies in country life lead so many farmers to leave the farm as the lack of available high schools; and the few good roads that are now available are proving to be a tremendous help in farming.

Education is a government function. It is no longer determined by the desires of the parent or by his wealth. The principle of compulsory education is now fully established. The equally important principle that high school education should be free and available must be accepted. So long as there are so many farms with no high school facilities in reach, will progressive men be compelled to move to town when their children reach high school age.

High schools that are so far away that the children must leave home and pay board cannot properly be called available. Children of high school age should sleep at home. Furthermore, there are few farmers who can afford to send all their children thru high school if they must pay board. During Farmers' Week the author asked a former Dutchess County farmer why he moved to New Jersey rather than buy a farm in his home county. He stated that he certainly would have bought at his old home had it not been that he wished to send his children to high school. A few questions were asked, from which it developed that his father paid about $3500 in board to obtain high school facilities for his children. His brother, who lives in the home county, paid $1.00 a day for board for his son last year and this year the boy goes back and forth daily a distance of seventeen miles.

If the State desires persons to live on the farms and desires these persons to raise children, then the State should plan such a school system as will place education within the reach of every child.

Why should the State help small high schools? Is this not the duty of the local taxpayers? Either education is or is not a government function. If education is a government function then the State owes the same duty to one child as to another. It is now recognized that those things that need to be done but cannot be paid for locally should be done at the expense of the State or Nation. New York City does not pay all the expense of its harbor improvements, yet it is quite as difficult to show why a farmer in Alabama should pay taxes to improve the harbor in New York as it is to show why New York should help the education of the boy who is born on the hills of Steuben County. New York City and Buffalo do not pay all the costs of the Erie canal, yet it is not easy to show how this canal helps the resident of Elmira. In road construction the township pays for small culverts, the State helps on large bridges, and some of the largest bridges are paid for by the Nation. In many fields it is now recognized that what needs to be done for State and National welfare must be done at joint expense when the burden is too heavy for the local community. In any event the cities must pay in one form or another. They may pay taxes that will help bring modern education to the sparsely settled regions, or if they pre-

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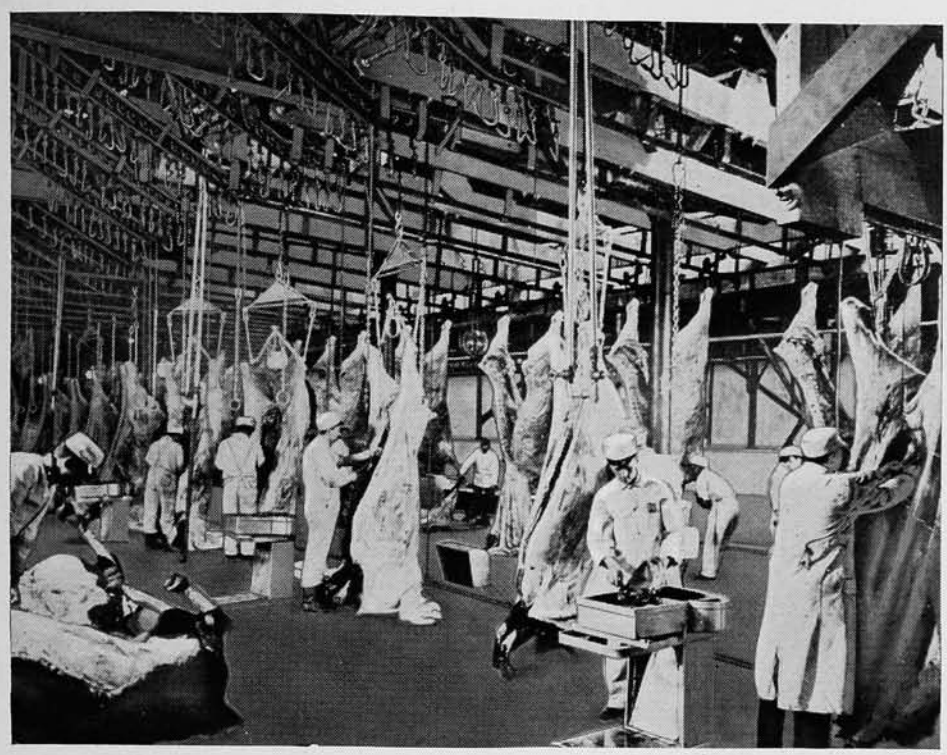
From Live Cattle to Beef

By L. D. H. WELD

Formerly Professor of Business Administration at Yale University



Where the Floorsman's Work Begins;—Only One of the Thirty-two Operations in a Modern Slaughter House

TO the uninitiated, the slaughtering of meat animals probably only means to dispatch the animal and pull off the hide. Those who have never witnessed the process in an up-to-date establishment have no conception of the varied handlings that are found necessary in the preparation of a carcass of meat and the skill that is required to obtain the best possible results.

Before explaining the many operations in connection with the preparation of beef, it will prove interesting to note that the live cattle are purchased in lots. Such lots may contain only one animal or even a hundred, according to how they are shipped in by the stockman. A lot consists of the animals bought by one buyer from the same source. The animals are slaughtered according to these lots, and each carcass is provided with a tag showing lot number, carcass number, and the dressed weight as it goes into the coolers. Separate weights are also taken of the hides and fats of each lot. All of these weights are turned into the cost figuring department, which determines the cost of beef and provides the buying organization with data showing how the various lots dressed out and how well each buyer judged the livestock he bought; likewise, the costs furnish the selling organization a guide as to what the beef needs to bring to avoid a loss in its handling.

Divisions of Labor in Cattle Slaughtering Operations

1. "Penning" consists of caring for livestock in the receiving pens at the packing house, and driving the animals up an incline to the top floor where dispatching compartments are located.

Under the old methods it was customary to take care of the preparation of by-products on the killing floor. This involved a tremendous amount of hand-trucking in disposing of the offal, and was not only an expensive way of conveying, but also interfered with the dressing of the carcasses, for the trucks were an obstruction.

This antiquated method has been superseded by that of placing the abattoir on the top floor above the floors where the many different by-products

are handled, and gravitating the offal thru chutes to the various floors as fast as it is taken from the carcass.

2. "Knocking" or stunning by means of a blow over the forehead with sledge hammer is the most humane method, for the animals drop without a moan or sense of feeling.

3. Shackles are fastened to the hind legs, so that the stunned animal may be hoisted to the bleeding rails for proper bleeding.

To avoid possible danger to the shackler, the dispatching compartment is so arranged that he is not required to enter it. The partial hoisting of the gate also tilts the floor of the compartment so that the carcass slides forward with its legs projecting.

4. The carcass is then hoisted to the bleeding rail. The bleeding process is more thoro and quicker when the animal is suspended.

5. The jugular vein is then severed by a skillful cut into the throat. The bleeding process is completed while the animal is still stunned. After bleeding, of course, there is no animation.

6. "Heading" consists of removing the hide from the head and unjointing the head so that it may easily be removed.

7. The carcass is then lowered from the bleeding rails to a position farther back on the floor and adjusted so that it will lay flat on its back for the skinning of the belly and sides. This process is known as "dropping and pritching up." The butcher performing this skinning operation is known as the "floorsman."

8. The "foot skinner" skins and removes the front feet.

9. The "leg skinner" skins the hind feet.

10. Then the hide is ripped clear down the belly and over the breast so the floorsman can begin his work.

11. The sternum is divided by means of a saw, the operation being called "sawing the breast."

12. "Sawing aitch" is dividing crotch bone.

13. The caul fat which covers the stomach is then removed.

14. The wind pipe is loosened from the neck to facilitate evisceration. This is done by the "gullet raiser."

15. The floorsman skins out belly and sides.

This is one of the most difficult operations in the whole process. To place a knife between the flesh and hide and not cut the hide or lacerate the meat, requires a great deal of skill. An ordinary puncture in a hide means a depreciation in value of one cent a pound or sixty cents a hide.

16. "Spreader men" attach a device known as a "beef spreader" to cords at the hock joint and shift the carcass to a position farther back on the floor.

17. The "hock puller" clears the hide from the hock joint.

18. The "leg breaker" removes the hind legs after the spreader has been inserted.

19. The "fell cutter" skins out the hind legs or rounds.

20. The "tail puller" removes the hide from the tail.

21. The "rumper" skins out the rumps.

22. The "fell puller" pulls the hide down over a wide flat tissue covering the hind legs.

23. The "fell beater" assists the fell puller by beating with the back of a cleaver on the hide to prevent tearing of the tissue referred to above.

24. The "backer" then skins the back.

25. The "rump sawyer" saws down the spine to the third vertebra, facilitating the work of the splitter.

26. The "gutter" performs the evisceration operation.

At this point in the operation, the Government inspector makes a thoro examination of all the vital organs, and if he finds any indication of disease, he tags the carcass so that it is switched into what is called the "retaining room," together with all the vital organs belonging to the carcass. Further examination is made here by another inspec-

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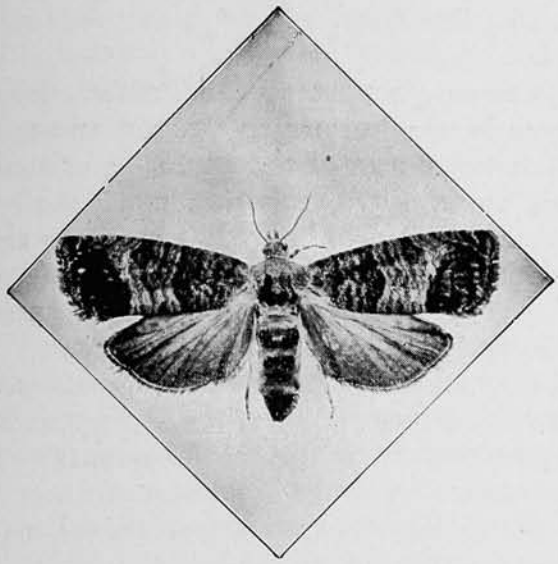
Some Insect Pests of the Apple

By GLENN W. HERRICK
Professor of Economic Entomology at Cornell University



SOME years ago Dr. J. A. Lintner made a list of three hundred and fifty-six species of insects that are injurious to the apple. Many of these insects, in fact the majority, are not important. Probably the really serious pests of the apple may almost be counted on the fingers of one's two hands. They may be named in about the following order of injuriousness at the present time, considering the United States as a whole: codling moth, round-headed borer, woolly aphis, rosy aphis, apple leaf aphis, San José scale, bud moth, spring canker-worm, apple-tree tent-caterpillar, plum curculio, flat-headed borer, and apple maggot.

The codling moth is undoubtedly the most injurious insect pest of the apple. It occurs in every state in the union in which apples are grown and has been estimated to cause an annual loss of over $16,000,000 to the growers of this country. About one week after the petals fall from the apple blossoms, the majority of the small grayish moths appear (illustrated in the photograph above), and they soon begin to lay their milk-white eggs on the leaves and sometimes on the branches and young apples. The larger part of the larvae from these eggs enter the apples thru the calyx end and spend about 30 days in the apple. In New York there is a partial second brood of "worms" that appear during the last week of July or first week of August. These larvae enter the apple more frequently thru the sides of the fruit and only spend about three weeks in the apples.

The codling moth is controlled by spraying with arsenate of lead, 4 or 5 pounds to 100 gallons of water, as soon as the majority of the petals have fallen. This is the most important spray for this pest and should be done very thoroly. Many careful growers prefer to make a second application of poison about three weeks after the first, taking pains to produce a fine misty spray to coat the leaves and young fruit.

Next to the codling moth the round-headed apple-tree borer is considered the most serious pest of the apple. The handsome white-lined beetle deposits its eggs in crevices cut in the bark on the trunk of the tree in May and June and even later. The grubs hatching from these eggs bore beneath the bark, and as they grow older tunnel deeper and deeper into the wood. They usually work near the ground and often ruin trees, especially young ones. In New York the insect probably has a three-year life cycle, but farther south the grubs may mature during the second summer, thus completing the life cycle in two years. This pest is worse in orchards that are grown up to grass and weeds. Therefore, clean culture is a fine preventive measure. The surest method of control is to cut the borers out by hand with a sharp chisel. The wounds should be given a coat of gas tar to prevent the entrance of fungi. Wrappings of newspaper extending about two feet up the trunk of the tree and tied on with cord which will yield or break with the growth of the tree, are said to give excellent protection from the borer. The papers should be put in place early in May.

The rosy aphis and the apple-leaf aphis are apple pests much dreaded by the grower. Each of these aphids in the fall lays its tiny black, shining eggs on the branches of the apple where they remain until spring. As the buds begin to swell and show signs of opening, the eggs hatch and the young lice cluster on the opening buds. The rosy apple aphis is purplish-brown in color and usually covered with a white mealy substance (wax). At least three generations are produced on the apple. Some of the individuals of the third generation and probably all of the fourth generation are winged and fly from the apple-tree to the broad-leaved and narrow-leaved plantain where the summer is spent, the aphids returning to the apple in the fall and depositing their eggs, thus completing the cycle. The apple leaf-aphis lives on the apple the whole year and is probably the worse pest of the two species. These aphids stunt the succulent growth of branches, curl the leaves, and deform the fruit.

They are best controlled by spraying with nicotine-sulfate, ¾ of a pint to 100 gallons of water, to which 4 or 5 pounds of soap have been added. The application should be made just as the buds are breaking, for at this time the young nymphs which are clustered on the buds are easily killed.

The bud moth is widely distributed in the northern part of the United States from Massachusetts to Oregon and is a destructive pest of the apple. The adult is a small, dark, ash-gray moth with a broad, cream-white band across the middle of each fore wing.

The partly grown, brown larvae pass the winter in silken cases placed near a bud or under a scale of bark. In the spring these tiny caterpillars become active and begin to eat into the swelling buds. As the buds develop the larvae tie the leaves together and live inside the tangled mass where they finally change to pupae during the month of June. In about 10 days the moths appear and lay their tiny eggs on the under sides of the leaves. In 7 to 10 days the eggs hatch and the young caterpillars eat off the epidermis of the leaves so that only a network of veins is left. In

(Continued on page 148)

TIME	MATERIAL	FOR WHAT
Before buds start	**DORMANT** Lime-sulfur 1 to 8	Scale, blister mite
When leaves of blossom buds are out ¼-½ inch	**DELAYED DORMANT** Lime-sulfur 1 to 8 "Black leaf 40" ¾ pt. in 100 gals. (Arsenate of lead 5-6 lbs. in 100 gals.) (If this spray is applied it will not be necessary to make the "dormant" application	Scale, blister mite Aphis (Leaf roller, case bearers)
When blossoms show pink	**BLOSSOM-PINK** Lime-sulfur 1 to 40 Arsenate of lead 5-6 lbs. in 100 gals. ("Black leaf 40" 1 pt. in 100 gals.)	Scab Bud moth, case bearers, etc. (Dark apple red-bug)
When the last of the petals are falling	**CALYX** Lime-sulfur 1 to 40 Arsenate of lead 5-6 lbs. in 100 gals. ("Black leaf 40" 1 pt. in 100 gals.)	Scab Codling moth (Bright apple red-bug)
To be determined by weather conditions and control of scab	**LATER SPRAYS** Lime-sulfur 1 to 40 Arsenate of lead 5-6 lbs. in 100 gals.	Scab Codling moth, other caterpillars

Summary of the time and materials used in spraying an apple orchard

Cornell's Semi-Centennial

By WOODFORD PATTERSON

Secretary of the University

IN June, 1919, Cornell University will celebrate its semi-centennial. This celebration was planned for the autumn of 1918 in order to mark the fiftieth anniversary of the opening of the University. It was postponed on account of the war, and now it will serve to commemorate the fiftieth anniversary of the first Commencement.

Three days have been appointed for the celebration. They are Friday, Saturday, and Sunday, June 20, 21, and 22. The Commencement exercises will take place on Monday, June 23.

It is planned to make this celebration a grand home-coming of alumni, and preparations are being made to receive several thousand persons. There will be a reunion of every class. The event will probably be accompanied by the largest assemblage of Cornellians that has ever taken place.

The semi-centennial celebration proper will be held on Friday morning, June 20. Charles E. Hughes, Governor Alfred E. Smith, and Judge Frank H. Hiscock, '75, will be the speakers. Judge Hughes was a member of the Faculty a quarter of a century ago, and Governor Smith is ex-officio a member of the Board of Trustees. Judge Hiscock is chairman of the Board of Trustees. This meeting will be held out of doors, perhaps in the football stadium if the weather is fair; otherwise, probably in Bailey Hall.

At noon on Friday the President and Mrs. Schurman will give a reception to the alumni in the New York State Drill Hall, where a luncheon will be served. Friday afternoon has been set apart for a conference in each college, of faculty members and alumni, to consider the problems of the college. The purpose of this series of conferences is to acquaint the alumni with the present work and outlook of the college, to give them a chance to meet former teachers, and to let them contribute whatever they may have of experience or suggestion. The plan to hold such conferences recognizes that important changes in educational ideals and methods may be a result of the world war. Each college is arranging for such a meeting, as are the departments of chemistry and physics.

The University will give a dinner to the alumni on Friday evening. The dinner will be served, probably, in the new drill hall. The names of the speakers on that occasion have not yet been announced.

Saturday morning will be devoted to the annual meeting of the Associate Alumni, which organization has had this whole day assigned to it and has arranged the program for the day. The morning meeting will be given to an exposition of the organization and plans of the general alumni association. Relaxation will be the rule for Saturday afternoon, when there will be a baseball game, probably with the University of Pennsylvania, on Percy Field. On Saturday evening the alumni will again assemble in the great drill hall for class dinners and a general alumni smoker, again under the auspices of the Associate Alumni.

The University's statue of Ezra Cornell will be unveiled on Sunday morning, June 22. This statue is cast in bronze from a design by the sculptor, Herman Atkins MacNeil, who was once an instructor in Sibley College. It stands between Morrill and McGraw Halls, facing the statue of Andrew D. White across the Quadrangle. The statue and its pedestal were completed and set up last fall. Professor T. F. Crane will be the chief speaker at the unveiling. John R. Mott, '88, will preach the baccalaureate sermon in Bailey Hall on Sunday afternoon.

The committee on arrangements is endeavoring to inform every Cornellian of the plans for the celebration. If any reader of this article knows of a Cornellian who has not received the first circular, which was mailed about March 1st, he can do the University a favor by sending that person's name and address to the University Secretary, 31 Morrill Hall.

THE CORNELL COUNTRYMAN

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Home Economics Editors

GERTRUDE SAMPSON RUTH NYE

ITHACA, N. Y., APRIL, 1919

WHY is it that so many people—particularly the city bred—would have farms reclaimed from waste lands given to the soldiers on easy payments? The basic idea of making useless lands productive is good, but the results would prove disastrous and an entire failure. Disapproving of the idea is not being ungrateful for the services of the soldiers nor is it favoring the creation of a "closed shop" in farming.

According to past statistics the number of farms in the country have greatly increased but the number of farm hands have not at the same rate. Yet, it is suggested to still more increase this difference and to still more increase the difficulty of securing farm labor. And these jobless soldiers could be better used in other ways. There are thousands of farms thru-out the country which are not entirely productive on account of lack of help. Added labor would mean increased production by improved methods of culture or the irrigation, drainage, or clearing of waste lands.

It should be remembered, moreover, that the farm labor question is not one to be settled so easily. The question is one of economics, and not to be adjusted by any law or regulation. As long as men find wages higher and living conditions more comfortable and desirable in the city, will there tend to be an oversupply of labor in the city and an insufficiency on the farm.

THE present very friendly attitude of the great majority of farmers towards the agricultural colleges and experiment stations has been brought about in comparatively recent years. Not so many years ago, before Farmers' Week became an institution, those who encouraged and helped the work of the college and station were very much in the minority. The great mass looked upon the experimentations as merely something for professors to fuss with. The college education itself was regarded as four years in which to give a young man a good time before he took up the serious business of life.

Now, however, we come to the realization that it is these institutions which make possible such things as Farm Bureaus, Farm Institutes, and cooperative organizations too numerous to mention. From a business standpoint alone, they are a sound investment for the state. In one particular case, a new variety of wheat introduced from an agricultural college paid to the state annually thirty times what the state pays for the support of the college.

THE COUNTRYMAN wishes to announce the election to the editorial staff of H. A. Stevenson, J. E. Fuller, P. M. Bungart, and to the business staff of D. Hoagland, A. N. Lawson, and E. L. Rich.

The Farm Home

Condensed Milk and Evaporated Milk

By FRANK E. RICE

Assistant Professor of Agricultural Chemistry at Cornell University

Most people do not have an accurate idea of the significance of names under which canned milk is marketed. There are many brands, yet there are but two distinct kinds, and only two, of concentrated liquid milk. Both contain considerably less water than is present in fresh cow's milk. Both are, therefor, condensed milks. However, the term condensed milk, is customarily applied to milk from which water has been withdrawn and at the same time sugar has been added, while evaporated milk is understood only as cow's milk with a part of the water removed.

Condensed milk contains from forty to forty-five per cent of pure granulated sugar. This sugar acts as a preservative, preventing the rapid growth of molds and bacteria. After opening a can of this product, there is little danger of spoilage; it may be kept even months without being iced. In the use of condensed milk in baking, in beverages, or on fruit desserts, either no sugar is required or less sugar than would otherwise be used. On account of the high proportion of sugar present, it has been used by some in place of sirup on griddle cakes.

Since evaporated milk does not contain this sugar nor any other substance to inhabit the growth of organisms, it cannot be depended on to remain good for very long after the can is opened. After the manufacturer fills evaporated milk into the tins, they are sealed and heated to very high temperatures. This kills all organisms, and it is therefore unnecessary to ice unopened cans; decomposition cannot begin until after the top is removed and contaminating material subsequently introduced.

During the processes of manufacture of both condensed and evaporated milk, the raw cow's milk is subjected to high heating. For this reason, the finished products cannot contain the objectionable bacteria, which are often present in the raw milk as commonly used. While this heat is sufficient to kill most bacteria, it is not great enough to destroy those recently discovered substances found in milk and which are necessary for animal growth—"food harmones," or "vitamines."

By adding one and a third to one and a half pints of water to one pint of evaporated milk, a mixture is obtained identical in chemical composition to that of cow's milk. If condensed milk be diluted in the same way, it will resemble milk to which about one-fifth its weight of sugar has been added.

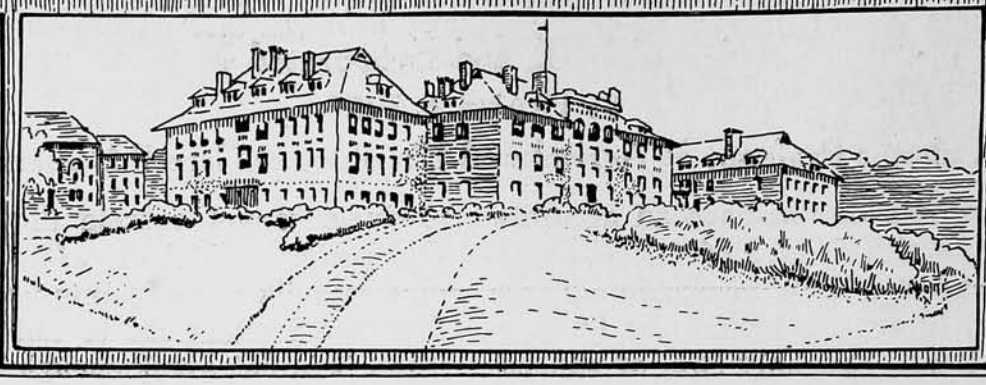
There is but little uniformity in the retail prices of canned milk. All brands of condensed milk, as well as of evaporated milk, are of nearly the same composition and food value, yet the consumer pays more dearly for some brands than for others. Tins of evaporated milk are obtained generally in six-ounce and pound sizes and sweetened condensed milk in eleven-ounce, fourteen-ounce and fifteen-ounce sizes; the larger sizes will be found more economical.

Raw milk, on account of its great bulk in water (about eighty-seven and a half per cent), and on account of the ease with which it spoils, is expensive to ship and handle. The cost of distribution has been found to be as great as the cost of production at the source. In the process of condensation, a large part of the water is removed; after canning, the product remains good indefinitely and requires no special attention. It is for these reasons that a condensary located near the source of supply is able to manufacture, transport, and market canned milk as cheaply as raw milk can be marketed in most cities.

There is another consideration in the

(Continued on page 152)

CAMPUS NOTES



Semi-Centennial Forum

A committee is formulating plans for the college forums which are to be held in the different colleges of the University during the coming semi-centennial in June. The purpose of these forums is to bring the alumni together in order to discuss the various college problems. Certain of the alumni will be requested to come a little beforehand to acquaint themselves with the existing conditions. The forums will be held in the different colleges on Friday, June 20; and on the following day all will meet in a general forum. These meetings should be very well attended as the committee is planning for a very large gathering of alumni.

"Botanical Abstracts"

A noteworthy movement in botanical science is the new journal, "Botanical Abstracts," inaugurated early in 1918. The rapid advance of botanical science and the great activity of workers in its various fields have led to the publication of such a volume of material that it has become quite impossible for any one worker to consult even that portion relating to his own specialty. A real demand has therefore developed for an international botanical abstracting journal, which thru the publication of short abstracts will call to the attention of all workers the current contributions to the various branches of botanical science the world over.

A comprehensive plan is being inaugurated for insuring that all botanical articles appearing in the literature of the world are abstracted. This involves the assignment of between two thousand and three thousand botanical serial publications to collaborators—workers in the various botanical fields throut the country who have expressed a willingness to cooperate in the work. Fully four hundred collaborators have already been secured and the work of assigning publications to them is under way.

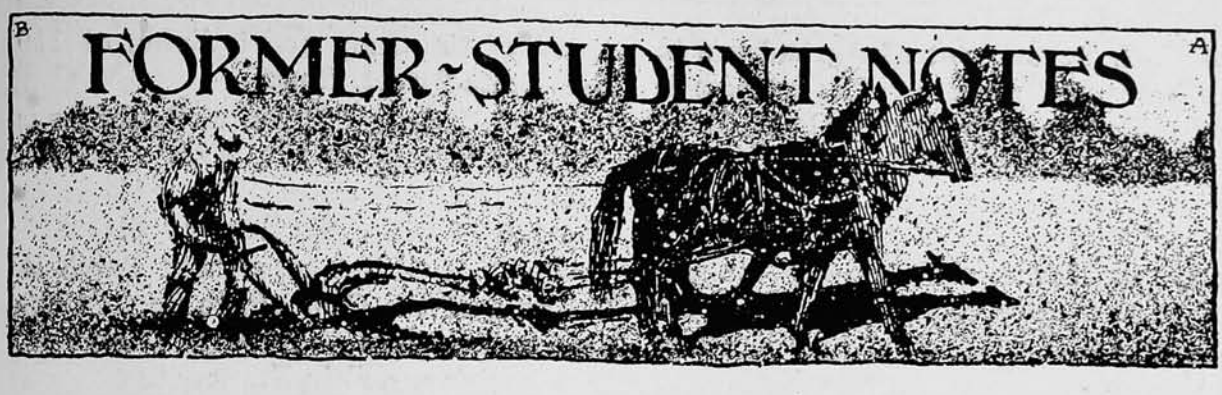
The new journal is in charge of a Board of Control of which Dr. Donald Reddick, of the department of plant pathology in this college, is chairman. Editorial responsibility for the journal is in the hands of a board of sixteen editors, of which Drs. Reddick, Chandler, and Schramm of this college, are members.

This important international scientific service is made possible largely thru the generous cooperation of the College of Agriculture.

The Seed Special

The department of farm crops and the department of plant pathology united in sending out a "Seed Special" during the first two weeks of March. This "Seed Train" contained samples of various cereal grains and grasses, besides illustrations of cereal smuts and demonstrations as to how they should be treated. The main idea the department of farm crops wished to convey to the farmers of the state was that it would be a lot better to concentrate on one or two varieties of grass or grain seeds and thoroly develop these, than to try a great many without achieving any conclusive results. This department showed

(Continued on page 154)



'99, B. S.—Mrs. Helen Gibbs Drake, wife of Allen Norton Drake, died at her home in Buffalo on March 6. She leaves her husband, a three-day-old son, three sisters, two brothers, and her mother, Mrs. Ann T. Gibbons of Ithaca.

'05, B. S.—J. W. Swaine of the Canadian Entomological Division is spending some time at Cornell completing his work for the degree of Ph. D. Mr. Swaine has already published a monograph on "Canadian Bark Beetles." He is from Ottawa, Canada, and is one of the authorities in this country on the common bark beetles.

'07, B. S.—R. S. Moesley, a former extension instructor, has accepted a position as manager of the Sunny Crest Poultry Farm at East Aurora.

'09, B. S.—G. N. Wolcott, who has been with the A. E. F. in France, has returned to this country and is beginning his work for his Ph. D.

'10, B. S.—A. E. Boicourt, formerly in charge of an experimental plant, is managing the poultry at an estate in West Park.

'11, B. S.—Alvin J. Nitzsche is county agent of Fanning County, Georgia, with offices at Blue Ridge.

'11, B. S. A.—Lieutenant Waldemar H. Fries resigned his commission on January 4 and is now with the Pyramid Silks Corporation, 150 Madison Avenue, New York, being temporarily located at Allentown, Pennsylvania. His permanent address is 129 Columbia Heights, Brooklyn.

'12, W. C.—H. B. Buchan, a winter course student, is superintendent of an estate in West Park.

'13, B. S.—Mortimer D. Leonard, who was in charge of the Erie County Field Laboratory for the Pennsylvania State College, has been appointed field assistant in the U. S. Bureau of Entomology. He has been assigned to extension work on the truck-crop insects of Long Island in cooperation with the department of entomology.

'13, B. S.; Ph. D., '17—Charles Paul Alexander is now in the University of Illinois, taking the place of W. Hart in the department of the entomological collection of the Natural History Survey of Illinois.

'13, B. S.—James S. Wight is horticulturist with the Tallahassee Pecan Company, owners of a thirty-five thousand-acre pecan grove at Tallahassee, Florida.

'13, B. S. A.—Ralph H. Denman is with the Peninsular Portland Cement Company of Jackson, Michigan. His address is 218 West Wesley Street.

'13, B. S.; '18, Ph. D.—Frans E. Geldenhuys is teaching nature study, natural sciences, and agriculture in the Grey College School, Bloemfontein, South Africa. Andries P. van der Post and he are cooperating in providing articles and news on agriculture in a monthly publication, Lewe en Strewe, a South African magazine devoted to the interests of vocational training, the farmer, the manufacturer, and the commercial man.

'13, Sp.—Abram L. Dean is a member of the staff of the U. S. Bureau of Animal Industry as poultry specialist and is stationed at the Massachusetts Agricultural College. He is also poultry club leader for the state. His address is 24 Pleasant Street, care M. A. C. Faculty Club, Amherst, Massachusetts.

'13, B. S.—C. W. Barker is farming at Spencerport.

'13, B. S.—Dudley Alleman is with

the U. S. Department of Agriculture in the bureau of markets. His address is 212 Willow Avenue, Takoma Park, D. C.

'14, B. S.—H. H. Knight, who has been in command of men in the Photographic Section of the Aviation Division in France, has returned to this country and expects to resume his work in the department of entomology here in a few weeks.

'14, B. S.—L. E. Card, assistant professor in the Connecticut Agricultural College, is coming in the near future to Cornell to study for a doctor's degree.

'14, B. S.—S. C. Bishop, who has been New York State Entomologist since leaving college, is now an ensign in the U. S. Naval Reserve Force.

'14, B. S.—Arnold E. Davis is farming at Livonia.

'14, B. S.—Roger H. Cross is farming with his brother at Fayetteville. They are specializing in potato raising and breeding.

'15, B. S.—B. E. Barringer, who has been teaching vocational agriculture at Dansville since graduation, has resigned and, beginning next fall, will take up graduate work at Columbia University.

'15, B. S.—D. T. Crandall, recently discharged from service, has returned to his position as teacher of agriculture at Westfield.

'15, Sp.—Ernest Rathbun is with the Forest service in northern France repairing roads.

'15, B. S.—Cecil R. Gross is now in Germany with the Army of Occupation. He is attached to Field Hospital 132, 108th Sanitary Train. During the last few months of the war, Gross saw service on the Argonne-Meuse front.

'15, B. S.—William P. Brodie married Ruth E. Johnston of Newburgh last July. He is demonstration agent of Salem County, New Jersey.

'15, B. S.—L. J. Steele is manager of the Orleans County Farm Bureau with headquarters at Albion.

'15, B. S.—E. C. Weatherby is the manager of the Cayuga County Farm Bureau with headquarters in Auburn.

'15, B. S.—F. W. Furst has been discharged from the spruce production division of the army and is living at 110 East State Street, Ithaca.

'16, B. S.—Miss Helen E. Saunders is teaching biology in the Winsor School, Boston, Massachusetts. Her address is, The Stuart Club, 102 Fenway Street.

'16, B. S.—First Lieutenant Ralph E. Griswold of the Camouflage Section has been assigned to the 103rd Engineers, 28th Division, still in France.

'16, B. S.—L. H. Woodward, just returned from active service in France, has been elected teacher of agriculture at Greene.

'16, B. S.—W. A. Hoffman is employed in the department of entomology at Monticello, Florida.

'16, B. S.—Announcement has been made of the engagement of Edith B. Schrader of Saranac Lake to Harwood Martin of Honeoye Falls.

'16, B. S.—F. R. Perry has been discharged from the Army and is at his home in Churchville.

'16, B. S.—A. G. Allen has been discharged from the Aviation Section of the Army and is at his home in Salisbury, Maryland.

'16, Sp.—W. A. Kibbey has been discharged from the Artillery Officers' Training Camp at Louisville, Kentucky, and is at his home at 1401 Emerson Street, Washington, D. C.

'16, B. S.—W. L. Webster is on the Post farm at Stanley.

'17, B. S.—T. B. Augur is with the Friends' War Victim Relief Corps, a branch of the American Red Cross, in France.

'17, B. S.—Henry E. Haslett is government sheep specialist for the State of Massachusetts and assistant in the department of animal husbandry at the Massachusetts Agricultural College. His address is Lincoln Avenue, Amherst, Massachusetts.

'17, B. S.—Edwin C. Smith, who was a first lieutenant in the Air Service, has been discharged and is living at 93 Clinton Avenue, Brooklyn.

'18, D. V. M.—Harry P. Wynne has been discharged from the Veterinary Corps of the Army and is living at 140 Oak Street, Binghamton.

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Ex-'18—Guy Rickard is an ensign in the U. S. Naval Aair Force at Miami, Florida. Rickard was the University rifle champion and captain of the rifle team before he left in 1917.

'18, B. S.—Fred Kraus and R. B. Bush are employed as chemists with Nestle's Food Company in New York City.

'18, B. S.—S. E. Van Horn is now dairy inspector for Nestle's Food Company.

'18, B. S.—Alfred E. Emerson is research assistant at the Tropical Research Station of the New York Zoological Society in British Guiana. He is engaged in research work in ornithology and entomology under the direction of William Beebe, Curator of Ornithology at Bronx Park. Emerson expects to return to "the States" next October.

'18, B. S.—Miss Dorothy M. Gray has an office in Billings, Montana, where she is practicing landscape architecture. Her address is Box 1204.

'18, B. S.—A. Stanley Burchard is a private in the Chemical Warfare Service and assigned to Company F, 2nd Battalion, stationed at Edgewood Arsenal, Edgewood, Maryland. His mail address is Oxford.

'18, B. S.—Corporal Thomas R. Wagner of Philadelphia has been admitted to the Third Marine Officers' Training Camp at Quantico, Virginia, from which he expects to graduate on June 15. He is in Company B.

'19, W. C.—R. C. Ogle has received an appointment as an extension man in the Poultry Department. He is working with the poultrymen of Rockland, Orange, Ulster, and Sullivan counties.

Ex.-'19,, B. S.—M. W. Postman is chemist in the Medical Corps at Camp Pike, Little Rock, Arkansas.

Ex.-'19, B. S.—Leo Guentert is employed as chemist for Nestle's Food Company at the Ithaca factory.

Ex.-'19—J. F. Lane has been commissioned Assistant Paymaster in the Navy with the rank of ensign. He received his training at the Assistant Paymasters' School at Princeton University.

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Organizing Agriculture as a Business

(Continued from page 120)

of agriculture, the farmers' institutes, clubs, and associations of various kinds, with the agricultural press, are doing a fairly good job in disseminating information and in furnishing the opportunity for comparing experiences. This much of the ground would seem to be fairly well covered. But organization for the development of agriculture in a business way is yet in its infancy. It is to be hoped that the various state associations reaching out thru the county farm bureaus to every community of the several commonwealths may so develop in power and in procedure as to bring about a new era in the development of agriculture as a great national business.

American Potash in Crop Production

(Continued from page 122)

interesting to note that increase of potash in the fertilizer, about three per cent, did not correspondingly increase the yield.

These figures reveal an effect that has been observed in other places, namely, that a poorly balanced fertilizer, especially if very high in nitrogen and lacking in potash, lays the plant open to attack by disease organisms so that it goes down even sooner than where no fertilizer were used and produces a corresponding lower yield.

Bearing on the general value of potash in the fertilizer, the results at the New England experiment stations quite generally assign a larger value to potash than phosphoric acid. Thruout the middle west phosphoric acid has been regarded as relatively more valuable than potash in the fertilizer. The accuracy of this suggestion may be seen in a summary of the long-time records at New York, Pennsylvania, and Ohio in standard rotations.

From the data, it appears that in New York the effect of potash alone in a complete fertilizer has increased the value of nine crops by $28.19 over the

Fertilizer Formula	Yield Average Two Years	Increase Due to Potash
Standard brand		
4-8-3	261	44
Nitrogen all nitrate		
4-8-3	287	70
4-8-6	269	52
4-8-10	263	46
4-8	217	
Average 4 plots no fertilizer	189	

effect of nitrogen and phosphorus alone, while phosphoric acid has increased it $11.31. In Pennsylvania, potash in a complete fertilizer has increased the value of crops per four year rotation by $8.19, while phosphoric acid has caused an increase of $31.87. In Ohio, in the five year rotation, potash in the complete fertilizer increased the value of crops $7.94 per rotation, while phosphorus has increased it $28.21. In the three year rotation with potatoes, potash has caused an increased value of $6.40 per rotation, and phosphoric acid increased the value per rotation by $8.22.

The net increase in value would be secured by deducting the cost of the treatment. In the amounts in which the materials were used there was not always a profit. But this is no reflection on the fertilizer. It indicates the need of a better adjustment of the amounts used to the needs of the soil and crop. With scarcely any exception, the value of the potash as well as of the other three elements is indicated.

It can, therefore, be expected that potash will come back into commercial fertilizer but in more conservative amounts than was formerly used for the ordinary farm crop.

American Production of Potash

The high prices of potash that have prevailed during the war have stimulated the development of several American sources. First of all, the nitrate of soda coming from South America has long been known to contain a small per cent of potash, but it was not until war prices prevailed that its recovery was practicable and that the process was undertaken. It now comes into the market as nitrate of potash, which material carries about 15 per cent of each constituent.

In 1918, the United States produced about 75,000 tons of actual potash. Two-thirds of this came from the brackish lakes of western Nebraska. A mixture of salt which is obtained by merely evaporating the water of these lakes under crude conditions contains about 30 per cent of water soluable potash.

The nearest approach to the European deposits of potash is the Searles Lake area in California. There is a deep underground deposit, which has long been subject to litigation and which has only just begun to yield important amounts of potash.

Much has been said about the sea weeds or kelp of the Pacific Coast as a source of potash. These plants resemble giant stems which grow up from the bottom of the ocean in shallow water. When dried and charred (to drive off part of the organic matter) the material contains about 30 per cent of potash. The Federal Government has constructed an experimental factory in southern California for its production. The farmers of Nassau County, Long Island, were fortunate enough to secure a carload of this kelp potash from the government factory for the present season's crop.

The most promising sources of American potash are the cement mills and the blast furnaces. In the clay and limestone used in making cement and in the ores and fluxing materials used in the blast furnace, there is a very considerable per cent of potash. Part of this is thrown off as dust and vapor in the process of heating the materials in the furnace. An electrical process has recently been devised to collect this dust, which from the cement mill contains from 8 to 12 per cent of potash and about 30 per cent of lime. About 2 pounds of potash is produced per barrel of cement. The recovery of potash is

found to be increased from about 25 or 30 per cent to over 60 per cent by the introduction into the furnace of common salt. The potash in this dust is only slightly soluble in pure water, but is said to be soluble in slightly acidulated water and should, therefore, be available to plants. It has not been tested out in crop production as yet, but it has a good future.

It has been estimated that the recovery of potash from the blast furnaces of England may be made equal to the total consumption of potash in that country before the war. The process of recovery is inexpensive. The European mines seem likely to have considerable competition with the by-product potash. Suggestions are on foot to protect the American manufacturer of potash in order to insure an independent supply in such critical periods as the world has just passed thru. Some degree of protection is good public policy.

But the most easily available and cheapest source of potash is from ordinary barn yard manure.

Manure carries from eight to twelve pounds of potash per ton and a six to ten ton application is equal to a ton of three or five per cent potash fertilizer. Data now available indicates that twenty to forty pounds of potash per acre even for potatoes will generally give very good results.

No potash will be available from European mines before fall, and it will not get mixed into fertilizer before the spring of 1920.

Two Farm Necessities

(Continued from page 126)

fer, they can continue to allow the conditions on farms to be such that the city is so much more attractive than the country that everyone wants to go to the city. Or conditions may be made such as to lead a reasonable proportion of the population to live on farms. The number of persons engaged in agriculture in New York in 1840 was 455,954; in 1910 it was 372,410. This shows how success-

ful the making of the conditions of life in the cities attractive, without making similar improvements in the country, has been.

The present plan of paying high school tuition for non-resident children with the proposed increase in pay is a help, but it is not sufficient. In fact, it tends to prevent the construction of new high schools, because, while the State pays tuition if no school is maintained, it does not provide equal help when a small high school is constructed.

Many new high schools are needed in the State. A survey should be made of the available schools in each county with recommendations as to places where new high schools are needed and recommendations as to places where transportation is needed. The plan should be such as to make a high school available to all children in the State. Conditions in New York are too diverse to be covered by a single law. In some cases transportation is needed. In other cases the tuition law is sufficient. In other cases new high schools need to be built. Laws should be so framed as to encourage the construction of new high schools and to favor consolidation of schools where it is desired. Such laws should be permissive with liberal State aid.

Another great need in rural life is more stone roads. Who could have foreseen the great value that the state roads have been? Where such roads are available they are proving to be a powerful factor in making farm life more attractive and farming more profitable. Enough about road construction is now known so that a great road building program thru cooperation of the Nation, State, and County should be entered into. Some roads are used primarily for thru travel and are national highways. Such roads need to be built very substantially and need to be very wide. Other roads are used primarily by citizens of one State, but one community or one state no longer lives to

itself alone. A detailed survey of the present roads of every county with recommended plans for road improvement is needed. Some new roads need to be laid out; others need to be changed at some points; others should be closed. The present traffic on state roads should be studied with respect to its volume and the distance that each load moves. Such a road building program should be continuous but should be pushed with vigor during the periods of unemployment. The only way that this can be done is to have complete detailed plans made long in advance.

Some Insect Pests of the Apple

(Continued from page 130)

August and September the partly grown larvae migrate to the branches and pass the winter in their silken cases, ready to attack the buds again in spring.

In cases of serious infestation, the trees should be sprayed with arsenate of lead, 2 pounds to 50 gallons of water, as the flower clusters begin to appear; repeat just before the blossoms open. If these two applications are followed by the first codling moth spray after the petals fall, the insect should be fairly effectively checked.

The San José scale, formerly considered one of the worst fruit pests in this country, is apparently on the wane, at least in the East. Parasites, short season, and perhaps other factors, have contributed to the decline of this insect in New York State. It is not yet, by any means, a pest to be neglected or overlooked and should still be fought with persistence if present in an orchard. The insects pass the winter in a partly grown condition beneath tiny, circular, black scales on the branches of the trees. In the spring they become full grown, and in a normal season a generation is produced in about fifty days. In long, warm seasons there may be three broods in New York State while in cool, short summers not more than two generations may be produced.

The universal spray mixture for this insect is lime-sulfur, 1 gallon to 8 gallons of water, when it tests about 32°

Baumé. It may be applied in fall or spring and in cases of bad infestation should be applied at both of these periods.

The spring canker-worm is a widely distributed pest of the apple, and altho not now as serious in New York State as formerly, it should be watched. The females are wingless and must crawl up the trees in order to deposit their eggs. Consequently they may be caught in large numbers by banding the trunks of trees with tanglefoot. The tanglefoot should be spread on a band of tarred or other heavy paper tied around the trunk with all of the cracks and crevices in the bark beneath filled with cotton. These bands should be applied in late February or early March. In addition the caterpillars may be killed while young by spraying infested trees with arsenate of lead, 5 or 6 pounds to 100 gallons of water. Thoro cultivation of infested orchards in August and September destroys the pupae.

The apple-tree tent-caterpillar often occurs in large numbers over wide areas and defoliates the apple trees if spraying is neglected. The eggs are deposited during the last of June or first of July in ring-like masses encircling the smaller branches. They do not hatch until the following spring just as the buds are swelling. The young caterpillars attack the buds and soon build silken, tent-like nests in the crotches of the branches. Infested trees should be sprayed while the larvae are young with arsenate of lead, and the application should be repeated in a few days if necessary. The egg-rings may be collected during the fall, winter, and spring and destroyed. Wild cherries and seedling apple trees along fence rows and in neglected places should be destroyed because they serve simply as breeding places for these pests.

The apple maggot is a native insect that originally fed on thorn apples. The small, white maggots tunnel thru the flesh of the apple and finally cause decay and total ruin of the fruit. The flies have a habit of sipping food from the surface of the leaves and fruit and may be poisoned by spraying the trees

with a sweetened poison mixture composed of 2 pounds of arsenate of lead and a gallon of water. For summer and early fall apples the first application should be made in early July and repeated one or twice if the infestation the previous year has been serious, or if rain has closely followed the first application and has washed it off. Thoro and clean cultivation of neglected and badly infested orchards seems to aid in checking the pest.

The plum curculio is an old offender in scarring and deforming apples. Fruits punctured early in the season are liable to drop, but if they remain on the tree they often become knotty and deformed. It injures the apples by making crescent-shaped egg scars on the fruit, which, as the apple grows, gradually expand and develop into characteristic, shield-shaped, russeted scars. In addition to this the curculios feed on the fruit making circular, shallow cavities in the sides of the apples. Often, especially late in the season, these pits become deepened and enlarged, and the orifice of each becomes surrounded with a narrow black ring of skin.

In preventing ravages of the plum curculio, it is important to practice clean cultivation of the orchard, to clean up all hedgerows in the vicinity, and to prune the trees judiciously to admit sunlight, for sunlight and heat are destructive to the grubs of this insect. In addition, thoro applications of arsenical mixtures, especially the first and second codling moth sprays, are perhaps the most important means of prevention. The applications should be made in a thoro, careful manner.

Condensed Milk and Evaporated Milk

(Continued from page 133)

use of canned milk, which is of vital importance both to the consumer and to the common good—there is no waste; that which is not consumed today or tomorrow may be used afterward. Then, too, altho concentrated canned milk di-

luted with water may contain the same nutrients and in the same quantities as were originally present in the raw milk, yet certain enzymes, which are found in fresh cow's milk, are destroyed in the cooking, and it has sometimes been claimed that these are desirable in contributing toward the digestibility of milk. Boiling of milk also changes its flavor. For these reasons, canned milk may not soon take the place of raw milk entirely, yet the history of the industry has shown that where communities have become accustomed to it, its use gradually increases.

From Live Cattle to Beef

(Continued from page 128)

tor, who then designates what disposition shall be made of the carcass.

27. The "splitter" chops thru the spine down to a point close to the shoulder.

28. The "hang off" hoists the bullock to an elevated position where he may be hung on roller trolleys, equipped with hooks and operating on rails suspended from the ceiling. The spreaders are removed from the hocks at this point and the hooks of the trolleys are inserted in their place. The bullock is then pushed to a position farther back on the floor.

29. The "hide dropper" skins the shoulder and forearms and drops the hide to the floor.

30. The "chuck splitter" splits thru shoulder and neck. The bullock is now divided into halves.

31. The conveyor chain takes the sides of beef over the wash rails.

32. The "wash gang" trims, scrubs, sprays, and finishes the sides of beef as they travel along a system of overhead rails. They are then ready for the representatives of the U. S. Bureau of Animal Industry, who make a final examination, considering cleanliness, blemishes, and any other points that may have been missed.

From the wash gang, the conveyor chain takes the sides of beef to the doors of the chilling rooms or "coolers."

In order to have an appetizing flavor and to make possible the preservation of the meat, it is necessary to remove the animal heat. That is done by chilling. In former times, before mechanical refrigeration came into use, the location of the packing house depended as much on the availability of an adequate supply of ice as on shipping facilities. Chill rooms then were only ice boxes with bunkers overhead, into which tons upon tons of ice had to be placed. Slaughtering plants were, therefore, located near places where ice could be harvested and stored for a year's requirement. At best it was a case of speculating on the elements. An open winter was a period of great anxiety, and if the crop of ice was not forthcoming, it meant shipping in ice from a distance at great expense.

Present-day mechanical refrigeration and ice-making has obviated all of this. By having two refrigerating machines (the one in use and the other in reserve), and by taking hourly temperatures day and night, the matter of preservation of meats has been placed on a scientific basis where results are an unfailing certainty.

In conclusion, it can be said for the modern abattoir that every possible mechanical aid that could be thought of has been provided. The arrangement of turn-tables, hoists, spreaders, and conveyors has reduced heavy physical effort to a minimum. The men are under no mental or physical strain.

Campus Notes

(Continued from page 134)

samples of silage corn with the varieties, Luce's Favorite and Hall's Golden Nugget, suitable for most of the state. For the higher altitudes and northerly areas Cornell No. II and Bailey's Dent were recommended. For ear corn Cornell No. II and Early Huron were advised for the better part of the state, while for the rest of the state the kind of flint corn used in Dutchess County was recommended. The varieties of oats

shown were the Banner and Swedish Select. In the potato exhibit emphasis was placed on the selection of groups rather than special varieties themselves. For sections with cool climate and light soils the Cobbler group (early) and the Green Mountain group (late) were recommended. Those sections of the state with hot summers and a heavy soil were advised to use the Rose group (early) and the Rural group (late). For spring wheat seed the Marquis variety was best adapted. There was also an exhibition of soy beans and Canada field peas, which were recommended largely for their use with corn and oats as silage. Still another exhibit, the grass seed exhibit, showed samples of alfalfa and mixed grass seed. There were demonstrations showing how these seeds were often mixed largely with weeds. The farmer was advised to watch carefully for any fraud such as this.

The plant pathology department prepared samples of potatoes, beans, and cereal seeds, showing the stages of the plant diseases upon them. They instructed the farmer as to the proper methods of control and prevention for these diseases. This department also visited various potato seed farms, and a record was kept of those places where good, healthy seed may be secured. Both departments have prepared a list of farmers who will sell seeds which has been shown to be of good quality and fit for use thruout the state. This list may be secured by writing to the department here in the college.

Dr. A. H. Sharpe, who has been coach of Cornell's football, baseball, and basketball teams since 1912, will sever his connection with the University in the spring and return to Yale, his Alma Mater. Doctor Sharpe goes to Yale as Director of Athletics, in which capacity he will have charge of the same teams he has supervised at Cornell. In addition to his duties as coach, however, Doctor Sharpe is further charged "with the responsibility of cooperating with

coaches and captains of all teams in Yale University, whether formal or informal; to maintain the highest traditions of amateur sport; to develop and maintain the morale of all such teams and the members thereof; and to keep athletics at Yale on the highest plane of honor and integrity as well as efficiency."

In the inter-college cross country race held on Saturday, March 8, the College of Agriculture, the winners last year, finished second. J. K. Wardwell, '22, M. E., was first to cross the finish line, with S. M. Abrams, '20, Ag., a few yards in the rear.

Recently the department of animal husbandry made two important purchases. One was a Percheron stallion to head the stud at Cornell. For some time the department has been making quiet inquiry among the more noted breeders and importers thruout the central west and finally Olifant 142267 (120297) was selected. This horse was imported from France last year by Truman's Pioneer Land Farm of Bushnell, Illinois.

Olifant was foaled April 15, 1914, and was bred by Voe Broward, Department of Eure et Loir, France. He traces back to some of the best Percheron blood of France. He was selected to lead the stud at Cornell because of his outsanding evidence of quality, substance and endurance, for in these characteristics his equal is not often found. Olifant is black with narrow trip and sinip, stands sixteen and three-quarters hands and when loaded at Bushnell weighed over 1900 pounds.

The other purchase was a Holstein bull calf which will be a year old in April. His name is Great John Lyons, and he was purchased from H. A. Moyer of Syracuse.

The calf has King John for his sire and Betty Lyons for his dam—the latter the thirty-pound daughter of King Lyons. Her great-day is Bertha Lyons

Netherland with a record of thirty-four pounds of butter in seven days. She is out of Blanche Lyons Netherland who also has a thiry-four-pound record. Thus the calf is one of those rare animals whose pedigree shows three consecutive dams each of which has given thirty or more pounds of butter in seven days.

The calf has only a few black markings, carrying three crosses of King Segis; and in his pedigree one can find twenty-nine cows whose seven-day records average thirty pounds of butter. According to Mr. Moyer, the dam is the greatest bred daughter of King Lyons that he ever owned.

Dr. L. A. Maynard, chemist of the department of animal husbandry, is at present stationed at Bar-sur-Aubey in France. He is with the headquarters of the First Army as divisional gas officer in the Gas Defense Service. Under date of February 19, 1919, Dr. Maynard writes that it is impossible for him to state just when he will be able to leave France.

Dr. Maynard was commissioned as First Lieutenant in the Gas Defense Service in the Sanitary Corps in November, 1917. During his service in France he was advanced to Captain, and recommendation for promotion to Major had been made, but this recommendation was not acted upon because all recommendations for promotion were held up by the signing of the armistice.

During the week of March 10, Profesor L. J. Cross of the department of agricultural chemistry assisted in the instruction in the extension school at Canton.

The department of agricultural chemistry will rearrange and extend its courses to be given next year. The chemistry of foodstuffs will be covered in both chemistry and advanced courses. It is planned to schedule a regular outline of courses to be taken, both in the

department and outside, which will fit the student for the position of chemist in the food industries and other laboratories controlling the manufacture and sale of food products.

A beekeepers' school was held at Cornell during the week of February 24 to March 1 by the department of entomology in cooperation with Dr. E. F. Phillips and G. S. Demuth, of the Bureau of Entomology in Washington, D. C. The attendance and interest were very gratifying, the total registration for the week being 145. Beekeepers from Canada, Michigan, Connecticut, Pennsylvania, and New Jersey, in addition to those from New York, were in attendance.

Professor E. S. Savage, of the department of animal husbandry, addressed the sixteenth annual meeting of the New York State Millers' Association at Buffalo on Tuesday, March 18. The subject of his talk was "A Farmer's Ideas of Feed.'

Since the beginning of the fall term, 1918-1919, the following additions have been made to the faculty: Homer C. Thompson has been appointed to the department of vegetable gardening; William J. Wright, state leader of junior extension work, is now a professor in the department of rural education; A. H. Hendrickson is assistant professor in pomology; and Helen Monsch is assistant professor in home economics.

Robert Bier, of the department of vegetable gardening, has resigned in order to acept a position with the Office of Crop Estimates in the U. S. Department of Agriculture. For the present, Mr. Bier's headquarters will be at Ithaca.

The new State Armory and Drill Hall was first used for an all-Cornell event on the evening of March 8. The twofold purpose of the affair was to celebrate the receipt of the New Armory by the Cornell community and to add to the funds of the Athletic Association. Under the frankly descriptive title of "Hardly Fair," the housewarming committee surely "put across" the "best good time" since the last Spring Day, nearly three years ago.

Some twenty side-show booths were arranged about the sides of the huge hall in the form of a "C" and a large space for dancing was roped off in the center. Besides all the ordinary features of the midway, there were "The Portrait Painters" and "Cornell Hardly Done," not to mention the Layfayette stage-coach, wherefrom any number of folks might see the whole world thru a port hole.

Of course, "Colonel Grand Hoax Hardly" was really the only personage of international reputation in attendance. But it goes without saying that he got away with enough "pep" to completely rejuvenate the Paris Peace Conference, whose special envoy he was to the Fair!

The total receipts were $2547.16. Expenses amounted to about $1066.00, showing a gain of some $1500.00 for the treasury of the Athletic Association.

The annual College elections resulted in the election of the following officers:

Agricultural Association

Vice-president, Miss Helen Bool, '19; secretary, E. C. Estabrook, '20; athletic director, E. Davenport, '20.

Senior Class

President, P. L. Dunn; vice-president,

Miss T. V. Vigert; secretary and treasurer, D. F. Brooks; representative to Agricultural Association, R. R. Drake.

Junior Class

President, J. T. Van Doren; vice-president, Miss Mary Moore; secretary and treasurer, E. M. Collins; representative to Agricultural Association, D. Hoagland.

Sophomore Class

President, C. W. Nordgren; vice-president, Miss M. Aldrich; secretary and treasurer, J. R. Fleming; representative to Agricultural Association, J. B. Hunt.

Freshman Class

President, E. T. Rumsdorf; vice-pre ident, Miss M. Eldridge; secretary and treasurer, D. P. Rubel; representative to Agricultural Association, T. K. Bullard.

At a recent meeting of the Athletic Council the following "Ag" men were awarded "C's" or numerals: J. P. Egbert, '18; F. E. Quick, '19; Edward Davenport, '20, and Geoffrey Knight, '20, "C's" for last year's 'varsity crew. M. N. Thompson, '21, numerals for last year's freshman crew; and W. R. Schlicter, '22, numerals won at the underclass track meet February 8.

Oliver Wilson, Master of the National Grange, in his speech of Farmers' Week called attention to the fact that labor thru its unions is declaring that wages must not go down. Their cry is "Cheaper Food and High Wages." Mr. Wilson showed that this is impossible if the farmers are to be maintained in this country. If food goes down in price, wages must also decrease. The speaker also deplored the fact that the price was set upon wheat, but the price of farm implements, manufactured articles and fertilizers have been allowed to greatly increase. Mr. Wilson suggested that if the price was to be fixed on farm produce, it should be fixed on the basis of an eight-hour day and not on the basis of the

ordinary farmer's ten to fourteen hour day.

Yet despite all this apparent discrimination, the farmers have given the government less trouble than any other class. Furthermore, the farmers of this country have stood by the nation during this great crisis. They have lent their hands to the victory and now in the coming days of reconstruction, they should get together for the promotion of their own interests. Mr. Wilson, as did all the speakers during the week, emphasized the value of cooperation. The farmers must come to it if they are going to be felt as a power in the nation. The consumer and the farmer sooner or later must see each other's viewpoint and stand side by side not only for their best interests but also for the best interests of the nation.

H. W. Collingwood, editor of *The Rural New Yorker*, introduced a new note into the scientific buzz and hum of Farmers' Week. In his talk on "The Sunny Side of the Barn," he emphasized the need of some imagination, faith, and hope of life in the daily lives of farm children. In his conception the aim of education is to keep alive the faith and hope of childhood, since the visions of youth are the strongest influences of life and since it is the happy, hopeful children who make useful citizens. Mr. Collingwood said that as we have crowded music, poetry, and love out of education, we are pushing the children from the sunny side of the barn—the comfortable and happy side of life where they feel the joy of living—to the frosty side where work is done under compulsion and where the children come to feel they are doomed to stay. The old idea that boys would work better on the frosty side of the barn, is passing. In its place is coming the new one of putting joy and faith and imagination into their work, that they may remember happy childhood pictures and learn to feel the thrill of opportunity and the joy of living always on the sunny side of the barn.

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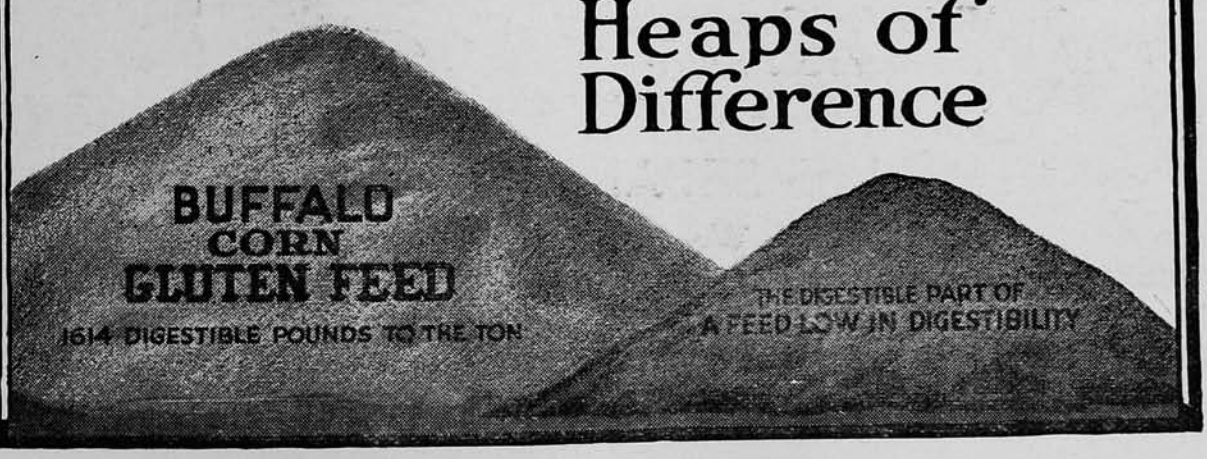

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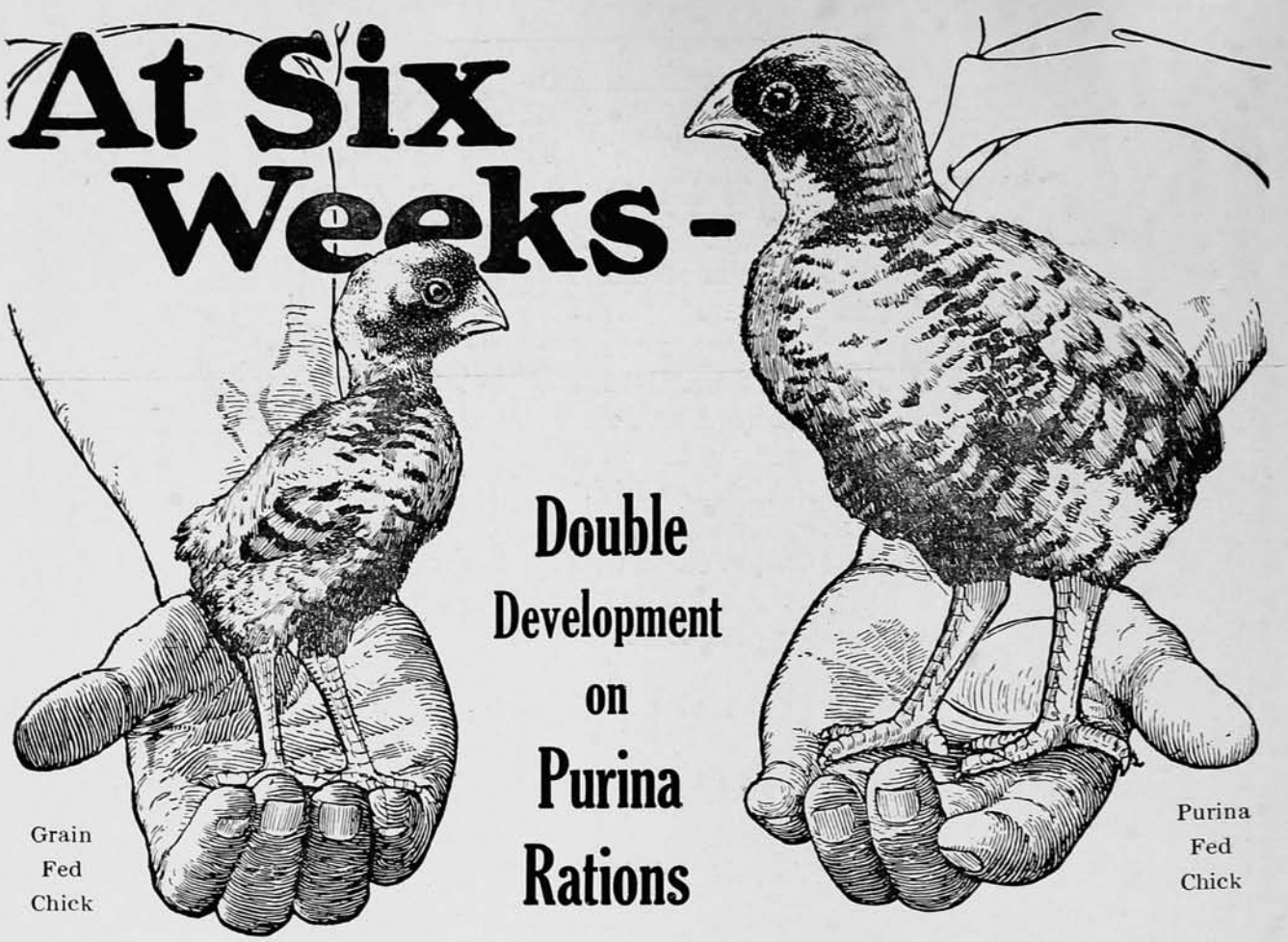

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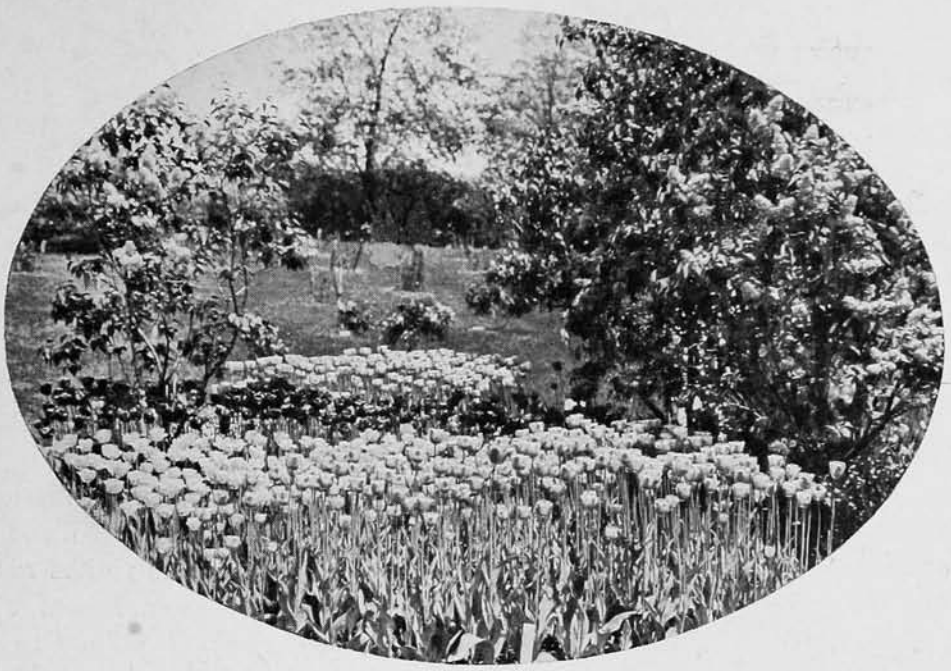


CONTENTS

MAY, 1919

Entered as second-class mail matter at the Post office, Ithaca, N. Y.

The Honeybee

Burnished gem of buzzing brightness,
Animate miracle of beauty,
Living dream of fairy lightness,
Fleet-winged bee;
Free-lance with no other duty,
Than to sally forth for booty
O'er the summer lea.
Oh! beautiful, when brightly banded golden
She probes the pendant mass of linden bloom,
Or flashes on, with precious riches rolled in
Tiny baskets, or perchance hangs over
Banks of soft perfume,
Where hangs the peerless nectar-yielding clover.
Ever going, ever coming,
With a glad symphonic humming
Of her irridescent wings,
That rejoice with song untiring,
Full and free.
As the spring time robin sings,
So the bee
Bears off her booty, straight without inquiring
In ethical propriety;
Into the sea of bloom just buccaneering,
She goes unfearing,
And all sweet spoil makes gladly her possession,
Or cares a fig if this be thought transgression.

Beautiful bee, Carniolan, Caucasian,
Italian, or bee from the land of the palm,
Partake of the nectar, and harvest the balm,
Come, and no hand shall resist your invasion.
From May to October, hum
Over the scented lea,
Come with your frolicsome,
Gladsome, contented glee.
Come with the shine and the color and glow
Of spring's fairest day.
Until the soft bloom of the goldenrod blow,
Honeybee stay.
Oh! happiest rover
Careening swift corner,
Bright queen of the clover
And soul of the summer!

W. P. ALEXANDER, '17.

THE CORNELL COUNTRYMAN

Vol. XVI ITHACA, N. Y., MAY, 1919 No. 4

Culture and Agriculture

By FRANK WILLIAM HOWE

Dean of the Joseph Slocum College of Agriculture at Syracuse University

THERE was a time—not very long ago—when a respectable number of persons who considered themselves well educated had grave doubts whether culture and agriculture were not mutually exclusive terms; persons who did not believe that the ordinary farmer may rationally be considered a man of culture, or perhaps even capable of culture. Indeed, it may be questioned whether this point of view was not quite generally entertained "among our best people." According to this philosophy the only hope for the farmer or the farmer's family to acquire culture lies in the possibility that he may somehow rise superior to the natural limitations of his daily work and school his mind to the contemplation of the nobler things of literature, history, and art. The study of beet roots had no cultural value to be compared with the study of Greek roots, nor alfalfa stems with Latin stems.

This type of thought affected even some of those who gained their living from the farm but inherited their educational ideals from the past. It is noteworthy even yet that the state colleges of agriculture in the South and East have generally emphasized the study of some foreign language, particularly Latin, as a necessary condition or accompaniment to the study of agriculture, in order to insure their students at least a fraction of the "culture" they might secure in attending other colleges and universities. This notion of the special virtue of foreign language study has been less emphasized in the agricultural colleges of the Northern and Western states; but quite generally over the country as a whole, practical assent has been given to the view that the land-grant colleges exist for the benefit of the sons and daughters of farmers who could not afford to pay the costs of attendance at other colleges or universities, or who might feel socially out of place in these institutions, or peradventure, might not be able to meet the scholastic requirements of entrance in these other schools.

Possibly it was to remove this last suspicion and to reaffirm the cultural capacity of farmers' children, even when measured by the other scholastic standards, that later on it became the fashion to include a foreign language in the entrance requirements of state colleges of agriculture, especially when connected with older universities. Possibly also a consideration of equity is involved. If the state is to furnish free tuition in agriculture, but does not allow free tuition in all other college courses, perhaps it might justify this policy by imposing a kind of culture handicap upon the student of agriculture by requiring him to study some foreign

language as a condition of being allowed to study agriculture at state expense. In other words, we may coax him or compel him to acquire culture by studying the necessary cultural subjects before, or along with, his study of agriculture, if the agricultural subjects themselves are not sufficiently cultural to develop sufficient culture to satisfy the claims of citizenship.

But suppose this requirement turns out to be a real handicap in securing the special type of training for which the agricultural college was established? What shall we say of the boy or girl who studies agriculture eagerly in the high school, but who does not care for or succeed in the study of the foreign languages? Shall the state deny him the privilege of getting some culture and honor as he can by graduation from the college of agriculture? Does the land-grant college of agriculture exist for the purpose of conferring culture upon its students? And is culture the necessary product of foreign language study? Or is preparation for usefulness to be considered equal to if not identical with real culture?

But there may be some reasonable difference of opinion as to the meaning of "culture," perhaps even when it is spelled with a "K" and enforced with the sword and the submarine. But when we attempt exact definition, it seems well to say that real culture may be defined negatively much more easily than in the affirmative. We seem instinctively to know what it is not without being satisfactorily able to say what it is.

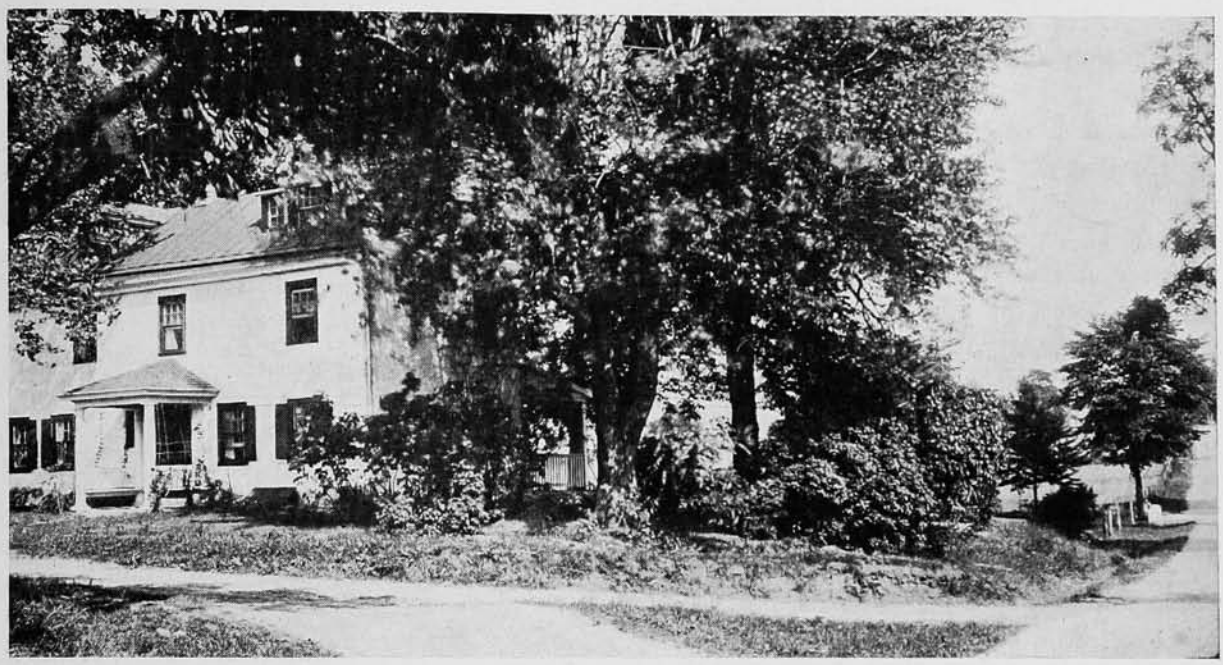
For example, I care not how well-schooled a man may be, I know that he is not cultured when I hear him swear or see him smoke in the presence of either women or men who object to this infringement of their own rights. If acts like these are compatible with culture, then we either miss little in not having it, or else we must admit that its champions experience occasional lapses from their allegiance. On the other hand, a man may do some things that are forbidden by the code of the ultra-cultured without actually losing his claim to gentility. I have heard of a scientific type of agriculture that proposes to produce peas that are flat on one side so that they will not roll off a table knife. And I presume this whimsical proposition is accepted in some quarters as sufficient evidence of the irrepressible conflict between culture and agriculture. But conceivably a man might even eat peas or pie with a knife and be a gentleman if he absolutely had no fork or spoon to save him from starvation. And so a man may keep his seat in the car while women are standing and yet be a cultured gentleman—for he might be sitting on the window sill or the hand-rail or on another man's lap; or he might have much farther to ride than the lady, or he might be wearied with a long day's work and have a mile or two to walk after leaving the car, while she has just stepped out of an easy chair at home; or again, he might be ill and unable to stand, or perchance he might be reading behind a paper and never see her at all! And so a gentleman's seat is to be held or surrendered according to the special circumstances of each case. The lady herself is not truly cultured who expects a man to act invariably according to a fixed prescription regardless of conditions.

The essence of culture is considerateness. Culture is not to be learned by memorizing the etiquette books. It is not a slavish following of rules, nor the ability to repeat formulas nor pronounce big words nor interpret dark sentences. Culture is not anything that must be learned from books or by intimate association with select persons or thru imitation of distinguished models of excellence. Culture is not anything that can be positively guaranteed as the result of pursuing a prescribed course of study. No students can say "these and these subjects I shall put into my program, and when I have finished I shall be a man of culture."

Lest these views shall be regarded as merely the pronouncements of personal opinion, let me support them with the statements of a few educators who will

be accepted as good authority. Says President A. Rose Hill of the University of Missouri:

"Culture is not inherent in particular forms of subject-matter, but is a by-product of the educational process, and represents an attitude of mind and life rather than a particular kind of knowledge."



In similar language speaks President R. C. McLaurin, of the Massachusetts Institute of Technology:

"Some speak as if the test of culture were the knowledge of Latin, or Greek, or of French literature, or of Italian painting, or of what not. As a matter of fact it is none of these things, for I take it that the root of culture in any worthy sense is the possession of an ideal that is broad enough to form the basis of a sane criticism of life."

Let me add to these words a statement by Professor W. H. Heck, author of *"Mental Discipline and Educational Values"*:

"It is a sad commentary upon our educational abstractness that we often fail to realize the high and noble inclusiveness of the ideal of use in our preparation of girls and boys for efficiency and service in society. We sometimes run away from the real test of real things and cry out for culture, as if culture had any meaning apart from its use in adjustment."

Now listen to Professor John Dewey, of Columbia University:

"The assumption that a training is good in general just in the degree in which it is good for nothing in particular, is one for which it would be difficult to find any adequate philosophical ground. Training, discipline, must finally be measured in terms of application, of availability. To be trained is to be trained to something and for something."

And lastly let me remind you of these words of wisdom from the late Commissioner Draper, head of the University of the State of New York:

"New York will never relax her grasp upon the things which culture the minds and souls of men, but it is to be hoped that she will realize better than she has that the finest and deepest culture comes thru work; that work by the hand and by the head are yoke-fellows in our free civilization, and that both the rights and the prosperity of her people hinge upon the professional and industrial equilibrium of her tax-supported education."

There is a hint in these last words that we may even professionalize the technical subjects in our agricultural colleges to the extent that we almost entirely obscure or ignore their industrial application. We may so subdivide and elaborate our courses of study that no ordinary student can in four years compass enough of them to equip himself for practical efficiency on the farm. Indeed, this is the criticism most often directed against the agricultural college. Are we, perhaps, getting so much of culture that we are falling short in our agricul-

(Continued on page 192)

The Alumni Conference

By CORNELIUS BETTEN

Secretary and Registrar of the New York State College of Agriculture

PLANS for the alumni conference in the New York State College of Agriculture at Cornell University, to be held on June 20 as part of the great semi-centennial celebration of the University, are well under way and are so comprehensive as to call for the active cooperation of all former students, members of the faculty, and, to a less extent, of the present student body. Because of the number of events scheduled for the celebration, the actual time for the conference will be briefer than would otherwise be desirable, but as far as possible this will be offset by careful advance preparation.

The purpose of the conference is to acquaint the alumni as fully as possible with the work, the plans, and the needs of the State College of Agriculture, and particularly, to receive from them suggestions based upon their experience since leaving college. It is desired that the conference shall be distinctly an undertaking of the former students, and the officers of the alumni association have been asked to take charge of the meeting. The faculty has appointed a committee to assist by making available in advance whatever information the alumni may desire.

A joint meeting of the alumni officers and of the faculty committee has been held. The general plan adopted is to have the conference in charge of a number of former students designated by the officers of the association. It is hoped that these representatives will be in Ithaca for some days prior to the conference, gathering their impressions and taking opportunity to formulate their conclusions so as to make the conference itself most helpful. It is not intended, however, that these representatives shall occupy the entire time of the meeting. On the contrary, it is desired that all shall freely take part. To that end the committee will make information available to all who may be able to come to Ithaca prior to the conference.

The faculty committee is endeavoring to anticipate information that former students may desire. In conjunction with the alumni association it has prepared and is mailing a questionnaire to obtain information regarding the former students themselves, particularly as to the occupations into which they have entered and their careful opinion on the relation of their college experience to their later work.

To make the work of the Cornell University Agricultural Experiment Station readily accessible to returning Cornellians, the committee is arranging convenient maps of the college farms and other descriptive guides to the various experimental plots. An extensive outline covering all of the activities of the College—teaching, extension, investigation, personnel, administration—is being prepared. The more significant of these items will be included in a handbook which will make an appropriate souvenir of the conference.

At the present time former students may help make this meeting a success by sending in their questionnaires immediately and by indicating any subjects which they think should claim the attention of the conference. Such suggestions will be transmitted to those in charge of the meeting. In addition, any discussion of the plans here described will be welcomed. Particularly is it requested that every former student, whatever or wherever his present work, shall return his questionnaire promptly. Only thus can the data be compiled for use in advance of the conference.

"Hothouse" Lambs

By KARL J. SEULKE

Assistant Professor of Animal Husbandry at Cornell University

THE term "hothouse" lamb is applied to winter born lambs that are fed intensively from birth so as to attain a marketable weight of forty to fifty pounds at eight to twelve weeks of age. The name gives the novice in sheep husbandry, and many of the old timers as well, the impression that the production of this delicacy requires elaborate and expensive equipment, special training on the part of the shepherd, and large amounts of high priced mill feeds for successful production. The production of "hothouse" lambs requires ewes of special breeding and warm, tho not necessarily artificially heated, quarters; otherwise the equipment is much the same as that commonly used with the ordinary spring lambing flock.

There are a number of advantages to this method of production over the ordinary method. First of all, the lambs are never affected by stomach worms because they are not pastured. Secondly, the ewe flock requires less attention during the farmer's busy season and all of the work in handling and marketing the lambs comes during the winter. Thirdly, the lambs are fed only for a short time and are marketed at from eight to twelve weeks of age, at which time they have attained very nearly the weight of a spring lamb at five months of age. Fourthly, the production of "hothouse" lambs is adapted to the small flock as well as to the large one since one "hothouse" lamb can be marketed as conveniently as a larger number. It is important, however, that the producer be within twelve to eighteen hours (by express) of his market unless local refrigerator car service is available. "Hothouse" lambs are most in demand and bring highest prices between January 1 and the beginning of Lent.

To produce "hothouse" lambs it is necessary to obtain ewes that will lamb in the fall and early winter instead of in the spring. In almost all breeds of sheep occasional individuals occur that possess this tendency, but only a few breeds possess this fall lambing character to a great enough extent to make the breed suited to "hothouse" lamb production. The Dorset Horn and Tunis breeds are noted for their fall lambing qualities and can be relied upon to transmit this character to a large percentage of their offspring when mated to ordinary farm flocks. Therefore, the beginner in the "hothouse" lamb business may begin with the ewes of his grade farm flock or with western ewes, and by mating these with a ram of one or the other of the above mentioned breeds, produce a flock in which a large percentage of the ewes will possess the fall lambing quality. Since the Dorset Horn is most commonly used for this purpose this first cross will be called half-bred Dorsets. The ram lambs of this cross will be castrated and marketed the same as any spring lambs.

Since these half-bred Dorset ewes possess the fall lambing quality to a large extent, they may be used to produce "hothouse" lambs by turning a ram with them in July of their second summer and allowing him to run with them until late fall so that the ewes that fail to breed for early lambs may drop lambs during March and April of the next year. This causes less uniformity in the spring lamb crop, but gets the lambs that are too late for "hothouse" lambs on an early summer market. These lambs bring prices equal to those received for "hothouse" lambs when sold to summer hotels. They are known as "Fourth of July lambs," etc. in the sections where summer boarders and tourists are willing to pay extra for this delicacy. They have the added advantage of escaping stomach worms, a cause of great loss in the spring lambs.

The ram used should be of mutton type. A Dorset Horn ram may be used each year and the ewes from each succeeding generation will become more reliable as fall lamb producers. Many breeders prefer a ram of some of the dark faced breeds, as they produce a larger, more blocky lamb that sells a trifle higher on the market. This plan, however, necessitates the use of a Dorset ram every three or four years in order to obtain females to replenish the fall lambing flock.

The ewes producing the lambs should be brought in from the fall pasture before it becomes so short as to cause them to run down in condition. They should be fed good alfalfa or clover hay, and a light ration of oats, bran, and oil meal previous to lambing in order to increase the milk flow. Silage, if free from mold and unfrozen, is a valuable feed with the hay and will assist greatly in cutting down the cost of feed and increasing the flow of milk. As the ewes approach lambing they are each placed in a separate lambing pen. After the lambs are born the shepherd's duty is to see that the lamb is owned by its mother and that it obtains a stomach full of warm milk as soon as possible. If the ewes are taggy, they should be trimmed before lambing, as lambs will often suck the tags and locks of wool and actually die from lack of food.

Buildings required for "hothouse" lamb production should be the ordinary sheep buildings on the farm. They should be light, dry, and free from draughts. Contrary to common belief, it is seldom necessary to provide artificial heat for the flock, provided the lambs can be kept in a warm basement barn or other structure where the wind can not blow thru. In very cold weather it is often desirable to have a warm room handy where a new-born lamb can be kept until dry, but except in very cold weather the lambs, even in New York State, can be dropped in the basement barn with little protection except a few grain bags or burlap draped about the lambing pen. At Cornell University the "hothouse" lambs have never been kept in artificially warmed quarters and year after year the results have been excellent.

Altho the small lamb will not eat a great deal of grain, he soon learns to nibble at it and to supplement his mother's milk. He will make good gains and consume a fair amount of a mixture of equal parts of ground corn, ground oats, bran, and linseed oilmeal, which should be placed so that the lamb can eat at will, but can not climb into the box.

The ewes should be carefully watched after the lambs are taken off to see that their udders do not spoil. It is advisable to milk the ewes for a time until danger from spoiled udders is past. "Hothouse" lambs are seldom docked or castrated, or if they are done, the operations should be performed at an early age. These operations tend to stop the growth for a time and the "hothouse" lamb must be brought to the desired weight at as early an age as possible. The most desirable weight is from thirty-five to fifty pounds live weight, which should be attained at from eight to fourteen weeks of age. It is important to market them before they learn to eat much hay as they then lose fat and become rangy.

"Hothouse" lambs are usually sent to the market dressed. The common method of dressing is to remove the front feet at the break (lamb) joint and remove the hind toes and head. The abdomen is opened from breast to twist, and a strip of pelt an inch wide is removed from each side of this opening and back over the twist to the base of the tail. The abdominal organs, with the exception of the liver, kidneys and kidney fats, are removed, but the organs of the thorax are left in. Cross sticks are put in the back, and the caul, or membrane surrounding the paunch and intestines, is draped over the opening in the abdomen and between the hind legs. After the carcass is thoroly cooled, it is covered with a layer of cheese cloth and one of burlap, and is then ready for shipment.

The production of "hothouse" lambs

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The European Corn Borer

By E. P. FELT

State Entomologist of New York

THE European corn borer easily ranks as the most important pest which has become established in the United States during the last twenty-five years, since the probabilities favor serious and widespread losses to our principal grain crop. The yield of corn is approximately twice that of oats and three times that of wheat. This new pest not only attacks corn, both sweet and field, but the probabilities are that it will prove a serious enemy of Kaffir corn. It has been pointed out elsewhere that the annual loss caused by this insect might easily overrun a billion dollars which would mean considerably less than fifty per cent damage to our 1918 crop of 2,582,814,000 bushels, which sold at a little over $1.36 per bushel.

Corncob and Husk Infested with Borers

Applying the above standards, this pest would be a tremendously expensive one for Illinois with its 1918 crop of 351,450,000 bushels; Iowa with its yield of 375,624,000 bushels; and Indiana with its 169,554,000 bushels of corn. Similar tho not quite so serious losses, because the corn crop is smaller, face the other important corn states.

The European corn borer is now well established in eastern Massachusetts over an area of approximately 320 square miles, and was probably introduced in hemp imported by cordage factories near Boston. It has been found in relatively much smaller numbers over a territory of 400 square miles in the lower Mohawk Valley, and present information indicates the probable occurrence of this pest in a few restricted localities in Connecticut and possibly in one or two additional states.

The above may appear an overstatement of facts and probabilities. One need only search the European records to find this insect recorded as frequently causing fifty per cent losses in portions of Europe, and to learn that it is able to maintain itself over large areas in both Europe and Asia. An examination of the history of this pest in America discloses very serious injury in badly infested areas. In some cases this amounts to an almost total loss of the crop, and while it is true that sweet corn has suffered most in Massachusetts, this appears to be simply because the insect in that state is mostly in a market garden area and consequently sweet corn rather than field corn is the crop more generally grown. Equally serious if not greater injury occurred in Massachusetts in nearby field or Indian corn.

The extent to which an infestation may progress is illustrated by the finding of 311 caterpillars in one hill of corn, 117 in one plant, and 15 in one

ear—one caterpillar being sufficient to seriously damage an ear. Every ear and almost every joint may be infested under such conditions. Badly affected stalks may be thoroly honeycombed and break or lodge as a result. The burrows afford entrance to moisture and molds with a consequent great injury to the fodder. Moreover, this corn borer also attacks nearby celery, beans, potatoes, and other garden plants as well as a number of the larger stemmed weeds and grasses. The caterpillars winter in these stems and so far the only control method known is the collection and burning during the winter of all infested stems, stalks, and corn stubble. This would be very costly under average farm conditions, tho it might be practical in a market garden section. The insect produces two broods a season and the moths, laying approximately 300 to 700 eggs each, are so prolific that such clean-up measures, even when carried out thoroly, are only partially effective.

In other words, this insect is a very destructive enemy of corn which has become well established in several localities in the United States. Its habits are such as to render control costly and relatively inefficient and, unless something effective is done very shortly, it is only a question of time before it spreads thruout the corn belt and causes tremendous losses.

The European corn borer is the only insect in this country which habitually bores in all parts of the stalk, including the cob, and at the same time injures the kernels. Its presence in stalks during the dormant season is indicated by characteristic holes about one-eighth of an inch in diameter, generally with discolored margins and usually plugged with borings. These entrance holes are most easily seen on stalks that have been stripped of leaves by cattle, tho they are also readily found in corn stubble. The holes lead into irregular burrows or galleries an inch to several inches in length, each of which may contain a yellowish-gray caterpillar about three-fourths of an inch in diameter. This borer has a brown head and the body is minutely spotted with brown. The injury to green corn in the field is more conspicuous, since the holes are marked by hanging masses of borings and in many instances by exuding sap. There may be similar perforations in the husks, the stem of the ear, and tunnelling in the grain itself. Broken tassels with extruded borings at the point of injury is another easily recognized sign of infestation. Every part of the plant except the fibrous roots may be affected, tho most of the work is limited to the stalk and the ear.

The record of this insect in America indicates a comparatively slow spread, except when the over-wintering caterpillars are transported considerable distances in corn on the cob, plant stems, stalks, and similar materials. The probabilities are that the pest was brought to New York State and Connecticut in some such way. The danger of spread in this manner is so great that the states of Massachusetts and New York have established quarantines to prohibit the shipment from infested areas of green or dried corn on the cob or plants or parts of plants likely to contain living corn borers. These state quarantines may be supplemented and made more effective by similar action on the part of the Federal Horticultural Board, should such be deemed advisable.

It is unnecessary to call attention to the fact that the corn crops of Massachusetts, Connecticut, and New York are comparatively small as compared with the enormous production in the corn belt area. Anything done in the infested states to control or exterminate this insect affords protection to the vastly greater interests of the middle states, and these latter are of more than local importance. In other words, this problem is a national one. A satisfactory solution, especially if it means extermination, would protect the corn crop of the entire country for all time and enable production to continue, as in years past, under the most favorable conditions. Should the insect get be-

(Continued on page 194)

Farm Mortgages Thru the Federal Land Bank

By IVAN WRIGHT

Instructor of Rural Economics at Cornell University

NOWHERE in the country is money cheaper or more abundant than in New York State. There are private money lenders, mortgage companies, real estate loaning agents and agencies, credit unions, insurance companies, building and loan associations, savings associations, and a State Land Bank. Besides, there are scores of semi-commercial banks, which are soliciting the farmers as customers to whom they may safely lend their money or credit. All of these lenders offer the farmer relatively good terms and low rates. The questions are often asked: What need is there of the Federal Land Bank? And why do farmers borrow thru it?

These inquiries may be answered as follows: The numerous credit grantors mentioned are not in position to reach out into many rural districts, and in some cases the terms are unadapted to the farmers' needs. The Federal Land Bank's loans provide for the farmer to pay off his debt according to his earning capacity. This bank is required to do conservative and safe business. It offers low rates of interest and long terms of payment. It carries only one line of securities—first mortgages on improved farm land. Every farm on which a loan is made is carefully investigated as to safety of title, agricultural productive earning power, the personal security of the owner, buildings and insurance, and sales value of the property. The members of an association, who must number ten or more, are jointly liable for the liabilities of the association to the amount of ten per cent of their own loan. The mortgages are thus based upon equal proportional security. This makes a standardized body of mortgage securities against which the bonds are issued. Therefore, the bonds are among the most standard, safe, and desirable securities in the market. They sell well and command a high price.

Terms of a Federal Farm Loan

The limits for which a loan may be secured thru the Federal Land Bank are from five to forty years. Thirty-six years is the time generally recommended, because an amortization payment of one per cent of the principal per annum liquidates a loan in that length of time. For the first five years no payments may be made except the interest and the regular amortization installment provided for in the loan. However, at the end of five years the whole loan may be paid off at the option of the borrower on any regular interest payment date, or the borrower may pay any part of the whole loan in installments of twenty-five dollars or multiples of twenty-five dollars every six months or every year. Part of each payment is the interest on the remaining unpaid principal for the previous six months or year, and part of it represents a payment on the principal. The usual payment, including both interest and principal installment, is about one per cent more than the regular interest rate. The payments are so made that at the end of the time for which the borrower has contracted the loan, both his interest and principal are paid. Under the amortization plan of the Federal Land Banks a farmer borrowing $2,000, for example, pays six and one-half percent, or $130 a year or $65 every six months; five and one-half percent on his remaining unpaid principal, and the remainder as installment on the principal. So with each payment the amount of interest is less and the payment on the principal more, yet the amount paid remains the same until the last payment, which is $60. By this plan the cost of paying off a $2,000, 35-year farm mortgage is $4,545. But when business again becomes normal and money more liquid the Federal Farm Loan interest rates will undoubtedly go back to the

five percent basis, which was abandoned on account of war conditions.

How a Farmer May Borrow

In order that a farmer may use the borrowing facilities of the Federal Farm Loan organization, he must first become a member of a "National Farm Loan Association." Ten or more farmers desiring to borrow money may organize such an association. One of the men interested in organizing will write to the Federal Farm Loan Bank, Springfield, Massachusetts, asking for blanks and instructions how to proceed. When these are received the prospective applicants will hold a meeting for the purpose of organizing. They will elect a board of directors. This board will elect a loan committee, president, vice-president, and secretary-treasurer. The latter is a bonded officer and may or may not be a member of the association. These ten or more farmers will make application on furnished forms to the Federal Land Bank for loans and a charter to do business. (The aggregate of all their loans must not be less than $20,000.) They then sign and acknowledge articles of association and forward them to the Federal Land Bank. The bank will then send its appraiser to inspect the lands offered as security for the loans applied for and the status of the members of the association; if satisfactory, the loans will be authorized when the charter is granted to the association. The money is then advanced by the bank thru the secretary-treasurer of the association. In the application for a loan, each member states how much money he desires to borrow and the value of the land to be offered as security. Then, if the loan be granted, the secretary-treasurer will apportion the money, when received, to the members according to the amount granted each upon his land as security. Each borrower is required to purchase stock in the association of which he is a member at the rate of five percent of the amount of the loan received. The association as a whole then purchases stock in the bank of the district equal to five percent of the amount of its members' loans. The borrower will receive dividends on this stock as earned, and the amount paid for the stock will revert back to the borrower when he redeems his mortgage.

In case a borrower wishes to sell his land, the Land Bank may permit him to assign the mortgage and his stock interest in the local association to the purchaser.

A farmer may borrow to the extent of fifty percent of the appraised value of his land and twenty percent of the permanent and insured improvements, provided this amount is not less than $100 nor more than $10,000.

The Landless Man and the Law

If an individual has on hand money equal in amount to fifty percent of the value of the land which he expects to buy or has bought, he may pay this amount upon the property and borrow the rest from the Federal bank in his district. Or if the person from which one is to buy is willing to take a second mortgage equal in value and in conjunction with the first mortgage required by the Federal Bank, the prospective buyer may secure the farm without money. Such a plan, however, is not to be too strongly recommended, but many young men of ability who are honest, especially graduates of agricultural colleges who desire to farm but have no money with which to start, could no doubt make a success by this method. Very likely this scheme will be used by many, because a period of forty years is given in which to redeem the first mortgage, and the amount of the loan undergoes a constant reduction thru annual or semi-annual payments. Such are the possibilities of borrowing thru the Federal farm loan system, exclusive of the joint-stock land banks.

The Land Bank in New York State

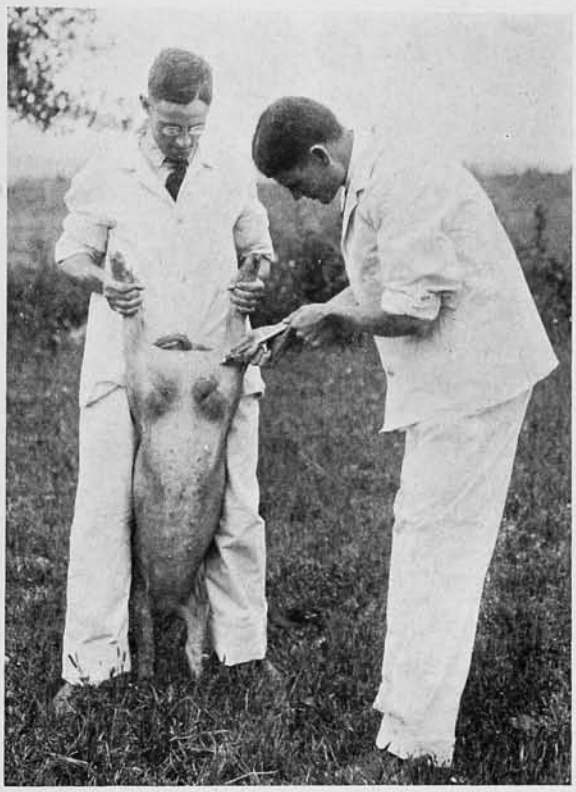
The Federal Land Bank in New York has been in operation less than two years. Up to April first of this year 2,246 applications for loans had been received, aggregating $7,827,007. 953 of these loans had been closed, with a total of $2,923,390. The local associations now in the State are listed on page 194:

The Prevention of Hog Cholera in New York

By R. R. BIRCH

Veterinary Experiment Station, Cornell University

NEW YORK'S swine industry is not large as compared with that of the great hog-raising states of the central west, but it nevertheless represents an investment of more than ten million dollars. The hog is by far the most economical meat producer there is, and he readily adapts himself to the intensive farming systems common in New York State. Hogs also offer a surprisingly profitable means of disposing of city garbage. The element of luck has been practically eliminated from the practice of garbage feeding, so that it now offers no more risks than other livestock enterprises. For the man who is willing to pay the price which must be paid in dealing with all livestock — eternal vigilance — hog cholera is conquered.



Immunizing a Shoat

Working with an intimate knowledge of hog cholera about ten years ago, Dr. Marion Dorset reasoned that because there was something in the immune hog's blood that prevented hog cholera virus from living in it, perhaps the blood could be made even more effective in counteracting hog cholera if the immune could be given exceedingly large doses of hog cholera blood, thus developing the immune's capacity for throwing off or destroying the virus. This principle was worked out, and it was thus that anti-hog cholera serum came into existence, for it was found that the blood of these highly immune hogs, or hyperimmunes as they were called, would protect susceptible hogs against cholera.

The process of serum manufacture is interesting. First a hog is immunized. Then after several weeks or months an enormous dose of blood drawn from a shoat sick with cholera — one thousand times enough to kill a susceptible hog of the same size — is administered directly into the blood stream. After about two weeks this highly immune hog (hyperimmune) is ready to bleed. He is bled from the tail by means of a vacuum apparatus; the blood is whipped out to prevent clotting, strained thru sterile gauze, and carbolic acid is added as a preservative. The serum is then stored in a refrigerator until enough is on hand for a test.

When a test is to be made several thousand doses of serum are mixed in a large receptacle and a sample is drawn for testing. The test requires eight pigs, each of which is given two cubic centimeters of hog cholera blood—a sufficient dose to kill. Two of the pigs receive ten cubic centimeters each of the sample of serum to be tested, two others receive fifteen cubic centimeters each, and two others receive twenty cubic centimeters each. The other two are given no serum. If the pigs given hog cholera blood and no serum die of cholera, and if those given hog cholera blood with serum as protection

remain in the same pen with the pigs dying of cholera and do not themselves sicken, the serum is considered fit for use in the field, in doses of twenty-five cubic centimeters for a fifty-pound pig. Larger animals are dosed in proportion to weight. Most of the serum used in New York is made at the Veterinary Experiment Station, Cornell University. From there it is distributed all over the State, usually thru veterinarians to hog raisers who require it. It is sold at cost of production.

It has been found, however, that if hogs are given the serum alone, they will be rendered immune only for about thirty days, and the serum is much too expensive to be used so often. But if the serum with a small quantity of hog cholera blood (virus) are given at the same time, this "double treatment" gives the hogs lifetime immunity. Great care is required in using it. It involves the use of virulent hog cholera blood; and if sufficient serum is not given with the blood, if the serum is not carefully prepared, or if the animals are out of condition at time of treatment, serious results will follow. On the other hand, if it is administered at the right time by men experienced in its use, it involves very little danger. It does not give permanent immunity to all pigs under twelve weeks of age, but it is rare for a pig given double treatment after reaching that age to ever again become susceptible.

Serum is a preventative of hog cholera, not a cure for it. If it is used when the disease first starts in a herd, most of the remaining well animals will be saved, but if treatment is delayed until a considerable number have died and many others are sick, a much smaller proportion of the herd will be saved. Every day is precious when an outbreak of cholera appears in a herd, and the owner should lose no time in having his hogs treated with serum. The sudden death of one without visible cause, followed in a few days by the appearance of sickness in others; the disposition of the sick animals to chill, to hide in their beds, to eat scantily, and to leave the trough in advance of the well ones, are fairly reliable indications of hog cholera. Cholera pigs often show fever, constipation followed by diarrhea, and a purplish discoloration that appears on the belly, ears, and snout. A mistaken idea seems to prevail that a hog cannot have cholera without becoming very thin and weak, and without suffering with diarrhea. As a matter of fact many hogs die of cholera while still in good flesh, and before diarrhea appears. If the owner suspects cholera in his herd, he should call his local veterinarian without delay, let him see the herd, take temperatures, and perform post mortems. Usually if the disease is present, evidence is easily found when a post mortem examination is made, but sometimes several examinations are necessary before conclusive evidence of hog cholera can be found. In case the disease does not prove to be hog cholera, money spent for serum is wasted, but when cholera is found to be present, no time should be lost in immunizing all well animals that remain. The after-treatment of the herd should be entrusted to the veterinarian.

What precautions can one take to prevent hog cholera from reaching his herd? It is impossible for hog cholera to develop in a herd without the introduction of hog cholera virus from without. Filth, improper feeding, and bad quarters, while injurious in themselves, never cause hog cholera. Exposure to the disease must take place. This exposure may occur in shipping, in showing at fairs, thru the exchange of breeding animals, or by men, horses, dogs, and other carriers tracking from infected to clean yards. Sometimes a herd is exposed by drinking from infected streams, and in the East especially garbage feeding is responsible for many new herd infections. A man suspecting cholera in his herd often tries to save some of his hogs by butchering them. All of the hogs killed may appear well, but some are really in the first stages of hog cholera. Meat from these animals is entirely fit for human food, but raw

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The Tractor on a Hilly Farm

By JARED VAN WAGENEN, JR. '91

AN experience with a tractor covering only one season and a single machine will hardly enable one to qualify as an expert. Any value that this contribution may possess is due to the fact that our farm is distinctly not a good tractor proposition. I did not purchase our machine under the short-lived enthusiams engendered by the magic descriptive powers of the golden-tongued traveling representative. Probably the reason I bought is largely temperamental. A lover of cattle, I have always viewed the horse with scant consideration, if not with positive dislike, and have always felt the lure of wheels and gears.

Our machine happens to be a small, one-man tractor, not the latest model. I selected it merely because its circulars and its "talking points" looked good to me. I imagine that the ownership of a tractor and of a car are alike in one respect: the man who has his first car and is without experience with any other is inclined to believe that he was benignly and providentially guided in the selection of his particular vehicle. I have a perfectly open mind, and am not crying the merits of this one make of tractor. In fact, I know a lot of things about it that are wholly susceptible of improvement. I have often wished that I had the designing engineer in hand so that I could tell him a lot of truths that he doubtless knows already. I have two neighbors with other makes, on farms almost the counterpart of ours in topography, and probably they wonder why I made the choice I did.

This old farm is not by any means ideal tractor land. It is in the hill country of eastern New York, most of it rolling, glaciated, limestone land. The fact that it is largely fenced with stone walls is evidence that limestone fragments from the native ledges and ice-borne granite "hardheads" from the North are scattered over our fields and thru our soils. There is one field of twenty acres—a reclaimed swamp—which is level and stone-free. This field is our real tractor area, but most of the farm is made up of glacial hills (drumlins) that are strongly rolling with deep escarpments. At least a third of the farm is absolutely too steep for tractors and not really fit for advantageous tillage with horse-drawn implements.

I have come to fully realize our handicaps, yet I cannot say that I have been disappointed, nor have I regretted our purchase. When I bought I knew there were many acres on which I could never hope to use the tractor, and I had no visions of selling horses or dropping some of our farm labor force. We have for years used six farm horses, and we have all of them yet. But the tractor will surely permit us to use a cheaper and lighter type of team, and it will enable us to reduce the use of expensive grain food. I am not at all sure that, figuring gasoline and depreciation, power tillage is cheaper than horses, but it does help in getting the crops planted more nearly on time. Ten days, and sometimes less, in the date of planting may make the difference between success and failure. This is probably the best argument for the tractor: that it supplies the equivalent of a couple of extra teams for those strenuous spring days when one could employ any number of horses and then not have half enough.

The efficiency of the tractor decreases with surprising rapidity as the grade on which it is used increases. A tractor with no implement behind will climb almost any slope that a team can scramble up with an empty wagon, but with even a light harrow, a machine tends to dig itself in on rather moderate grades. Once the drive-wheels begin to slip and saw themselves into the ground, it is useless to try to get out except by leaving the load behind. In fact, the tractor

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THE CORNELL COUNTRYMAN

FOUNDED 1903 INCORPORATED 1914

NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL UNIVERSITY

ITHACA, N. Y., MAY, 1919

ONCE again the people of this country are asked to respond to the call. We must support this fifth loan as patriotically and as wholeheartedly as we did the other four. The men in the Service have done their part to make the world a decent place to live in, both for themselves and their children. They have, indeed, fought the good fight and have kept the faith. Will we do the same? Or will we strike out on our home grounds? We must remember that money in Victory notes is not a gift; it is an investment. It not only represents a duty, but a privilege.

The Victory loan cannot fail. No, not if all of us do our part in this supreme crisis. We will put our shoulders to the wheel and push. Under no other conditions will the loan be successful. What if we fail? We must not. On the other hand, what if we carry this thing thru to a glorious finish? We shall then truly have kept the faith with those who so bravely laid down their lives on the fields of Flanders.

THE seventeen-year locust, or cicada as it is more properly called, will appear the latter part of May and early in June. There will be light outbreaks in Monroe, Niagara, and Orange counties, and swarms of them in Queens and Suffolk swarms of them in Queens and Suffolk counties on Long Island. The insect does not injure plants by devouring the leaves, but rather by depositing eggs in the branches. As a matter of fact, the insect lives on the trees only a few weeks, emerging from the ground late in May, climbing the young trees, shedding its skin, laying its eggs, and then dying. The adult insects deposit their eggs in the young twigs of pear, peach, and apple trees particularly, weakening the branches so that they may be easily broken off. If the branches are not broken off, they usually become knotty and scarred from the healed-over egg punctures. Young trees two or three years old and those newly set are most likely to be attacked. Probably the only satisfactory way of protecting the trees is to pick the insects off by hand.

Injuries from the seventeen-year locust have been largely overestimated, and no permanent injury seems to have been done to forest trees or mature fruit trees in former outbreaks. On the whole, there seems to be little cause for general alarm in New York, since the locust attacks only very young trees, and will appear only in a comparatively limited area.

THE COUNTRYMAN announces the election of Russell Lord to be editor, H. A. Stevenson to be managing editor, and Donald Hoagland to be manager, for the year 1919-20. Mr. Lord has been contributing editor for the past two years. He is now in France, but will be back in the College at its opening next fall.

The Home Use of Milk

The home economics department of the New York State College of Agriculture at Cornell University is conducting a state-wide project for stimulating the use of milk to improve human health, growth, and welfare. The slogan is "Use one and one-half pints a day for every child, and one pint for every adult."

Milk is a very necessary food for it solves the common difficulties of the average housewife in planning nutritious meals. In particular, it supplies three things that many of our most commonly used foods lack or contain in too small amounts to meet our needs. These are (1) lime, which helps to build bones and teeth; (2) protein, which has high muscle building qualities; and (3) fat, which contains dissolved in it substances necessary for both growth and health. Egg-yolk and cod liver oil are the only other fats besides milk fats which contain these substances. These then are the three substances which are not supplied equally well by other foods.

We notice that peoples such as Chinese, Japanese and those from the tropics, who make leaves of plants the basis of their diet, are small in stature, and have a short span of life, a high infant mortality, and a tendency to cling to the ideas and occupations of their forefathers. In contrast, the peoples who use milk as the basis of their diet are greater in stature, have longer lives in general, and have a lower infant mortality. They are progressive and have made a greater advancement in education and politics.

Many people do not like to drink milk and neglect its use in sufficient amounts. Milk does not have to be taken as a beverage to supply good health. It may be cooked in many different ways. This applies for children as well as for adults. Cooked milk may be slightly constipating but this may be overcome by using laxative foods such as fruit, vegetables, breads, and breakfast foods made from the less highly refined grains. Cooking milk slightly impairs its nutritive value if it is used as the only food. The value lost is that property which raw milk possesses in preventing the disease called scurvy. Adults overcome this difficulty by eating a mixed diet. For the little baby, however, if boiled milk is used, it is wise to add to the diet either strained, diluted orange juice in daily amounts of one to two tablespoons or mashed potato

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PLEDGE

I believe in stimulating the increased use of milk to promote health.

I desire to cooperate with the _____ County Home Bureau, and the Home Economics Department of the New York State College of Agriculture at Cornell University, and the United States Department of Agriculture by carrying out, as far as possible, in my home for not less than three months, a demonstration in the use of milk in the diet.

Please send me the necessary record blanks and other material.

Signed _____

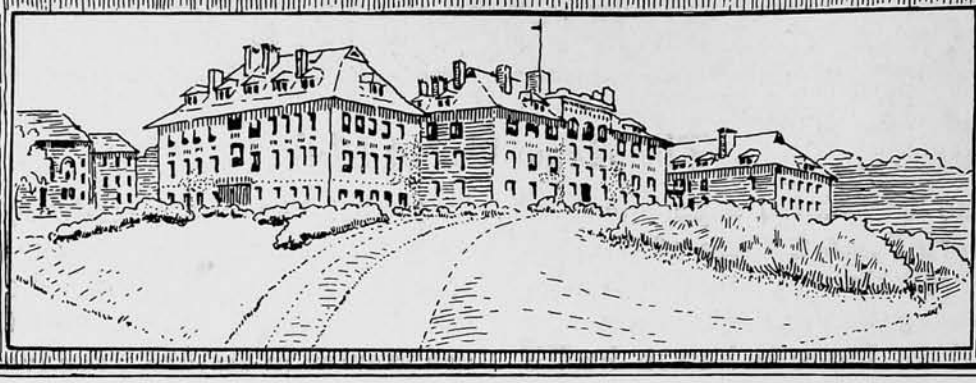
Address _____

County _____

Date _____

NOTE: In emergencies it is understood that the cooperator may be obliged to suspend the work and that she may resume it as soon as conditions permit.

CAMPUS NOTES



Winter Course Scholarship

According to the will of Harrison L. Beatty of Bainbridge, the sum of five thousand dollars has been bequeathed to Cornell University to establish what shall be known as the "Beatty Agricultural Scholarships." This principal shall constitute a permanent fund, the interest from which shall each year be divided into three equal parts for the establishment and maintenance of three scholarships in the short or winter course in agriculture. The scholarships shall be awarded annually to those candidates from Chenango County who shall pass the required competitive examinations with the highest grades. The only other conditions are that one scholarship must be held by a resident of Bainbridge, while the other two may be held by anyone from Chenango County.

Disease Investigation Fellowships

Two new industrial fellowships have been formed lately. The first is the Green Lawn Pickle Growers' Association. It has come about thru the cooperation of the packers and growers for the investigation of diseases of crops grown by the members, especially pickles and cabbage. I. H. Vogel, who was an instructor in extension work at Cornell last year, has been put in charge of this work at Green Lawn, L. I. The second, at Wilson, called the Wilson Growers' Association, has been established thru the cooperation of the growers and the Niagara County Preserving Corporation. Its purpose is the investigation of diseases of tomatoes, peas, and other field crops grown by the members of the association. P. P. White, who has been a graduate student in the department of plant pathology at Cornell, is in charge of the work.

The Wilson Field Laboratory Association Fellowship has been renewed for the third year, H. W. Dye continuing as fellow. The object of this fellowship is the control of diseases on muck grown crops.

The Alumni Association of the New York State College of Agriculture is offering, beginning with this year, an annual prize of twenty-five dollars to the student in the Junior class of the College who has made the best scholastic record thruout the three years preceding. A committee of the faculty will award the prizes each year.

Mrs. Florence Nevin, W. C., '19, of Easton, Pennsylvania, has donated a silver cup to be given as a prize in the short course public speaking. The cup is to remain the permanent possession of the University and the names of the winners will be engraved on it each year.

The departments of plant pathology and entomology, in cooperation with the county farm bureaus, have put special field assistants to work on plant diseases and insect pest control during the growing season in the following counties:

(Continued on page 208)

The *Countryman* maintains a complete file record of former students of the College of Agriculture. Requests from subscribers and others for information about former students of the College will be given prompt attention. Information concerning former students will also be welcomed in order that our records may be up-to-date.

'97, W. C.—W. J. Bell is running a dairy farm at Ogdensburg.

'99, B. S.—Judson M. Taber died in December at Bethlehem, Pennsylvania. Mr. Taber has been in the steel and coal business in Pennsylvania ever since leaving Cornell.

'99, B. S.—Mrs. Helen Gibbons Drake, wife of Allen Norton Drake, died at her home in Buffalo March 6.

'05, Sp.—J. E. Hasbrouck, Jr. is now manager of the J. E. Hasbrouck Co., Inc., dealers in coal, flour, feed, lumber, etc.

'06, B. S.—Chas. F. Shaw is professor of soil technology at the University of California.

'07, Sp.—Franklin P. Nichols died at his home in Dayton, Ohio, on January 3 of pleurisy. He is survived by his parents, two brothers, and one sister.

'07, B. S.—Lynn F. Ayer is superintendent of a large farm at St. James, Long Island.

'07, B. S.—Edward W. Cleeves is farm bureau manager of Warren County.

'07, Sp.—Ralph Day is working a farm at Canandaigua.

'10, W. C.—Walter J. Farley is running a poultry farm near Carthage.

'11, Sp.—H. L. Smith has been elected teacher of agriculture at Dansville. He was formerly teaching agriculture at Livingston Manor.

'11, W. C.—Henry P. Blessing is serving in France. His address is Company E, 52nd Infantry, 6th Division.

'12, B. S.—N. R. Peet, who is county agent for Niagara County, has been promoting some new state legislation regarding agricultural drainage. He has also successfully promoted the establishment of several fruit packing houses in his county. His address is Lockport.

'13, B. S. A.—H. W. Allyn is running a dairy farm in connection with a large greenhouse at Woodside, Pennsylvania.

'14, Sp.—H. D. Bauccus of Melrose died of influenza on January 15th.

'14, B. S.—J. Lissing Buck, who has been in agricultural experiment work in China for the past three years, is married and his present address is Nau Lindov, Auluvai, China.

'14, B. S.—H. C. Knandel is instructing at the Pennsylvania State College at State College, Pennsylvania.

'14, B. S.—H. S. Gabriel, recently cited for bravery while with the 316th Infantry, was one of the three chosen from his regiment to attend a British university. He chose Oxford and will remain there until ordered home.

'14, B. S.—Fannie Boone was married to Chester A. Carney, Chief Petty Officer, U. S. N., on January 21, at Philadelphia.

'15, B. S.—W. Roth, who has been principal and instructor of agriculture at Machais, has been elected to a similar position at Edmeston.

'15, B. S.—E. H. Priess, after having been discharged from the Army, is with the H. J. Heinz Co. at Bowling Green, Ohio. His address is 216 Court Street.

'15, B. S.—Corporal Laverne S. Phillips is a member of the 323rd Infantry, 82nd Division.

'16, B. S.—Victor M. Buck writes from France that he may take graduate work at an English college to further prepare him for missionary work in India. He has served with the 2nd Corps, Aeronautical Service, in the 101st Photographic Section.

'16, B. S.—Gilbert Saxton Rhodes died in a hospital in New York on February 19, following an operation for mastoiditis.

'16, B. S.—Mr. and Mrs. George F. Shrader, of Saranac Lake, announce the engagement of their daughter, Edith B. Shrader, to Harwood Martin of Honeoye Falls.

'16, M. F.—F. R. Fielding is now in New York awaiting discharge from the Navy, in which he is an ensign.

'16, B. S.—Roy C. Bird is still in France with the 20th Engineers.

'16, B. S.—G. S. Rhodes died of pneumonia at his home in Ithaca on March 18th.

'16, B. S.—Miss A. F. Jansen, who was teaching home economics at Harrisville, West Virginia, has been elected teacher of domestic science and art at the high school of Etna, Pennsylvania.

'16, B. S.—A. A. Allen, just discharged from service, is returning to his position as teacher of agriculture in the state school at Cobleskill.

'17, Ph. D.—A. B. Beaumont is professor of agronomy at the Massachusetts Agricultural College. He has recently taken an active interest in the extension of soil survey in New England.

'17, B. S.—Donald C. Tompson recently received his discharge at Camp Devens. He has been adjutant of the depot brigade at the camp during the period of the war.

'17, B. S.—R. A. Wheeler, when last heard from, was teaching aerography and machine gunnery at the Naval Aviation Ground School at Minneapolis, Minnesota. Wheeler was rated as ensign at the close of hostilities.

'17, B. S.—L. R. Skinner has been released from naval service, and is at present at his home. He was working in English waters on a mine layer.

'17, B. S.—H. F. ("Tex") Tilson is now with the Rock Creek Lumber Company, Trinity, Texas. Before being discharged, he was a first lieutenant in aviation, flying at Bolling Field.

'17, B. S.—Harry Lebowsky has announced his engagement to Miss Mary Nanes of New York City.

'17, B. S.—Mrs. Alice Van Scoy Crandall, who has been junior extension leader, has resigned her position to join her husband at Conneaut, Ohio.

'17, B. S.—Ruth Starr is living at Irvington, Ohio.

'17, W. C.—William F. Voller, Akron, is making a specialty of apiculture, having developed a market for his product in Buffalo.

'17, B. S.—J. S. Everitt of Sayre, Pennsylvania, was on the campus recently, having just received his discharge from the Navy.

'17, B. S.—M. H. Frey has been discharged from the 10th Engineers and is now at his home in New York.

'17, B. S.—W. H. Doggett is still in France with the 10th Engineers. His present address is 2nd Bt., 10th Engineers. care Fuel Wood Project, A. P. O. 706, A. E. F.

'17, B. S.—H. O. Johnson has been discharged from the Navy. His marriage to Miss Mary Chick of Hopewell, New Jersey, was recently announced.

'17, B. S.—R. E. Perry has received his discharge from the 10th Engineers.

'18, B. S.—Hazel Torbel is now assistant dietitian at Lakeside Hospital, Cleveland, Ohio.

'18, B. S.—Ella D. Zurbrick is home demonstration agent for Sullivan County. Her address is Liberty.

'18, Sp. Ag.—L. H. Robinson is running a poultry and truck farm at Castile.

(Continued on page 196)

BOOK REVIEWS

The Farmer and the New Day, by Kenyon L. Butterfield. $3.00 net. The Macmillan Co., New York City, N. Y.

Truth; the impartial conclusions of a man of brains. This book reflects the deliberate and far-sighted study of economic conditions and tendencies in America. Its careful and thoro analysis of the farmers' problems should give pause to the recent rather hysterical recommendations of inexpert officials. The rural problem is taken up in each of its many phases. Clear reasoning, backed with actual examples, develops the truth, sometimes contrary to farmers' notions, more often according to them. The author also indicates the national duty to adopt a rural policy and appends a suggestion for such a policy.

The Little Town, by H. Paul Douglas. $1.50 net. The Macmillan Co., New York City, N. Y.

Parts of this book should be in every high school library. The author points out that the gospel of rural progress applies to the little town and indicates new motives for their civic betterment. The method of proving the text by citing actual examples is rather feeble, since sufficient precedent is hardly available. But on the whole we feel that the book will edify the little town and we hope that the author's faith in its ability to respond to the needs of the hour is not misplaced. Certainly the concluding paragraphs of the book encourage and inspire the reader with the worthiness of the effort to wake up the twelve thousand little towns with their twelve million hitherto isolated and apparently unprogressive citizens.

The Food Crisis and Americanism, by William Stull. $1.25 net. The Macmillan Co., New York City, N. Y.

A courageous, if unconservative, discussion of the critical condition of American agriculture. We believe Mr. Stull to be the first thoroly practical economist who has sought and found the fundamental errors in the statistical bases for price-fixing. He "strikes twelve" when he says "only by the assurance of continued profits can American agriculture be rehabilitated." But he suggests no present remedy. Perhaps the developments since the end of the war would have affected his view of the future, but the book was written during the war, when the prospect was dark indeed for the American farmer.

Cooperation in Agriculture, by Harold Faber. An adaptation of Andelsbevaegelsen I. Danmark, by H. Hertel. $2.75 net. Longmans, Green, and Co., New York City, N. Y.

This work is especially timely now when American interest is being directed toward cooperative associations as the solution to our agricultural problems. Altho written more particularly in response to British inquiry, the book should be valuable for the guidance of young cooperative movements in the United States. In tracing the successful development of Danish cooperative associations, the author has not always noted the peculiar conditions which in many cases determined the success of the Danish procedure. However, the author emphasizes the determining factor in cooperative effort everywhere — individual confidence and trust among the members. He is urgent in his claim that the Danish cooperative associations, no less truly tho indirectly, contribute largely to the educational, social, and religious vitality of Denmark.

Cooperation, the Hope of the Consumer, by Emerson P. Harris. $2.00 net. The Macmillan Co., New York City, N. Y.

The first part of this book, being chiefly a review of the published findings of municipal supervisors of weights and measures, seems rather out of date, but the advice to housekeepers is apropos—individual responsibility must accompany any relief from the high cost of living. The author advocates the Rochdale plan of cooperative stores, illustrating their practicability by adequate examples. Mr. Harris is enabled to support his argument by virtue of his

years of business practice in both competitive and cooperative enterprises.

Farm Manures, by Charles E. Thorne, Director of the Ohio Agricultural Experiment Station. Published by Orange Judd Co., New York. Price $1.50 net.

The necessity for conserving every pound of available fertilizer makes this book particularly pertinent to the time. Professor Thorne has devoted his life to investigations along this line and his findings are invaluable to the farmer as well as the student and teacher.

The American Apple Orchard, by F. A. Waugh, Professor of Horticulture and Landscape Gardening, Massachusetts Agricultural College. Published by Orange Judd Co., New York. Price $1.00 net.

This book, by a leader in horticulture, was written in response to numerous requests for a practical pointed work on apple culture. Professor Waugh has had wide experience in fruit growing, as well as in teaching; the book is snappy, terse, and readable. Methods are discussed, not for their theoretical value, but from the standpoint of the cash profits they will return.

Insects Injurious to Vegetables, by F. H. Chittenden, United States Department of Agriculture. Published by Orange Judd Co., New York. Price $1.50 net.

This is a complete practical work, giving descriptions of the more important insects attacking vegetables of all kinds, with simple and inexpensive remedies for checking and destroying them, together with timely suggestions to prevent their recurrence. It embodies the life work of Dr. Chittenden, the world's best authority on insects injurious to vegetables.

Home Vegetable Gardening From A to Z, by Adolph Krum. Published by Doubleday, Page & Co., Garden City, N. Y. Price $1.25 net.

This book is particularly timely. Every phase of the home vegetable garden is covered in minutest detail and it cannot help but be exceedingly helpful to every gardener. It is especially adapted to the use of the small home gardener in these war times.

Productive Sheep Husbandry, by W. C. Coffey. Illustrated. $2.50 net. J. B. Lippincott Co., Philadelphia, Pa.

The author gives a concise review of the history and present status of sheep-raising in Europe and in the United States. He shows that the tendency during the last half-century has been to develop the industry thru the exploitation of new pasture-areas and urges the present need to put the business on a permanent conservation basis. The thoro and systematic treatment of methods of handling and feeding gives the work excellent qualities as a text-book. The illustrations furnish adequate additional information about the many manual operations peculiar to sheep-raising. Particular attention is also given to the range-practices in the western states where the industry in this country has made its principal growth since 1860. Finally, the detailed topical index is a very valuable part of the work.

Sheep Farming, by John L. Craig. Rural Science Series. Illustrated, cloth. $2.50 net. The Macmillan Co., New York City.

In the first portion of this up-to-date text-book the different breeds of sheep are treated as to history, type characteristics, and particular merits. All breeds are described and photographs of typical specimens are reproduced. The author devotes another division of the book to flock management and improvement. Feeding schedules are taken up and various systems of pasturage discussed. A chapter deals with the preparation for exhibition, and the technique of prize-winners is revealed with great frankness. A rather comprehensive glossary takes up the diseases of the flock and suggests practical and tried remedies for each, so far as possible. The untechnical vocabulary and the author's evident experience unite to make this a valuable book for the specialized sheep farmer. Thruout the book the excellent illustrations support and clarify the text.

Culture and Agriculture

(Continued from page 173)

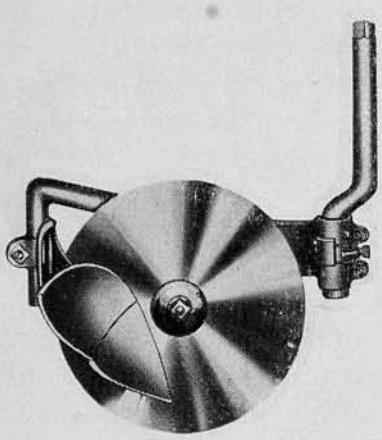
ture? Is it a fact that our acres are becoming so productive under scientific management that we need have no concern for our future food supply? Under the leadership of the colleges are our farmers becoming so efficient that fewer and fewer will need to stay on the farm? If this is so, do we need to train more and more leaders in agriculture to direct these few, or are the colleges of agriculture devoting themselves to the training of leaders for city life?

It seems to be true that the more freely the college student of agriculture is turned loose in the field of specialization, the less frequently does he return to practical agricultural pursuits. It is the admitted aim of some state agricultural colleges, if not the ambition of all, to train their graduates mostly to be "leaders" rather than practical farmers; but it is certain that we must be approaching a condition of equilibrium. The movement of young men from country to city cannot go on indefinitely and yet be necessary to train in the colleges an increasing number of highly specialized agricultural leaders. We shall soon need to cultivate some people on the farms who are willing to be led. Some of these leaders must actually establish themselves on farms and demonstrate their ability to lead and be led by their college training.

If you ask me whether we have been getting too much culture and too little practical agriculture in the colleges, my answer is, we have been getting too little culture out of our practical agriculture on the farms. We have overlooked or disregarded the culture obtainable directly from agriculture. We need more men educated in scientific agriculture who believe in the cultural possibilities of farm life, and who are practically willing to live in the country and demonstrate to their neighbors the practicability of the culture they have received in the college, and thus to elevate the common life of their own community.

(To be concluded in the June issue)

ACTION REVEALS A PLOW'S TRUE MERIT



Oliver tractor plows show up best when at work in the field—turning over the toughest soils, burying the thickest weeds—proving that the right kind of a tractor plow makes tractor plowing a success with any standard make of tractor.

Oliver Chilled Plow Works,
Plowmakers for the World
ROCHESTER, N. Y.

Farm Mortgages Thru Federal Land Bank

(Continued from page 180)

County	No. of Ass'ns	*Sec.-Treas.	Address
Albany	8	A. H. Perkins,	Tel. Bldg., Albany
Allegany	2	E. H. Terry	Ischua
Broome	1	A. S. Barnes,	Binghamton
Cattaraugus	1	E. H. Terry	Ischua
Cayuga	2	H. A. Tellier	North Rose
Chautauqua	3	E. W. Gage	Ashville
Chemung	1	T. W. Vann	Elmira
Chenango	7	W. W. Smith	Chenango
Clinton	4	C. M. Austin	Malone
Columbia	3	R. G. Patrie	Livingston
Cortland	1	R. A. Foley	Cortland
Delaware	1	J. M. Peake	Walton
Dutchess	1	H. Nelson	Poughkeepsie
Franklin	1	C. M. Austin	Malone
Fulton	2	W. F. Rasbach	Herkimer
Genesee	1	H. Booth	Batavia
Greene	4	C. F. Cochrane	Kingston
Herkimer	1	W. F. Rasbach	Herkimer
Jefferson	1	B. A. Field	Watertown
Lewis	1	B. A. Field	Watertown
Madison	2	W. W. Smith	Norwich
Monroe	1	F. E. Wyatt	2040 East Ave., Rochester
Montgomery	2	W. F. Rasbach	Herkimer
Niagara	1	D. M. Ward	Lockport
Oneida	1	C. H. Watters	Rome
Onondaga	1	J. M. Clark	112 Ct. House Syracuse
Ontario	2	C. Rundell	R. F. D., Romulus
Orange	1	R. S. Ackerly	Crystal Run
Orleans	1	F. E. Wyatt	2040 East Ave., Rochester
Oswego	1	F. H. Tullar	Oswego
Otsego	3	Mrs. C. F. Myer	Otsego
Putnam	1	E.E.Perkins	Poughkeepsie
Rensselaer	3	N. Naum	Nassau
Rockland	1	E. V. R. Gardner	116 Spring St., Newton, N. J.
St. Lawrence	4	B. A. Field	Watertown
Saratoga	7	I. W. Abbott	278 Hoosick St., Troy
Schenectady	1	J. H. Veeder	R. F. D. 3, Schenectady
Schoharie	2	A. H. Perkins	Tel. Bldg., Albany
Schuyler	2	T. W. Vann	Elmira
Seneca	1	C. Rundell	Romulus
Steuben	22	R. C. Turnbull	Campbell
Sullivan	3	I. Tiger	Ferndale
Tioga	5	T. W. Vann	Elmira
Tompkins	1	H. C. Baldwin	Ithaca
Ulster	2	C. F. Cochrane	Kingston
Washington	1	I. W. Abbott	278 Hoosick St., Troy
Wayne	2	H. A. Tellier	North Rose
Wyoming	1	H. M. Bowen	Warsaw
Yates	2	G. M. Velie	Watkins

*The secretary-treasurer of only one association operating in each county is given.

"Hothouse" Lambs

(Continued from page 176)

has been profitable for years and, while there is a limited market, there is not likely to be a surplus during the regular "hothouse" lamb season. The lambs from the Cornell University flock topped the New York market four out of five times during the season just closed. The average top was sixteen dollars per lamb, and when it is remembered that this was for lambs weighing thirty-five pounds, pelt on, pluck in, and the back sticks on, the profit to the producer properly situated can be easily appreciated.

The European Corn Borer

(Continued from page 178)

yond control and annually cause a loss of fifty per cent thruout the corn producing areas, the cost of production would be greatly increased and this cost would of necessity be met by the ultimate consumer.

The American people are confronted by a problem which must be solved in the very near future or the insect will have become so generally distributed as to render eradication practically impossible. Extermination of this pest is possible and owing to the large interests involved and the probability of very serious losses occurring if nothing is done, energetic control measures directed toward extermination, are advised. The State of New York has made an initial appropriation of $75,000 for control work. The Secretary of Agriculture in Massachusetts has requested the legislature to appropriate $100,000 for work against this pest and it is expected that the next Congress will make a large appropriation for the same purpose. The Federal Government has appropriated during the last three years nearly $3,000,000 for the control or extermination of two important cotton insects, the cotton bollworm and the pink bollworm. Corn is our most important crop and is surely entitled to a corresponding degree of protection from destructive pests.

The national character of the problem makes it imperative that the infested states and the federal government agree upon a policy which shall result in energetic cooperation. There is no time to be lost, since with each recurring brood of this borer—and there are two each season—there is almost certain to be an increase in the infested territory unless the most rigid precautions are adopted. The occurrence of the pest along the Mohawk flats and the probability of annual floods carrying infested material down stream, is something which cannot be overlooked. These flats must be cleared of the pest speedily or flood waters may do much to nullify control and extermination work. The situation is such as to justify large appropriations, immediately avail-

able, so that control and extermination may be pushed before the insect has had an opportunity to greatly extend its range.

Former Student Notes

(Continued from page 188)

'18, B. S.—I. H. Bernhardt is working in a lumber camp in the Adirondacks near St. Regis Falls.

'18, B. S.—L. G. Brewer is still on the other side. At present he is a first lieutenant, and has seen considerable active flying service.

'18, B. S.—P. Coville is spending several months with the Great Southern Lumber Company at Bogalusa, Louisiana.

'18, B. S.—Mark Owens is out of the service and is now with the Standard Oil Company of New York.

'18, B. S.—L. H. Taft secured his discharge at Camp Pike, Arkansas, and spent a month at Ithaca, preparing for the Civil Service examinations which took place the latter part of March.

'18, B. S.—L. H. Schwarte is still overseas with Company A, 306th Bn., Tank Corps. A recent card announced that he was enjoying a trip thru southern France.

'18, B. S.—Fred Merrill has landed at Hoboken after six months' service overseas.

'18, B. S.—A. C. Shaw has been released from naval service and is spending a few weeks at Central Valley. He plans to return to Cornell at an early date.

'18, B. S.—Joe Lay has returned from the Mexican border, where he has been stationed for the past year. He held the commission of first lieutenant when discharged.

'18, B. S.—Hugh Cosline is married and is principal of the Gouverneur High School.

'18, B. S.—E. G. Botsford is working on a fruit farm near Albany.

'18, B. S.—Gertrude N. Seward has charge of feeding the three hundred employees of the McAlpin Hotel, New York City. Her address is 142 Cleveland Street, Brooklyn.

'18, B. S.—A. Stanley Burchard is a private in the Chemical Warfare Service, assigned to Company F, 2nd Battalian, stationed at Edgewood Arsenal, Maryland. His mail address is Oxford.

'19, Ex.—Elizabeth Simpson is doing extension work for the home economics department in Westchester County.

'19, Ex.—Elizabeth Cook is doing statistical work in Iowa University.

'19, Ex.—Carrie Luce left March 31 to accept a position as student dietitian at Hahnewan Hospital at Rochester.

'19, Ex.—H. G. Chapin is manager of the Schuyler County farm bureau.

'19, Ex.—Sergeant Waldron Hubbard is in service at the Base Hospital at Edgewood, Maryland.

'19, Ex.—A. J. Masterman is testing milk on the farm of Cabanna, the breeder of high test Holstein cows.

'19, B. S.—Miss Caroline Lee has been elected teacher of home making at Dansville.

'19, Ex.—V. T. Wolf is apprentice teacher at the high school in Trumansburg.

'19, B. S.—Elizabeth Steer has received the position of assistant manager of Home Economics Cafeteria.

'19, Ex.—W. W. Jeffrey has returned to the University. He held the rating of lieutenant, junior grade, when given his discharge. Most of his time was spent on the battleship Missouri. He saw six months' service overseas.

'19, Ex.—R. E. Sigsby recently announced his marriage to Miss Ethel Jane Ward of Saratoga Springs.

'19, Ex.—Lieutenant C. W. Comstock has returned to the University.

'20, Ex.—W. W. Simonds has reentered the University. When discharged, Simonds was rated as ensign in Naval Aviation.

'20, Ex.—James Bard is testing milk near Boston, Massachusetts.

The Prevention of Hog Cholera in New York

(Continued from page 182)

trimmings from it find their way into garbage, the garbage is fed to well animals on some other farm, and they, in turn, contract cholera. This danger has proved to be so great that no garbage feeder should neglect to have his herd immunized.

Can a farmer immunize his own hogs? There is no law against it if he chooses to do so, and if he uses serum only, but if he has near him a competent graduate veterinarian he cannot afford to dispense with the services and advice of the specially trained man. General directions which can be given cannot always be made to apply to specific cases. The age of hogs, their condition, whether or not the sows are pregnant, when they are due to farrow, and many other considerations enter into the intelligent handling of a cholera herd. Finally, hog cholera blood (virus) is often required in treating the herd, and the danger connected with its use is so great that there is a State law against its use by others than duly licensed veterinarians, and even these have to obtain special permits. If the prevention of hog cholera consisted simply of injecting the serum, then many farmers would learn to treat their own hogs, but this is not the case. Trained and experienced men are essential to the effective handling of hog cholera.

Should not all swine breeders maintain their herds immune, so as not to be in constant danger of hog cholera? No, they should not. If one has just a few hogs, if his herd is well isolated, if he does not exchange breeding animals or ship in new hogs, and if hog cholera is not in the vicinity, then money spent for serum and veterinary fees is a needless expense. But the man who does not immunize should watch his herd closely and act promptly if hog cholera appears. The men who should maintain

immune herds are those who feed garbage, those who buy in new stock frequently, those whose farms have been infected thru recent outbreaks, and breeders of pure bred stock that have a special market for immune hogs. Men who show hogs at fairs should always have them immunized. Whether they should receive serum alone or serum and virus depends on the time they are to be out, the condition of the herd they represent, facilities for isolation at home, and other considerations.

Hog cholera is preventable; immune hogs can be kept in safety, even among hogs dying of the disease; and city garbage can be fed to immune hogs without danger of hog cholera. This protection of New York's swine industry has been made possible only by the preparation at the State serum laboratory of a plentiful supply of fresh, carefully tested and potent serum, and by constant efforts toward the effective use of this serum on the farms where it is needed.

The Tractor on a Hilly Farm

(Continued from page 183)

will work on any ground that is dry enough to till, altho it likes good footing and is most at home on fairly firm soils.

In our experience, heavy grades are a greater drawback than stones to tractor farming. Hills we cannot change or remove. The best we can do is to plan to climb them by gentle slopes and come down by the steepest, if we wish. Calculation and judgment will help to solve the problem. Working sideways of steep hills is unsatisfactory, dangerous, and hard on the tractor. Stones, if as small as a man's fist or a good sized cobble, are not as much hindrance as might be expected. The heavy gang plow weighing nearly half a ton stays down to its work much better than the light walking plow, and is far less likely to be thrown out by small stones. Of course, large stones are a different matter. So far as time will permit, we try to live up to the rule that a stone hit

San Xavier Mission, Tucson, Arizona
About 400 years old
H. L. WALKER

by the plow is a stone to be removed by digging and if necessary, by dynamite. This is expensive the first time land is plowed, but if a man feels that his farm is a heritage for his children's children he will take pleasure in that sort of toil. Unfortunately, he cannot smooth out the hills in any such way. But even if the stone is not removed, it is perfectly practical to back up, try it again, and finally slide over it, making no worse a balk than is common with horse plowing. Of course, if there are many ledges or big boulders above the surface, the tractor is rather out of the question, but such fields are not really suited for modern farming anyway.

My experience with a tractor is on a farm where conditions are frankly unfavorable; infinitely more difficult than in the great corn-belt country. With us a tractor is a debatable proposition, altho I expect to retain it as a permanent part of our farm equipment. But I have seen enough of it to feel sure that where lands are nearly level, free of stones, and the fields are of good size—ten acres or more—a good tractor is much in advance of the best team that ever lived. The proposition simply does not admit of any debate or argument. We will surely see a marvelous expansion of gasoline—or kerosene—farming on our level lands, and in the immediate future. Under such conditions we may approximate the "horseless farm" but my neighbors and myself will continue to keep nearly our usual number of horses. We will use our machine to help out in those sixty days of the year when by no possibility will we ever have horse power enough.

Finally, the success or failure of the tractor very largely depends on the operator. It requires a better man to run a tractor than it does to steer an automobile. Conditions under which it must work are very much more severe and there are more things to watch. Any measure of success which we may have had I ungrudgingly attribute to my son, who celebrated his sixteenth birth-

day by doing a long day's plowing. He handles the three-lever control with an unconscious ease that I cannot acquire and that I am not likely to hire. It is a matter of temperament, after all. There are men who would rather guide two and a half tons of horse-flesh in the shape of three big Percherons than anything made of steel, and if, by any mistake, such a man should ever dream of a gasoline horse—let him forget it.

The Farm Home

(Continued from page 185)

in the proportion of a tablespoon to one pint of water.

Milk, even at present prices, is the cheapest source of lime which can be used in meals. Too little lime in the diet may mean a low standard of health and efficiency thru its influence on the development of bones and teeth. The human being must have some animal or muscle-building and repairing material if he is to reach the highest state of efficiency. Milk is a much cheaper source of this protein than the more expensive yet less useful meat. Both the beef and the milch cow are fed on the grain the farmer produces. However, to receive the value of this grain the farmer has to kill the beef cow. The milch cow provides a constant supply of protein.

Those in charge of this project to stimulate the use of one and one-half pints of milk by every child and one pint by every adult, aim to put the value of milk as a food and its use in the home before the housewives of the state thru newspaper articles, talks, demonstrations, and exhibits. It is desired that the housewife give this plan a trial of three months. The home demonstration agent or extension specialist will furnish her with a pledge like the one in this article and necessary blanks, milk menus, recipes, bulletins, or other printed matter which will aid her in carrying out her plans. The blanks that will be supplied are for a monthly record

of each child's height and weight, in order that any improvement resulting from a regular use of the stated quantity of milk may be noted. The records, therefore, will show both the housewife and her friends the value of milk as a food when used in sufficient quantity.

Campus Notes

(Continued from page 186)

Wayne, Monroe, Columbia, Genesee, Steuben, and Orange. The following Cornell men have been put in charge of the work: Wayne—C. L. Brown, '18; Monroe—R. G. Palmer, '19; Columbia—E. Rundlet, '19; Genesee—F. R. Perry, '16; Orange—A. J. Brumen. (Mr. Brumen received his degree at Nebraska but did graduate work at Cornell.)

C. G. Vincent has been appointed instructor in the extension work of the department of pomology in place of W. I. McCann, who died last October. The new instructor graduated from the University of Missouri in 1916. He spent a year in Nevada State College and has been in the army since the fall of 1917.

Professor Elmer O. Fippin, of the department of soil technology, has resigned, his resignation to take effect at the end of the present school year. He will become director of the Agricultural Bureau of the Lime Association, with headquarters in the Mather Building, Washington, D. C. Professor Fippin graduated from the College of Agriculture of Ohio State University in 1900. For five years he was assistant in soil survey in the U. S. Department of Agriculture. From 1905 until the present time he has been assistant professor and professor of soil technology in the New York State College of Agriculture. During the past seven years he has been occupied almost entirely with extension work in soils, and has been supervisor of the soil survey of this State. Professor Fippin has become widely known thru his work in soils, and thru a number of books and bulletins which he has written on that subject.

WHAT DO THESE HEAPS MEAN?

THEY are intended to impress upon you how important a thing the digestibility of feed is. They represent the great difference there is in the digestibility of different feeds. They compare the milk-producing ability of a ton of Buffalo Corn Gluten Feed, 1614 digestible pounds to the ton, with that of a ton of feed low in digestibility.

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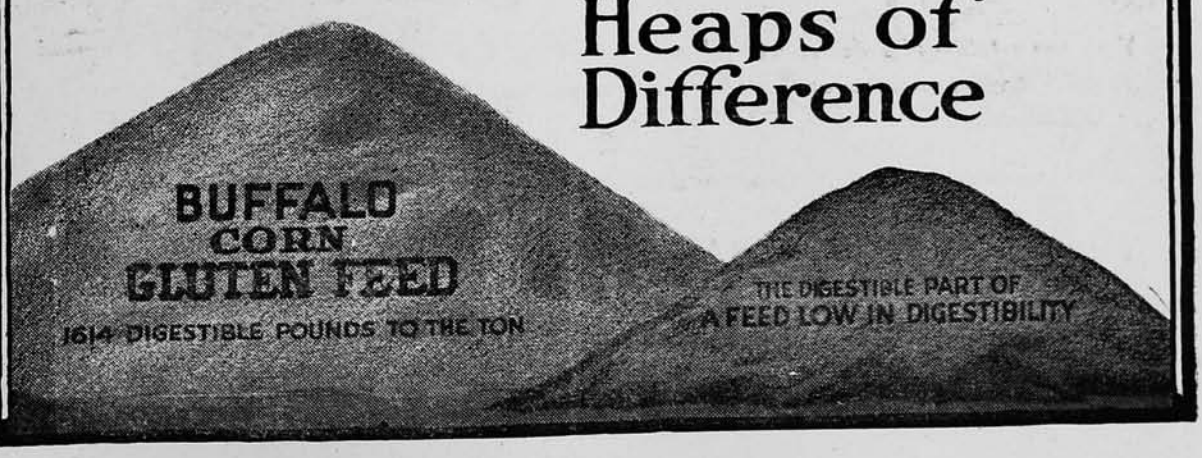

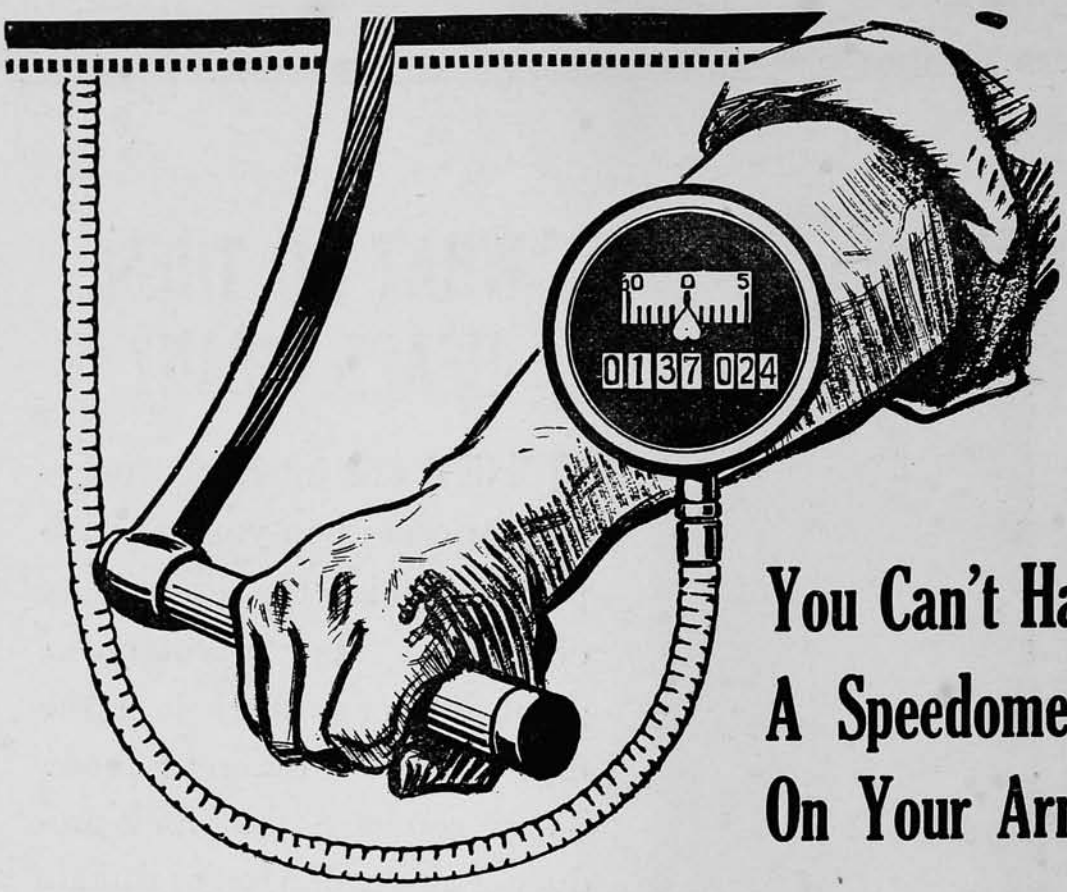

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Even if you could, it would not make you turn at a certain speed every time you used a separator. Own a separator that you do not have to coddle by turning at a fixed speed or by using speedometers and other contraptions. Do the sensible, practical thing and buy a Sharples.

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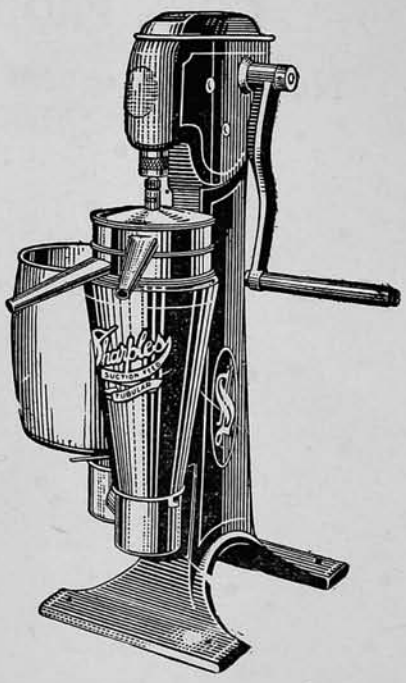

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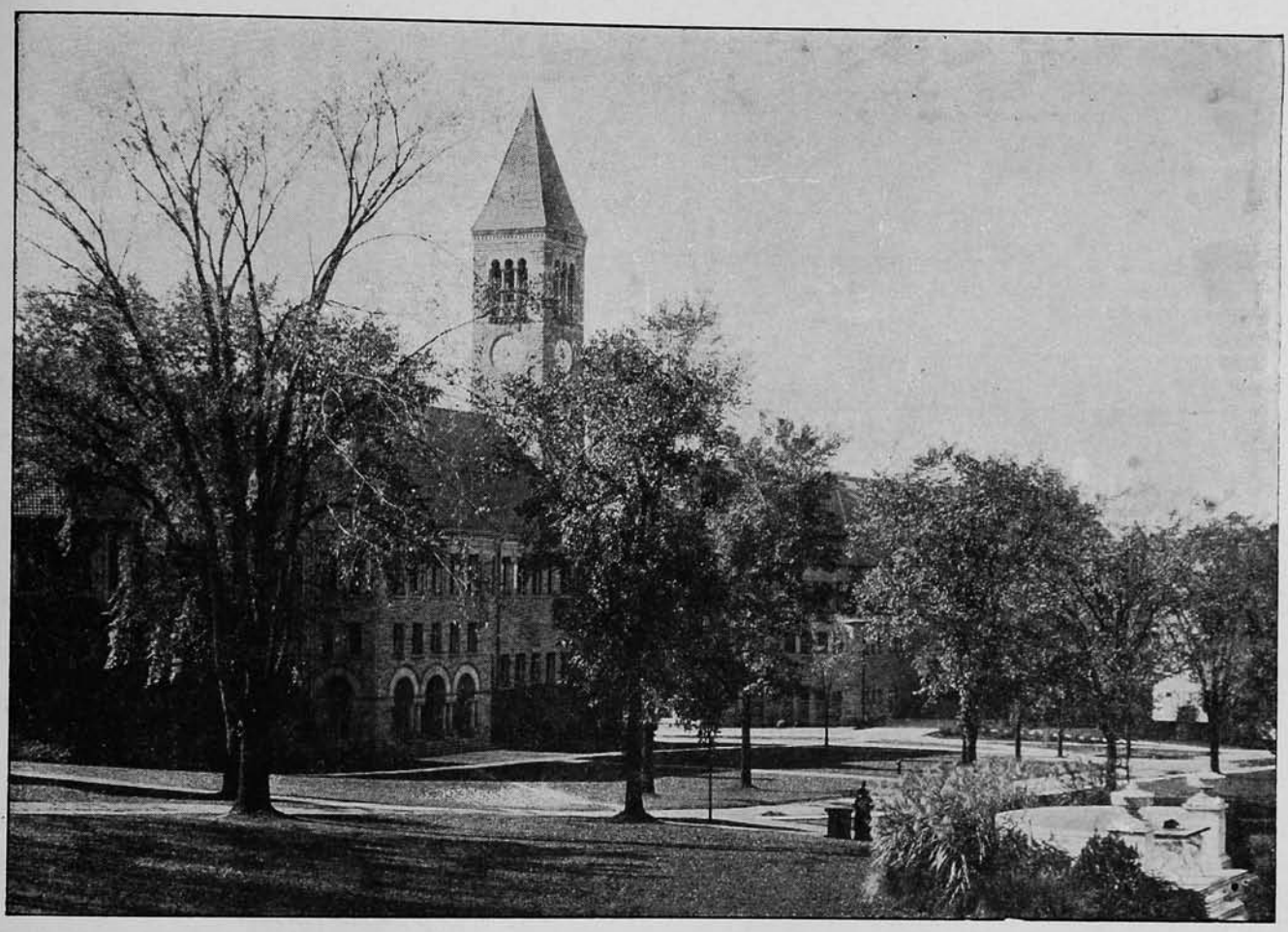
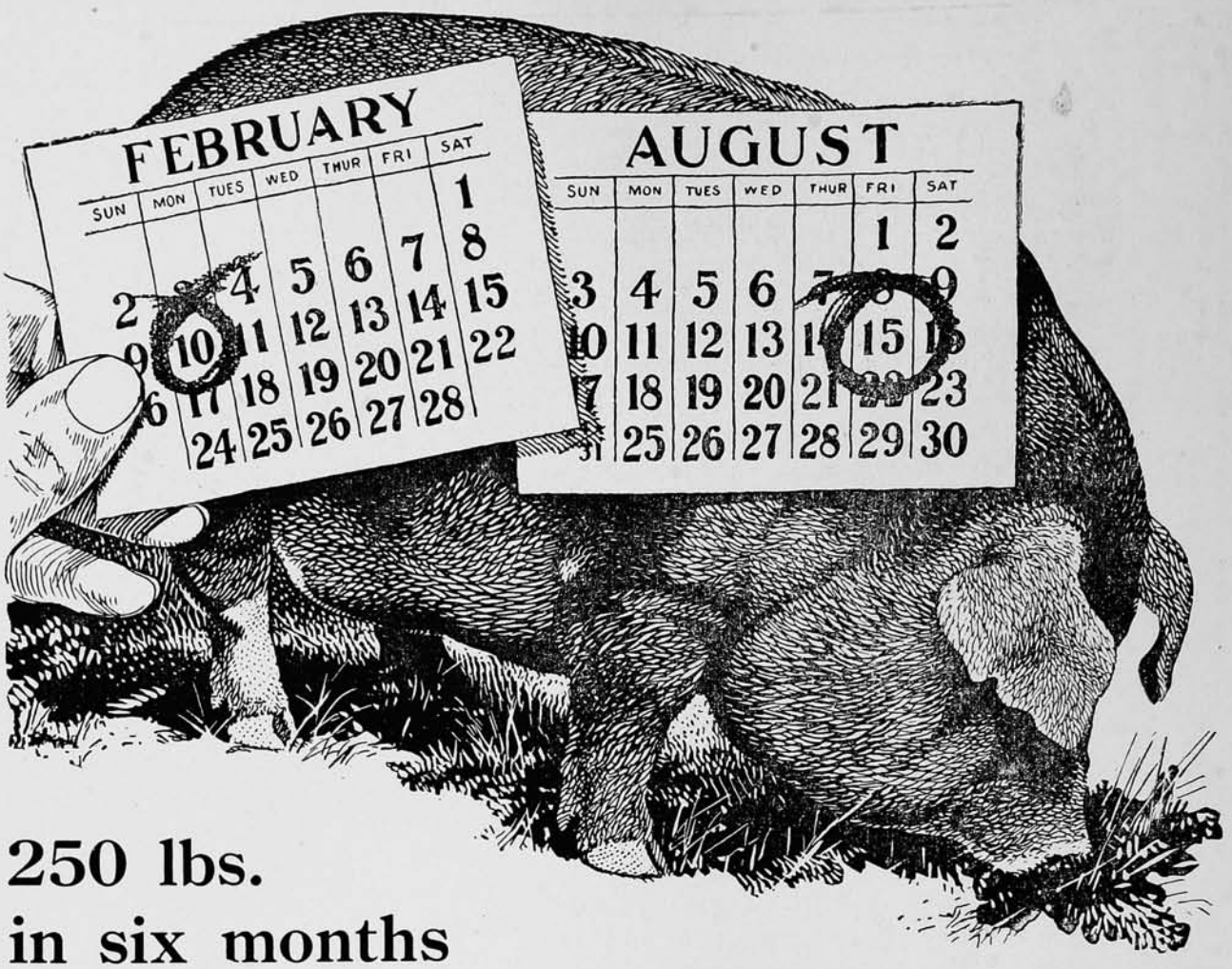
VOL. XVI NO. 5 1919 PRICE 25 CENTS

THE CORNELL COUNTRYMAN



SEMI-CENTENNIAL



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CONTENTS

June, 1919

Entered as second-class mail matter at the Post office, Ithaca, N. Y.

TO COMMEMORATE THE FIFTIETH ANNIVERSARY OF CORNELL UNIVERSITY

On this proud hill time was when all aglow
The golden corn waved high its silken plume
And verdant fields on sunny slope below
Gave to the breeze the clover's soft perfume;
Where peace walked lonely in the long ago
On this proud hill, behold, above thee loom
The noble towers, the stately halls where dwell
The beauty and the glory and the spirit of Cornell!

Full fifty years have spun the crown of gold,
That shines upon these venerable grounds
To-day, and all the loveliness of old
In newer beauty everywhere abounds;
Here, evermore shall Nature's charm enfold
The good gray halls when June again resounds
The harps of Spring in sweet Commencement days
To sing anew fair Cornell's fame and praise!

Once but a vision, fleeting as the song
The thrush sings when the dusk is on the dell,
Had not the master-mind been bold and strong
Perchance the clock-tower like a sentinel
No ringing tones to-day would roll along
The upland hills,—a voice of fair Cornell;
But he, who sleeps beneath the vibrant chime,
Wrought from his dreams an edifice sublime.

To them that toiled, a vision to transform
Into a structure reared for human good,
Whose hearts undaunted braved all stress and storm,
Where noble aim oft was misunderstood,
Give voice of praise, Oh! Cornell men, and warm
To them a grateful, loving brotherhood;
Thanks unto them, the great and manly twain
Who labored long and labored not in vain!

Thanks to all men and women that have spent
Untiring days ennobling thy fair fame,
Oh! peerless school, the bright embellishment
Of work and zeal, of thought and lofty aim
Is thine; thy sons and daughters well have lent
Themselves to good in thy respected name:
Thanks to the builders, let the bells to-day,
Give forth the thanks, each student heart would pay.

Ring, golden bells, in modulated lay
For this half-cycle that we celebrate
Awake the slumbers of the morning gray,
And sound at last when twilight shades are late:
For Alma Mater men are glad to-day
And every voice must ringing jubilate!
A song of praise, then, let the chorus swell
In strains majestic, honoring Cornell!

Cornell, good mother, great and most benign,
Behold thy sons in mighty multitude,
Assemble, in the classic halls of thine
To honor thee with filial gratitude.
We come as pilgrims to a well-loved shrine,
Filled with the spirit of beatitude,
Upon this day when Time has high enscrolled
Thy honored name on tablets of pure gold!

Imperishable in each student soul
The ideals gathered from thy fruitful tree,
Oh! Alma Mater, still an aureole
Beams thru his life the beauty gained of thee
And still the measures of thy music roll
For him with ever-heard sublimity,
His heart is thine by all that most endears:
He greets thee now, rich crowned by fifty years.

WILLIAM PRINDLE ALEXANDER

Ithaca, May, 1919

THE CORNELL COUNTRYMAN

Vol. XVI ITHACA, N. Y., JUNE, 1919 No. 5

"Let Us Look Backward in Order that We May Look Ahead"

By LIBERTY HYDE BAILEY

Courtesy of Alumni News

ON the 9th day of May, 1904, fifteen years ago, Governor Odell signed the bill establishing the New York State College of Agriculture at Cornell University. Thereupon came into existence not only a college of agriculture but a new educational policy in the Empire State.

The thirteen orignal states came into political existence at a time when education was considered to be the function of the church, of societies, and of corporations. State-maintained education for the entire population was of later growth, proceeding from the idea that a democracy must prepare its people for democracy: that the excellence and individual actions of persons are the foundations of democracy. The states organized from the Northwest Territory adopted the plan of Jefferson and others embodied in the Ordinance of 1787, resulting in the establishment of schools and universities as a state system, maintained at public expense. The experience of the West reacted slowly on the East. New York lies between the East and what was then the West; it could well break with the older traditions and adopt the western methods. Cornell University is itself an evidence of this,—a border institution in its beginning, standing for the equality of all educational subjects and not afraid to face the consequences. I remember as a boy in the woods the rumor that somewhere far to the East a new institution was established where any person could find instruction in any study.

Agriculture had come with this new institution, for it was founded on the Land Grant Act establishing colleges of agriculture and mechanic arts in the different states. Yet this act imposed no major obligation on the states. In the West the states came first to the aid of education by means of agriculture, for they had adopted the policy of

education of the higher grade as well as of the lower grade, maintained by the people in taxation. In that region the colleges of agriculture first began to break the bonds and to expand startlingly. This was in the later years of the last century. The issue that never had to be contested in those states was obliged to be drawn in New York; the old order must be broken. Education in agriculture has always been regarded, in this country, as peculiarly a state function. The great masses of the rural people were long inarticulate. They provide the essential basis and bottom of nations. The rural regions have been the seedbed of society. Persons of wealth have not founded institutions for these educational needs.

The so-called agricultural states, from Michigan and Ohio west, began to supplement the proceeds of the Land Grant Act. In comparison, New York fell behind. I well remember the great effect certain figures of comparison had on leaders in this state, when the bare statements of appropriations were presented to them. The history of the movement for state maintenance for agricultural education in New York may not yet be written. Its beginnings were much earlier than the passage of the bill of 1904. But the essential fact is that the people committed themselves to a State policy. The consequences of this policy will be more apparent as time moves on.

It is well to bear in mind that this is a State policy, not a Cornell policy. Cornell is not a beneficiary: it is an agent. It is an agent by virtue of its establishment on the Land Grant Act with definite relations to the State, its maintenance of agricultural education from the first, and by virtue of many subsequent acts of the Legislature. Service to the people is the core of this relationship; this fact colors all the work of the College of Agriculture and explains its motive and much of its excellent spirit.

The Great Reunion is a time for celebration and particularly for consecration. The College of Agriculture is now a fact. Those who knew the situation twenty-five years ago or even ten years ago have realization of what this fact means. Students come and go; their interests in the institutions are mostly temporary. Even when they return in after years it is to renew memories rather than to look into the great future. To them a college is a fact independently of its history. May I hope that the student body of this College will try to know how the College came; then may they know what it means. There is a definite evolution behind the College. Is the evolution complete? The Reunion, I trust, will set all Cornellians looking ahead. A university, a college, cannot live on its past. If there is pride in the past, so should there be more hope in the future.

Among the antique papers in my possession is a lecture I gave January 31, 1893. This was before the State had made any appropriation for agricultural education or the State Department of Agriculture had been established. I am shocked to find that it was more than twenty-five years ago; but this is not the point: with the student body of the present day, compare the figures of that epoch, when agriculture, horticulture, dairy husbandry, and veterinary science were administered together and when I was trying to convince my few hearers that the student body really was large:

Post-graduates	13
Regulars (4 years' course)	22
Specials (2 years' course)	23
Short Course	48
Total Number of Students	106

To make the showing duly impressive, I counted the number of classes in the five subjects and boldly proclaimed that they totaled seventeen!

If you are to have a jubilee, all you need is figures and facts. Begin with that epoch, if you will (say 1892), when the movements were beginning to find shape, before the Veterinary College was founded, and compare that with this. Note the date on the cornerstone.

(Continued on page 242)

The Semi-Centennial Celebration

By ANDREW J. WHINERY '10

Publicity Manager for the Semi-Centennial Committee

THE Semi-Centennial Celebration of Cornell University will be the greatest gathering of Cornellians that has ever assembled. All parts of the United States, England, Japan, Cuba, Mexico, and the Argentine Republic will probably be represented by more than five thousand former students and their guests. Cards have been sent out from the office of the Secretary of the University to every former student of Cornell. These cards have space for changes of address, war-records, and other biographical information, and will be permanently filed in the University records. A complete canvass of the rooming situation in Ithaca has been made, and every returning alumnus may be sure that he and his guests will have comfortable quarters for the period of his stay.

"The Semi-Centennial Celebration will be an occasion not to be missed by any living Cornellian who can possibly come. The development, the tradition, the students, the loyalty, and the aspiration of a half century will be focused in it. Cornellians are promising to return in great numbers. The College of Agriculture looks with anticipation toward welcoming many of its own former students, and advising with them on the problems and progress of the College."

A. R. Mann.

On Friday morning, June 20, the Semi-Centennial Celebration will be officially introduced by a salute of fifty guns to be fired by the artillery unit of the Cornell University Reserve Officers Training Corps. The Great Commemoration Meeting will then be held on Schoelkopf Field, at which Governor Alfred E. Smith, Ex-Justice Charles E. Hughes and Chief Judge Frank H. Hiscock, '75, will be the speakers. At noon President and Mrs. Schurman will hold a reception to the alumni in the new Drill Hall. Following the reception a luncheon will be served. During the afternoon each college, and the departments of physics and chemistry will hold a conference at which its work and problems will be discussed. It is hoped that every alumnus will attend these conferences in order that the University might benefit from his experiences. One of the important aims of the educational institution of the present day is to prepare its graduates for a life of usefulness to the community after they leave college. It is therefore desired to obtain the impressions of our alumni concerning the practical relation between the training which they received in college and their work afterward. In this way the University will receive suggestions which may materially increase its efficiency as a potent factor in American life. On Friday evening the University will give a dinner to its alumni in the new Drill Hall. This dinner is to be restricted to former students, and may properly be considered a Cornell family reunion.

A breakfast conference for the consideration of the education of women will be held early Saturday morning, June 21, in the Home Economics Building. At nine-thirty the Annual Convention of the Associated Alumni will be held in Bailey Hall. Here it is hoped to devise some method to secure a more intimate relationship between the University and its former students. There will be a baseball game with the University of Pennsylvania Saturday afternoon at Percy Field. Golf and tennis may also be enjoyed by alumni who so prefer. In the evening every class will hold a supper in the new Drill Hall. These will be followed by the greatest Cornell smoker that has ever been held. There will be talks by prominent Cor-

(Continued on page 242)

The College and the War

By MONTGOMERY ROBINSON

Assistant Professor, Extension Service, Cornell University

WHILE most departments in the College and University suspended much of their regular work during the war, especially after April, 1917, when students and faculty in large numbers enlisted in the armed forces of the nation, the extension service was called upon for war work at home. The world was hungry and the world looked to America to provide an enormous increase of that most vital sinew of war—food.

The Problem

The part which the American farmer played in the war is a story familiar to all. In many states adjustment of the farm business to a war basis was relatively simple: it meant merely a speeding up. Probably as satisfactory ultimate results would have been obtained had every state continued along normal production lines at increased speed. But certain crops, notably wheat, were in special demand. A diversified agriculture such as maintains in New York was called upon to make somewhat violent readjustments which would affect the production of the farms for a period of several years. There were misunderstandings and misinterpretation of government regulations and requests. There was the labor situation which had been growing difficult for several years and had suddenly become acute. There was a shortage of seed of some staple crops; and many minor problems due to the unusual economic conditions requiring immediate attention.

Mobilization

Inquiries came pouring in from all sides. Farmers looked to the College of Agriculture for leadership. The first step was a reorganization and replacement of extension forces. It seemed especially necessary to establish closer contact with farmers thru the immediate enlargement of the local clearing house machinery. In the spring of 1917, forty-one of the fifty-six agricultural counties had county farm bureau organizations. In these counties it was only necessary to increase the working force, and for this purpose men and women were selected from the senior class for emergency assistants to the farm and home bureau managers. In the fifteen non-bureau counties temporary offices were opened by the New York State Food Commission, cooperating with the College. To get this work started locally, members of the teaching staff at the College were sent into some of these counties. As rapidly as possible these men were withdrawn for other work and replaced by the more proficient seniors originally sent out as assistants in farm bureau counties.

A readjustment of the extension forces at the College was also necessary. There was a great need for more men. Some departments practically gave over their entire force to extension work.

The Census

One of the first jobs undertaken was the agricultural census in the spring of 1917. The department of farm management undertook the final compilation, checking, and interpretation of the county returns representing one hundred and eighty-five thousand farms. It meant fast work nights and Sundays for a few weeks, but the work was done in a surprisingly short time and made available early enough to be extremely useful. The finished report revealed a shortage of seed corn. At once the department of farm crops set about locating, inspecting, and certifying a sufficient quantity of seed corn to meet the needs. Incidentally a farmers' organization got on its feet thru this emergency measure and has established a cooperative service of large value to the farmers of the State.

Answers to Inquiries

Another job requiring immediate at-

tention was to answer the thousands of inquiries concerning revised crop rotations to include wheat; sources of seed supply; questions on cultural methods with beans, potatoes, rye, barley, spring wheat, and other crops which some farmers were growing for the first time; new wheatless rations for farm stock of all kinds; recipes for using wheat substitutes in the human ration; and canning, drying, preserving, and numerous other matters. Mimeographed sheets, post-card circulars, and short bulletins were prepared at once and distributed thru regular mailing lists, and thru the regular and emergency county offices. There were forty forms of these special mailing cards issued which had a total circulation of nearly two million.

One Phase of War Work—Starting a Pig-Club

Increased Emphasis on Approved Practises

In general the work of the extension service was a matter of speeding up; of bringing more pressure to bear along the lines it had been following for several years. War conditions made an especially favorable opportunity for emphasizing certain practices. For example, legume propaganda received tremendous impetus. With bran selling around $40 to $50 a ton and other protein feeds in proportion and in many localities hard to get at any price, the desirability of growing alfalfa, clover, peas, vetch, and other legumes became more evident.

Likewise, higher costs of feed accompanied by a disproportionate rise in price of eggs served to deplete the poultry stock of the state at an alarming rate. The entire staff of the poultry department with outside assistants covered the State in a series of selection demonstration campaigns which saved the farmers of the State a large sum of money and the poultry industry some valuable breeding birds.

Food Conservation

City persons also were called upon to help the food situation. This was mainly done thru conservation — preventing waste and using foods less desirable for the fighting forces. Here the College department of home economics, thru the county home bureaus, played an important role in the demonstration of war breads, the use of sugarless recipes, and the wider use of milk and potatoes. "Victory" menus and recipes were supplied the press until they became as familiar as many of the best known advertisements. So satisfactory was this campaign that a number of recipes growing out of war necessities will doubtless become permanent features of the American kitchen.

The story of home canning to conserve the surplus fruit and vegetables is a familiar one. Suffice it to say here that Cornell women were most active in that campaign also. Two special demonstration cars, making frequent stops along the railroad lines, were operated during the canning seasons of 1917 and 1918 presenting demonstrations of the most approved methods in this art. Many communities in the counties having organized home bureaus were led to cooperate in the purchase of pressure canners, and in several counties community canning kitchens were developed. At one such kitchen sixteen thousand cans of vegetables were put up during one season.

War Gardens and Pig Clubs

The war gardens which sprouted on almost every ash barrel also called for advice and assistance from the College. Our resources were strained to the breaking point to provide leadership in this enterprise. Several faculty members not on the staff of the vegetable gardening division but who had knowledge of the work freely gave their vacations and spare days instructing local leaders in details of garden management, planning, planting, cultivation, and harvesting; and in organizing war garden units. Some persons are apt to be scornful of the city war gardens. It is true that many of them were unprofitable financially, but a large number were quite the reverse. The main dividends from the war garden projects were enthusiasm, patriotism, and a spirit of helpfulness. Closely associated with this work were the pig, calf and sheep clubs, which the department of rural education helped to organize. The estimated value of the products of the junior home project work for 1918 was well over $195,000.

The War on Disease and Insect Enemies

For the most part disease and insect pests were little more prevalent during the growing seasons of 1917 and 1918 than in other years, but it was more important to combat them than ever before. In the more important fruit and potato growing counties, therefore, special agents were placed, who worked under the direct supervision of the departments of plant pathology and entomology. Their duties were to assist the county agents in holding demonstrations in the preparation of fungicides and insecticides and to assist in the repair and handling of spraying machinery. Chemicals needed in spraying were bought thru these agents in wholesale quantities and distributed to farmers at cost.

Extension Meetings

The winter of 1917-18 and last winter saw a modification of extension work to meet war needs. The number of one-day and one-session meetings was largely increased, somewhat at the expense of more thoro-going instruction at extension schools. Many of these meetings, especially during the winter of '17 and '18, were mainly for the purpose of explaining governmental control affecting farmers, straightening out misunderstandings, and giving encouragement and inspiration for still greater effort and sacrifices.

Tractor Schools

The tractor schools were of great interest in the winter meetings. One of the chief ways in which farmers attempted to meet their labor problem was thru the wider use of machinery and larger power units. The State Food

(Continued on page 244)

An Adventure in Education*

By F. W. BECKMAN

Professor of Agricultural Journalism at Iowa State College; now with the Army Educational Commission, A. E. F., France

OVER here in east central France is an American university, with a college of agriculture and ten other colleges as well as a farm school, which is undertaking to do things in education. It might well be termed an adventure in education, because it is blazing a trail thru regions that are uncharted and full of uncertainties. But the great undertaking of the Army Educational Commission is meeting with success and its university and allied work have taken on an activity and extent that are significant.

Secretary of War Baker paid this university a visit recently. Following his inspection, he said in an address to an open air convocation attended by seven thousand students and faculty members, "I have been thrilled by what I have seen. This university is striving to do something never before undertaken in the history of education and it is succeeding. It has set up within the Army a great educational system which is going to send soldiers back to civilian life ready and able to resume the duties of citizenship which are certain to rest upon them. It is providing educational opportunity not merely for those who already have some education, but it is going to make sure also that not a single soldier will go back home without knowing how to read and to write. This program marks another notable event in education and out of it are certain to come new and great developments."

Six weeks ago this university had an existence only as an idea. Today it enrolls six thousand students and has twenty-five hundred more in the farm school located nearby, while the extension activities of the Army Educational Commission extend thruout the A. E. F. in France and Germany and reach literally hundreds of thousands of men in one way or another. Early in March the university was merely a former American hospital center, located near the old town of Beaune, in the famous Cote d'Or vineyard district. It was occupied by a limited number of engineering and labor troops who were taking care of Uncle Sam's property, and the nucleus of the university faculty and administrative staff.

About the middle of March a host of young American soldiers, specially chosen, came sweeping into this camp from all parts of the A. E. F., packs and guns on their backs, gas masks and "tin" hats dangling at their sides. The university wasn't ready for them when they arrived and classes were deferred for a few days while the men put on overalls, took up hammers, saws, shovels, and picks, and helped to make it ready. They changed and repaired old buildings, built new ones, laid concrete floors, repaired streets, and generally "slicked" things up. Today the university, with its class rooms, offices, laboratories, shops, dormitories, mess halls, kitchens, store rooms, and so forth occupies more than three hundred structures of the long low barrack type, most of them of concrete or tile, but the newer ones of the ready made, "quick erection" wooden types devised for army uses. There are no imposing towers or turrets anywhere, but here and there a big hangar from some aviation field looms up, in use now as an auditorium, lecture hall, shop, or the like. More than eight hundred carloads of material and equipment, counting the dinky French and captured German cars in use, with the man-sized American cars imported,

*Professor Beckman, who is in France as a member of the Army Educational Commission, is also faculty advisor of the Agricultural College Magazines, Associated. This story was written for the exclusive use of these publications. —*Editor.*

have been hauled into camp since early in March over the American built railway line that connects with a French main line in Beaune.

The university community includes more than ten thousand persons, including the faculty and administrative staff of one thousand and a considerable number of engineering and labor troops. It is complete in itself and self-sufficient, providing all its own provisions, commissary stores, and university supplies thru Army sources, pumping its own water supply, making its own electricity, operating its own laundry, maintaining its own telephone system. At the farm school, a few kilometers away at Allerey, another former American hospital camp, are more than four thousand additional Americans. The Army has set up these institutions, under the immediate guidance of Colonel Ira L. Reeves. The Army machinery is wonderfully big over here in France. Sometimes it seems somewhat slow in getting in motion, but when it moves it moves with tremendous momentum, whether in the peaceful enterprises of education or in the business of fighting.

Agriculture is truly "on the map" in this educational program in the A. E. F. Back of agriculture is President K. L. Butterfield of Massachusetts Agricultural College, one of the three members of the Army Educational Commission, who has surrounded himself with a capable staff of men from the agricultural colleges of the United States. The agricultural work was early under way; it was desired and has been unusually popular. Each week, tens of thousands of farmer soldiers are in class and lecture rooms and in discussion meetings thruout the A. E. F. There is probably not a single regiment of the hundreds of the A. E. F. in France and Germany in which some sort of educational work in agriculture is not under way—a school, an institute, a short course, a farmers' club, special lectures, or correspondence courses.

In the week ending April 19, some twenty specialists from the agricultural colleges of the United States were out in the A. E. F. giving two and sometimes three institute lectures or short course talks daily. It is likely that their audiences totalled twenty-five thousand for the week. From the Army itself scores of other capable speakers have been drawn for this same kind of work. In one region alone, the Bordeaux region, an aggressive agricultural school officer has an agricultural staff of thirty-five Army men who are busy every day with institutes, clubs, schools, and field trips. That is a region where men are held to await transportation home; a region in which some doubters said conditions were unfavorable for educational work.

In most of the military units reached by these speakers "farmers' clubs" are established. Thru these clubs the farmer soldiers continue their study of farm and rural life questions. Probably five hundred of these clubs have been organized thruout the A. E. F. with an enrollment of fifteen thousand to twenty thousand. Sometimes they have only a dozen members and sometimes as many as one hundred. They meet from one to three times a week for study and discussion of farm topics, to carry on debates, or to hear lectures by experienced men. In one regiment of the First Division more than thirteen hundred were enrolled in such clubs. Even while they were in the great camp at Le Mans, where final preparations for the journey home are made, the men maintained these clubs. So determined were they about making educational use of their spare time that their organizations will be taken on board ship and carried even to the home camps where final demobilization will be awaited. "We expect to stay by this educational program until the last minute," said one of the leaders, "because the men mean business in this matter of learning more about farming."

The farmers' institute idea was first tried out in the Bordeaux area late in January, after representatives of the Army Educational Commission had convinced the authorities that it would work in spite of the fact that this was

(Continued on page 246)

The Farm Tractor and the War

By W. K. BLODGETT

Assistant Professor of Rural Engineering at Cornell University

IMAGINE a huge shed hundreds of feet long, open on one side and housing a fleet of army tanks, with nothing showing but the steel plates of their sides bound around with the two ribbons of track upon which they stand ready to creep against the Hun. They were "over there" by the hundreds and when the attack came they were one of the best means of clearing away the barbed wire and other obstructions put up to stop our men. Some of us who never saw a tank in real action against the Huns might have gotten some idea of their power if we could have seen one of these huge monsters exhibited in Boston during one of the loan campaigns. A big brick building was to be torn down and the tank was sent against the walls. Crash! the bricks fell and the huge monster crawled right over the ruins, emerging from the mass of debris. Crowds watched and were amazed. Illustrated Sunday sections of newspapers printed pictures of this and similar feats. Meanwhile another great army of tanks was performing a tremendous service in defeating the enemy, but not in such a spectacular way.

French Tank-Tractor Hauling a Canal Boat

The American farm tractor, not always housed, we fear, in a fine covered shed; not working in platoons; not the subject of many illustrated Sunday supplements, was nevertheless the means of sending an army across the sea. Working all hours of the day, plowing acre after acre, often disregarding darkness, these "tanks of the farm" sent as many men against the Hun as any other man-power-saving device the war called forth. In 1917 tractor manufacturers increased their output more than one hundred per cent over the previous year. The year 1918 showed an even greater increase. Every machine sold was the means of relieving some man-power for the shipyard and the shop, or the army and navy. At the same time that these one hundred and fifty odd manufacturers of tractors were doubling the number of farm tractors, many of them were devoting part or all of their equipment to special government needs. Farm tractors were made for French and English farms even more depleted of their man-power than we were. Many were sent across and operated upon large tracts, farming on a scale never before attempted in those lands of small farms and ordinarily plentiful hand labor. Again, some manufacturers, more especially those who made the track-laying types of tractors before the war, used all their energies in constructing army tanks. The experience which designers had gained in track construction was utilized in per-

fecting a track which would enable the tanks to climb embankments, cross shell craters, and flatten out obstructions. The severe usage to which the tanks were subjected demanded several changes which will assist in adapting the farm tractor to hillside conditions. For example, the tank motor must operate and lubricate properly even if the machine is tipped at a decided angle for a long time. The earlier motors did not meet this requirement and it became necessary to develop a lubrication system which would stand the most severe test ever likely to be met in tank operation. There is no doubt that in this and many other particulars the tank will contribute to the farm tractor in the immediate future.

While changes in construction were being worked out to make the tank more effective for fighting, emergency conditions produced equally rapid and important improvements in the farm tractor. The demand for great food production and the movement of farm labor to the army and the shops was responsible for the great demand for tractors. Like any other machine, an extended practical field use was necessary to discover the good and bad features. Under normal conditions years of use would have been necessary to establish satisfactory types, but because of the great need for a suitable machine, the attention of farmers and manufacturers alike was focused on the problem. The great popularity of tractor field meetings, tractor operator schools, and tractor articles in farm literature, gave evidence of this fact.

One result of the war has been greater popularity for smaller units than the big eight and twelve plow outfits of eight years ago. The dearth of labor affected the small farm as well as the ranch. Two and three plow machines became more sought after, especially under eastern conditions. While some of these small machines proved successful, other designs went into the discard only to be replaced by more suitable types. In general the four-wheeled machine with two drive wheels behind has tended to persist.

Again as the manufacturing of the tractor in large quantities became necessary, the manufacturer sought to secure quantity production by the same means that the automobile manufacturer had developed. Thus came the change from small plants, where all the parts were made in a crude way by each factory, to the large plants where the tractor was designed, a few parts made, and the rest of the machine bought from specialists and assembled. This practice has resulted in standardizing those parts which were most readily made by special manufacturers, such as motors, magnetos, air cleaners, carburetors, transmissions, and wheels. At the present time there are some manufcturers who make very little of the machine; practically all is bought and assembled.

The types of ignition used in 1912 have almost entirely disappeared and the high-tension magneto has become the standard system of ignition. The fuel problem is not so well settled since there are still many distinctly different types of carburetors used. This is explained by the fact that while the automobile industry was able to contribute at once to tractor ignition problems, it could not assist very much in the fuel problem, since it has been generally agreed that the tractor needs to use cheaper and lower grades of fuel than the automobile. Furthermore, the fuel and carburetion question is still far from satisfactorily settled for the automobile.

The greater production of motors, bearings, and gears resulted in the adoption of many automobile standards. The one and two cylinder motor has been largely displaced by the four cylinder type. Babbit bearings have been replaced by standard steel roller bearings. Heavy cast gears have been discarded for cut gears running in closed transmission cases.

Nearly all of the changes noted have been the result of greater production demanded by the war. The wide use of tractors has enabled manufacturers to discover quickly the weak points in their machines. The farmer who buys a tractor now will have the benefit of these rapid improvements.

War Time Development in the Fertilizer Industry

By O. M. KILE

Soil Improvement Committee of the National Fertilizer Association

SINCE cannon and crops consume many of the same materials, it was only natural that the advent of the world war should involve serious disarrangement of the fertilizer industry.

Former sources of supply, particularly those in foreign lands, were cut off at a moment's notice, prices of other materials were forced out of reach, and even the accustomed means of manufacture and transportation were modified or entirely eliminated. The fertilizer industry was perhaps peculiarly hard hit by the rapidly shifting war-time conditions, but when Mars is the dictator there is no recourse.

We shall not dwell upon the difficulties and troubles which at that time beset the fertilizer manufacturer from every conceivable angle—that is a nightmare we should like to forget. But now that it is over—or nearly over—it becomes apparent that many real and lasting benefits and progressive developments have come out of it all. The fires of war have served as a Bessemer blast to burn out the dross and leave the purer metal. Necessity, ever the mother of Invention, has stimulated the fertilizer industry to search out new materials, new methods, and even new ideals in the conduct of its business.

Developments Along Manufacturing Lines

When the German submarine cut off the pyrites supply from Spain, it became necessary immediately to locate another supply of sulphur-bearing ores from which sulphuric acid, and eventually acid phosphate, could be made. Certain deposits in Virginia, South Carolina, Georgia, and Missouri were opened, and for the first time domestic pyrites were used rather extensively. Many preferred, however, to use pure brimstone from Louisiana and Texas.

Now that special burners for brimstone have been installed, it is quite probable that many acid plants will continue to use this domestic source. It is entirely a matter of cost. If the domestic supply can be provided at a low enough figure, which now seems probable, we shall no doubt henceforth derive our sulphuric acid principally from American sources.

Potash at $500 a ton does not seem a good "buy" for the crop producer, and hundreds of experiments were started to derive potash from the many inert forms in which it exists in this country, principally alunite and feldspar. Other experimenters turned their attention to the recovery of potash from such waste products as the fumes from blast furnaces and cement mills, while a third group started in to evaporate saline lakes of the West. Each of the sources produced some potash, and thru the combined sources the needs of the American farmer were met to a considerable extent. Many of these methods, however, involve too great an expense, and must fall into disuse now that cheaper potash is again available. Such methods as the recovery of potash from factory fumes will, however, be continued, since the cost of production is small after the electrical precipitation apparatus is once installed. Eventually some fifty to seventy-five thousand tons of potash will probably be added from this source to our annual supply.

The salt lakes of Nebraska were the chief reliance for potash for a considerable period of the war. During the latter months of the war, however, the Searles Lake, California, product came into general use, and considerable quantities are now supplied from this source. No doubt a thrifty and economical domestic potash industry can be established

in this country in case it is thought worth while to make America "potash independent."

The production of nitrogen from atmospheric sources received a great impetus during the war. Private plants at Niagara Falls more than doubled in size, and the Government established various plants thruout the eastern half of the United States. Many of these plants were built solely for emergency needs, and were simply designed to produce nitrogen regardless of cost. Most of the Government plants have already been discontinued, and many are being dismantled, since the cost of production where water power is not used is prohibitive.

The high price of ammonia made it profitable for many coke plants to install by-product furnaces, and the production of ammonium sulphate was greatly increased during the war period. Here again the ammonia is a by-product, and when the ovens are once installed and paid for, sulphate of ammonia can be produced at relatively low cost, so that this source of ammonia will probably be a permanent one and will make very material additions to our annual supply of nitrogen for fertilizer use.

Many sulphuric acid plants were established by the Government during the war. All of these, however, have now been closed down and are to be dismantled, it is understood. A number of private plants, constructed purely for munitions making, are also being dismantled, but the total production capacity at the present time is considerably greater than the pre-war capacity. The total production in 1914 was approximately three million, six hundred thousand tons. By November, 1918, the total production capacity had gone up to about nine million, six hundred thousand tons per year, altho actual production was never more than ninety per cent of rated production capacity. Since the signing of the armistice the withdrawal of the Government plants and of private munition plants has brought possible production of sulphuric acid down to about six million three hundred thousand tons per year. Thus it is seen that plants are available for the production of practically any amount of acid that may be needed.

Development Along Merchandising Lines

The necessity for saving burlap brought about the use of two hundred pound bags rather than the one hundred sixty-seven and one hundred twenty-five pound bags formerly used. This means an economy in bagging material. While it is likely that two hundred pound bags will not prove popular in the North, because of the difficulty in handling, at least the standard seems to have been raised from the one hundred twenty-five pound bag to the one hundred sixty-seven pound bag, which means certain economies in bagging material.

Some progress has been made toward lengthening the shipping season by early ordering. In former years fertilizer factories worked at high tension for a few months in the spring and fall, with periods of relative inactivity in between. This is an uneconomical system, and general recognition of the principle involved in early ordering would bring about economy in fertilizer production and distribution.

Perhaps one of the largest developments in the fertilizer industry is the recently announced plan of standardization of analyses. This plan proposes to substitute for the multitude of analyses now found on the market, a few standard analyses which will answer all requirements. In other words, the great number of analyses which differ from the standards by only a fraction of a percent in one or more constituents will eventually be discarded, and in their place the farmer need only consider a few analyses which are recognized as standards for particular uses. All of these standards are high grade in character, that is, none contain less than fourteen percent available plant food. It took considerable courage on the part of the manufacturers to take a step which will eventually do away with many of their analyses which now have a big

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Culture and Agriculture*

By FRANK WILLIAM HOWE

Dean of the Joseph Slocum College of Agriculture at Syracuse University

TOO many young men from the towns and cities are studying agriculture as a profession rather than as an occupation. They intend to be "gentlemen farmers," but do not intend to work much with their own hands. They expect to "make money" on the farm by using their father's city-earned capital, but they do not usually expect to associate with their country neighbors and build up the social and religious life of the neighborhood. So strong seems this tendency of city boys to use their study of agriculture as a means of personal profit rather than community betterment, that colleges of agriculture are coming to be crowded with them. And the inducement of free tuition offered by the state also attracts many others who have no vital, personal interest in farming itself, but merely utilize the college of agriculture as a means of securing a good scientific and social training that can be profitably turned to other occupations.

The state normal schools require prospective students to subscribe to some sort of declaration that they intend to use their training for teaching in the public schools. A similar declaration from every student of agriculture in a tax-supported college of his intention to devote his training to practical agriculture, or to research or teaching in furthering the practice of agriculture, would probably test the elasticity of some consciences. If the requirement of two or three years in a foreign language is intended to discourage such students from rushing into agriculture, I submit that it is a requirement that can be more easily prepared for in the city schools than in the country, that it is more naturally related to the city boy's mind and environment, and that as a deterrent from agricultural study it is much less effective than a requirement of one year's practical experience on the farm would be.

There can be no question that a year's work on the farm would disclose the city boy's fitness to study agriculture much more positively than the ability to read a selected chapter in Caesar. In fact, to insure that the city boy has at least a fair understanding of what agriculture means, and that he has a mental and moral attitude toward it that implies at least some partial return to the state for his free tuition, it would seem a fair requirement that every city boy should have the experience of working for a whole year on a good farm before he presents himself for entrance at a college of agriculture. It seems unfair to the boy himself either to take his money for tuition or to tempt him by free tuition to enter upon a four-year agricultural course without an adequate preliminary conception of what a course in agriculture ought to mean.

The old conception of culture doubtless grew out of the ambitious tendency of the lower orders of society to ape the manners and accomplishments of the higher. In mediaeval times the priest and the monk must know Latin in order to read the Scriptures and officiate in the rites of the church. The peasant boy who aspired to the service of the church looked forward to the mastery of Latin as a vocational requirement; it was to be used in his calling. But to the humbler members of his family his attainment in the use of an unknown tongue became the proof of superior refinement and culture. Likewise the English peasant lad or lass who was fortunate enough to become connected with the retinue of a nobleman must learn French in order to qualify himself for promotion to higher circles of influence. And so with the

(*Continued from May issue)

study of mathematics as a prerequisite for the ancient pursuit of astronomy. In short, all the educational subjects that have attained high esteem for their cultural value were first courted because of their vocational value, as means to the better performance of some social or professional duty. The point I wish to urge here is that Latin still had cultural value for the priest who used it in his service; it did not become cultural by becoming useless. And if this be true, then every useful subject of study may become a means of culture for the actual user, and in a secondary sense it may also become passively cultural for the one who studies it merely for general information without expecting primarily to put it to the test of use. We must agree to this point of view unless we are to admit that culture invariably results from the study of that which is fundamentally useless.

What, then, are the possibilities of culture in relation to agriculture? My conviction is that, regardless of whether a man has studied Latin or German, regardless of whether he now eats peas with a knife or fork, regardless of whether he is the graduate of a college of agriculture or a college of liberal arts, or of none, if he is a real farmer he can unconsciously acquire genuine culture of mind and soul in the routine practice of his daily occupation.

No other occupation compares with modern farming in the opportunity it offers for constant mental progression, if one has the native appetite for progress. If one has it not, or it has not yet been awakened in the soul, then no study of French or music, art or esthetics, mathematics or metaphysics can make him a cultured man or woman. Lincoln found culture in a log cabin with two or three books and his own thoughts.

Wealth and ease of life are not the necessary conditions of culture. It cannot be bought with a price or put on like a garment. Pianos and fox-trots, victrolas and super-sixes, do not bring culture into country homes. It must begin on the inside of the personal and family life and blossom in words and acts that disclose superior character. And no other type of life is more favorable to the development of worthy character than is the work of the farm. The farmer needs only the vision of reality, of seeing the invisible in the visible, to appreciate the essential sacredness of the things with which he deals. He is the chief producer of mankind's daily food, the hand that feeds the world. If the understanding and contemplation of this fact does not bring a sense of the responsibility and dignity of his service, then we have much yet to pray for.

The hope of a wholesome American life lies in the prospect that our farmers may come not only to the full appreciation and discharge of their duty as producers, but also to the realization of the full possibilities of personal culture which farming should afford. The burden of our teaching hitherto and the aim of most government activity in the farmer's behalf has been to show him how to produce more bushels and tons per acre; but he knows now how to produce more than it is commonly profitable for him to produce. He does not wish now to be shown how he can live on twenty-five cents a day so much as to be shown how his income will enable him to live as well as he ought to. He is not satisfied with the mode and scale of living nor with the hours of labor that satisfied his grandfather. He wants more of the joy of living. If he was to be kept contented with the peasant's lot his larger education should never have been started by the state. Education is ever a disturber of the peace that sleeps in serfdom. Instill in man the taste of knowledge and you awaken a troop of energies that will scale the heights of culture.

What has agricultural learning done to quicken these springs of self-development? Possibly not so much as we could wish for the adult and aged members of the farm home, these survivors from the day when agriculture was not taught in the common schools. But what of the farm boy and girl of today?

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Preventative Measures for Some Common Ailments

By LULU GRAVES

Specialist in Nutrition at Cornell University

It is rather a human trait to follow the line of least resistance in our manner of living, and to "take no thought for the morrow" so long as tomorrow's troubles are not in evidence. This is particularly true of our habits of eating; we ignore the consequences until they are upon us in full force. So long as we may have the things to eat we want, when we want them, and all we want of them we are content. And we have reason to be content is this is the whole story.

It may happen, however, that we eat things sometimes which are not good for us, and again it may not be good for us to eat all we want of a desired food. Many so-called "diseases of age" are not diseases which come on when one is old or in middle life, but are the result of overtaxing some part or parts of the system for years until it has worn out under the strain. Improper methods of eating may include over-eating, under-eating, eating at irregular intervals, not thoroly chewing the food, food not properly cooked, and not selecting the right food for the body's need.

Over-eating, eating at irregular times, and not properly chewing the food, affect both the stomach and intestines. In addition to the burden of extra work put upon them, their delicate lining may be irritated or otherwise injured so that the juices they secrete may not perform their part in digesting the food, which then ferments or putrifies. If starchy foods are not finely divided and thoroly mixed with saliva before leaving the mouth the process of their digestion is delayed.

If fermentation takes place, gas or other toxic products are carried to other parts of the body, causing liver trouble, heart trouble, or trouble with whatever organ or organs that are not in a naturally healthy state. Nephritis, "Brights Disease," diabetes, and liver diseases are becoming common among people of forty to fifty years of age. All too often these are directly traceable to injudicious eating or other habits which were formed in youth. May cases of "biliousness," "gas on the stomach," and other common ailments are nothing but constipation, usually brought on by improper eating. There are antitoxins for typhoid, small pox, and many other diseases, but the best antitoxin for the toxic conditions produced by food not properly digested is common sense.

Much is said of preventative medicine and of preventative measures in the treatment of disease. One of the first measures of preventative treatment should be to teach the child to eat the things suited to his needs. It is an injustice to a child to allow him to form the habit of eating only the foods that please him, particularly if he does not include in his choice plenty of milk, eggs, green vegetables, and fruits. Not only is it to one's advantage to form these habits in youth when the body requires these foods for growth and development, but if one learns to eat all forms of wholesome foods when young, he will not find it necessary when he is older to adjust himself to the food he finds different from "what mother used to make."

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ITHACA, N. Y., JUNE, 1919

THIS year is the fifteenth anniversary of the tangible beginning of the New York State College of Agriculture—the signing of the bill authorizing its first State appropriation. As Doctor Bailey says on page 219, the real beginning was much earlier than 1904, but "all within a life-time."

This year also marks a definite period in American agriculture. The rapid advances in agricultural practises necessitated by the war, and the great need for food have widened the field of agriculture immeasurably. Now that the fighting is over, our real work as farmers begins—to use the war-time developments as a basis for further advances in farming.

It seems proper, therefore, to take stock of our resources and war-time developments, that we may proceed intelligently in the period of reconstruction and rejuvenation before us. The discussion of the influence of the war on the various phases of agriculture presented in the articles of this issue will, it is hoped, aid in this inventory of the stock-on-hand in agriculture, and serve as a basis for the greater strides of the coming years.

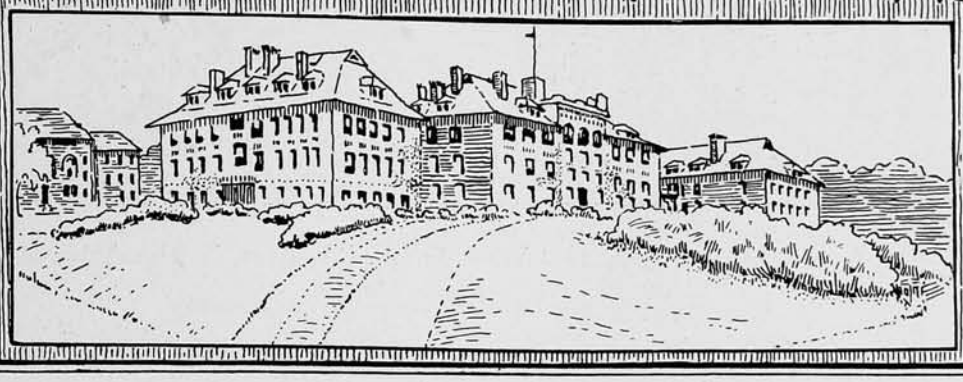
THE COUNTRYMAN announces the election of Hazel M. Andrews, Elizabeth T. Cooper, and L. A. Zehner to the editorial staff, and of A. C. Lechler and W. L. Savage to the business staff.

WE are at the close of the first fifty years of Cornell's history. One great purpose of an inspired genius has found expression in this expression of a democratic University. Cornell has maintained a position of respect, dignity and honor in the world of learning.

It is needless to enumerate the excellencies of our Alma Mater. She has succeeded beyond the expectations, tho not beyond the hope, of the founder. And now let us return, as children to the home, to honor her and to pay tribute to the instruction which means so much in our lives. But, more than that, we come to aid in making her even more effective for carrying out her beneficent program for instruction, extension, and research. We recognize and welcome our opportunity to share the experience of our years, of our losses and gains, our failures and successes in order to add to the heritage of posterity.

We have finished one era of history. Could any time be more fitting for our reunion? The war is over. And the war has taught us the need for readjustment in certain respects. Therefore, let us all gather together this June time—to take note of our position; to garner the rewards of the past; and to prepare for the dawn of a new era of progress. Lest anyone doubt the meaning of the gathering at this time, let us here interpret the significance of this meeting. Cornell, the truest representative of democracy in the academic world, is readjusting and consolidating her forces in preparation for a great future.

CAMPUS NOTES



Entomology Expedition to South America

Professor J. C. Bradley of the department of entomology will leave for South America next September on an entomological expedition. He will be joined in the summer of 1920 by Professor C. R. Crosby and Dr. W. T. M. Forbes, both of the department of entomology. The expedition is under the supervision of the University and its main purposes are to establish closer relations with South American universities and to collect entomological specimens. Professor Bradley will visit Brazil, Argentine, and Chile. In the spring of 1920 he will meet Professor Crosby and Dr. Forbes in Peru. The party will then go up the Amazon river to the city of Peral at its head waters.

Cornell Men Honored

A mass-meeting in honor of the Cornell men who served in the war was held in Bailey Hall Saturday evening, May 3. Dean E. H. Woodruff of the College of Law presided. Professor J. T. Quarles played a medley of the national anthems of the Allies, ending with the Star Spangled Banner. Sergeant-Major Keast, of the 7th Infantry, told of his experiences and showed pictures which he took while making a tour of the devastated regions of France. Sergeant Earl Wingate, another overseas man, spoke on "A Boy's Life in the Front Line Trenches." Mlle. Frances Marni and Gustave Freeman, who gave their services to the Government in the Victory Loan drive, sang several selections, accompanied by Miriam M. Scott and Professor Quarles. Professor Samuel P. Orth spoke on "Cornell's Record in the World War." He said that in every branch of the Service, the college man has stood out prominently. He mentioned that Cornell had sent more than five thousand men, not including those in the S. A. T. C., and that over half of these had received commissions. Professor Orth concluded by reading the names of the Cornell men who had been cited for bravery.

Junior Extension Conference

The first annual conference of county leaders in junior extension work was held at Ithaca May 1, 2, and 3. The purpose of the conference was to get the seventeen county leaders together and to shape the work for the coming year. Committees were appointed to consider and recommend plans for carrying on the various projects most effectively; the members of the conference played games and sang, to demonstrate the best ways to entertain. On the last day O. H. Benson, the federal leader of this work, gave a talk which was followed by suggestions for arranging exhibits at schools and fairs. About twenty district superintendents of schools, and several county agents, home demonstration agents, and high school teachers were present in addition to the county leaders. Professor W. J. Wright, of the department of rural education, is the State leader of junior extension work.

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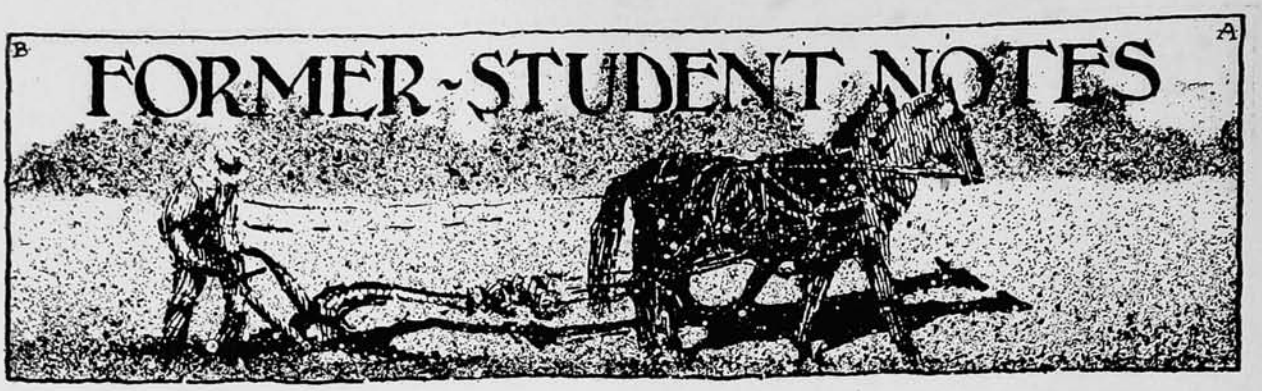


Men of the College Who Won Official Notice in the War

Jesse Milton Buzby, '18, Ambulance Driver, Legion of Honor.
Willard Ingham Emerson, '19, Captain, 311th Inf., Distinguished Service Cross.
Willard D. Hill, '15, Army Aviation, Distinguished Service Cross.
Roger Walcott Hitchcock, '10, Lieutenant, A. S. U. S. R., Distinguished Service Cross.
Marshall Liston Johnson, '15, Lieutenant, 369th Inf., French Cross of War.
James Oramel Peck, '18, Lieutenant in Aviation Service, French Cross of War while in Ambulance Service.
Henri Pierre Pochet, Sp., '04, Lieutenant, French Army, French Cross of War and Military Medal.
Paul Fitch Sanborne, '16, Lieutenant, U. S. R. A. D., Military honors from the Royal Military Academy.
Edward Ilsley Tinkham, '16, Ensign, U. S. N. R. F., French Cross of War while in Ambulance Service and Italian Medal of Valor.
Stanley Howe Sisson, '17, Ensign, U. S. N. R. F., mentioned for distinguished service in action.
Jesse O. Creech, '19, "Ace," Lieutenant in Aviation, British Distinguished Flying Cross, American Distinguished Service with Oak Leaf.
William A. Duckman, '17, Captain, U. S. M. C., cited for bravery.
H. S. Gabriel, '14, Lieutenant in Infantry, cited for bravery.
Francis Gibson Malloch, Lieutenant in Infantry, French Military Cross.
Albert Pendleton Taliaferro, Jr., '20, Ensign, U. S. N. R. F. C., Italian Medal of Valor.
Linus Vere Windnagle, '17, Lieutenant, Army Aviation, Italian Service Ribbon.
Charles Ennis, '19, Lieutenant, 2nd Division Supply Train, decorated with Croix de Guerre while with 4th French Army.
Andrew Alvord Baker, '19, Ensign, U. S. N. R. F. C., Italian Service Ribbon.

00, B. S.; '01, M. A.—Professor G. M. Bentley, state entomologist and pathologist of Tennessee, is secretary-treasurer of the Tennessee State Florists' Society, the Tennessee State Horticultural Society, the Tennessee State Nurserymen's Association, and the Tennessee Beekeepers' Association.

'06, B. S.—Harvey L. Westover has been connected with the Bureau of Plant Industry, United States Department of Agriculture, since 1914.

'06, Sp.—Rolla VanDoren is farming at Three Mile Bay.

'07, W. C.—R. S. Moseley is managing the Sunny Crest Poultry Farm at East Aurora.

'08, B. S.—Roy F. Wilcox is raising Kentia palms and other ornamental plants, for eastern trade, at Montebello, California.

'08, B. S.—Clinton J. Grant has been County Agent in Hampton County, Massachusetts, for the past six years.

'08, B. S.—E. H. Anderson is Superintendent of perishable freight investigation for the New York Central Railroad.

'08, B. S.—Vaughan MacCaughey, formerly professor in the College of

Hawaii, has been appointed superintendent of public instruction for the Territory of Hawaii.

'08, B. S.—George G. Becker has been released from the Navy and has accepted a temporary appointment with the bureau of entomology in the United States Department of Agriculture. He will do extension work on decidous fruit insects in Arkansas.

'09, B. S.—E. H. Thompson, formerly assistant chief in the office of farm management, United States Department of Agriculture, has returned to Delhi, where he will operate two farms.

'09, B. S.—E. W. Mitchell left the University without a cent of capital and today he owns two farms and manages another in the vicinity of Stuyvesant Falls. He is a successful fruit grower and is doing most of his work with three steady men and a tractor.

'09, B. S.—Since graduation Manuel A. Centurion has been making a special study of sugar cane. In January, 1918, he was appointed director of the agricultural experiment station for the Cuba Cane Sugar Corporation at Mercedes, Cuba.

'11, Sp.—J. G. Cochrane has accepted a position as agricultural assistant upon a camphor plantation at Green Cove Springs, Florida.

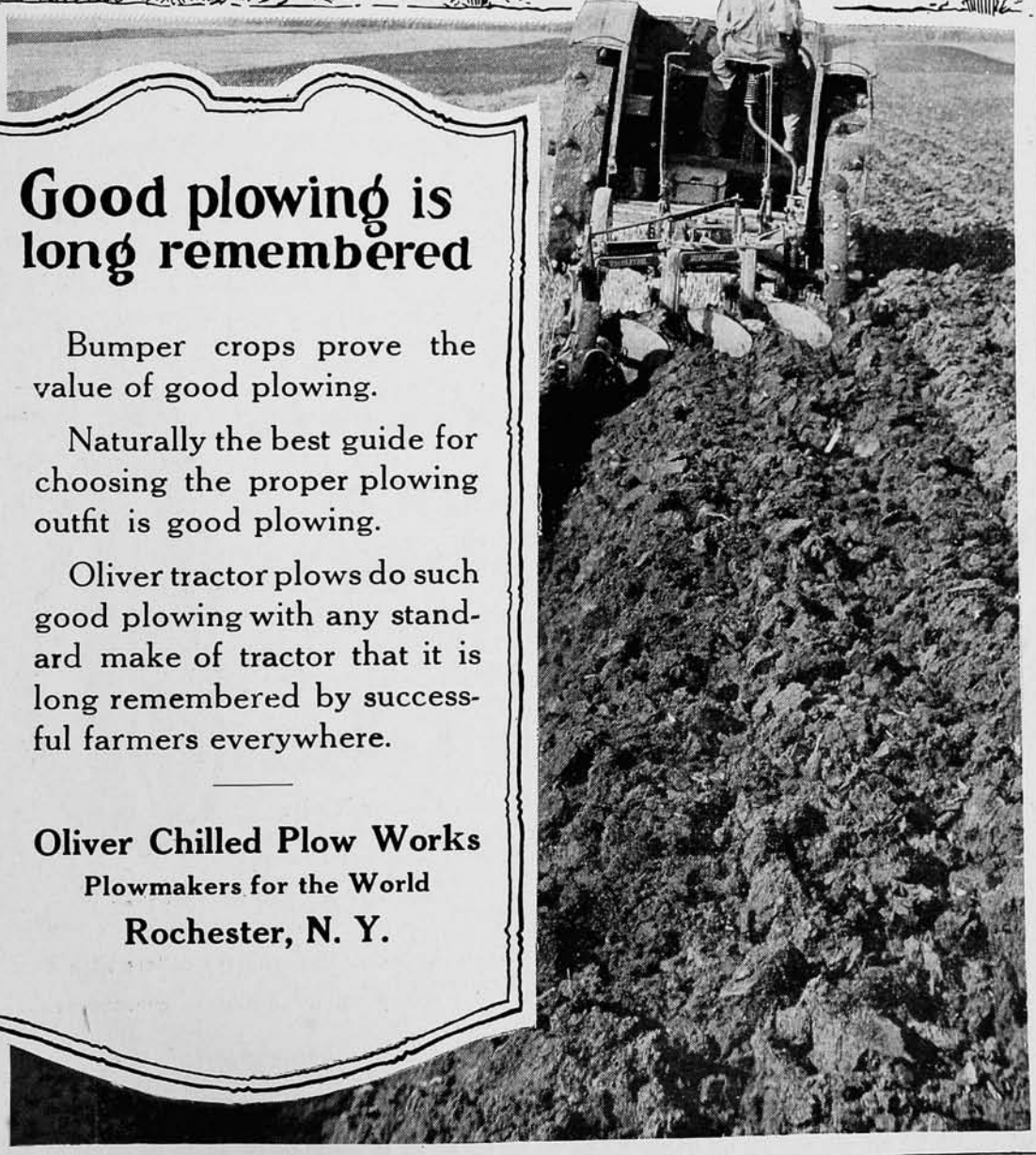
'12, Sp.—Harrison Strait has lately purchased a farm near Oneonta. For the past two or three years he has been working in the U. S. Department of Agriculture.

'12, B. S.—P. R. Guldin is extension instructor at the Pennsylvania State College.

'13, B. S.—Blanche A. Corwin has been teaching agriculture at Northfield, Minnesota. Last summer she had charge of the Woman's Land Army in Illinois.

'13, B. S.—S. C. Bishop, State Zoologist, has been in Ithaca for a month doing special work in the study of spiders, making use of the extensive collection of the College.

'13, B. S.—Arthur P. Williams is now assistant in agricultural education,



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Bumper crops prove the value of good plowing.

Naturally the best guide for choosing the proper plowing outfit is good plowing.

Oliver tractor plows do such good plowing with any standard make of tractor that it is long remembered by successful farmers everywhere.

Oliver Chilled Plow Works
Plowmakers for the World
Rochester, N. Y.

New York Department of Education, Albany.

'13, B. S.—Orford U. Schaeffer has rented his father-in-law's farm at Albion.

'13, B. S.—B. H. Austin was a visitor at the College for several days. He has been in the west representing a tractor company and is now back on his home farm at Phelps.

'13, B. S.—C. W. Whitney, instructor in extension, spent the week of April 28 in various parts of Steuben County conducting community singing, under the auspices of the farm bureau and the home bureau. He is devoting a large part of his time to this work and will go to any part of the State on request.

'13, Sp.—Frank Lathrop, a former editor of the Countryman, and T. E. Milliman, Sp., '12, were in charge of the exhibit on the cost of milk production at the recent milk show in New York City.

'13, W. C.—R. T. Morris has recently been discharged from the service and has returned to the department of poultry husbandry to work as an assistant.

'14, B. S.—Miss Margaret Conner was married to Lieutenant E. D. Vosbury, '14, of the United States Air Service, on April 19 at Washington, D. C.

'14, B. S.—Julius Smith was commissioned Captain, Quartermasters Corps, United States Army, in March, 1919.

'14, B. S.—Leslie Card, who has been with the Agricultural College at Storrs, Connecticut, has lately joined the staff of the department of poultry husbandry, where he is working for his Ph. D. degree.

'14, B. S.—B. W. Shaper has been discharged from the service and is now county agent for San Barnardino County, California. After leaving here he went to Amherst as assistant director of extension; later he resigned for military duty.

'15, B. S.—Paul H. Wing, second lieutenant in the Gas Service, was discharged December 23, 1918. He is now employed by D. H. Burrell & Co., manufacturers of dairy equipment.

'16, B. S.—Louis E. Freudenthal is manager of a one-thousand-acre farm at Las Cruces, New Mexico.

'16, B. S.—Harland L. Smith is teaching agriculture at Livingston Manor.

"Let Us Look Backward in Order that We May Look Ahead"

(Continued from page 220)

Your items may well be these, among many others: trustees; faculty; departments; offices; courses of instruction; students, not forgetting to differentiate the men and women; buildings; greenhouses; equipment (consider the single item of typewriters and stenographers); apparatus (not to mention microscopes; my department had one, but no place in which students could use it); land; grounds; live-stock; orchards; library; work in research; extension work; publications; sentiment of the farming people; organizations within and without; student activities; the leading spirits then and now; the conceptions of agricultural education; the speeches and the theses; and the clothes that students now wear.

It will be difficult for you to discover where the College of Agriculture was in those days. And then you should not forget to go back with Professor Roberts to the beginnings; and Professor Roberts may still tell us the story. It is all within a life-time; all the colleges of agriculture are within a life-time.

The Semi-Centennial Celebration

(Continued from page 221)

nellians, stunts by talented humorists, and entertainment by the Alumni and University Glee Clubs.

On Sunday morning, June 22, the statue of Ezra Cornell will be unveiled. It is situated between Morrill Hall and McGraw Hall and will be a beautiful addition to the quadrangle. In the afternoon the baccalaureate sermon will be preached by Dr. John R. Mott, '88. There will be senior and alumni singing in the quadrangle in the early evening, just at that time of the day when the Ithaca sunsets make Cornell unusually beautiful and attractive. The fifty-first commencement will be held on Monday morning, June 23.

The Semi-Centennial Celebration will be an occasion when Cornellians may

renew old friendships and make new acquaintances, when they may learn of the marvelous development of their Alma Mater, and when the University may profit by the experiences of its alumni. Every former student is not only invited but is strongly urged to be in Ithaca on Friday, June 20.

College and the War

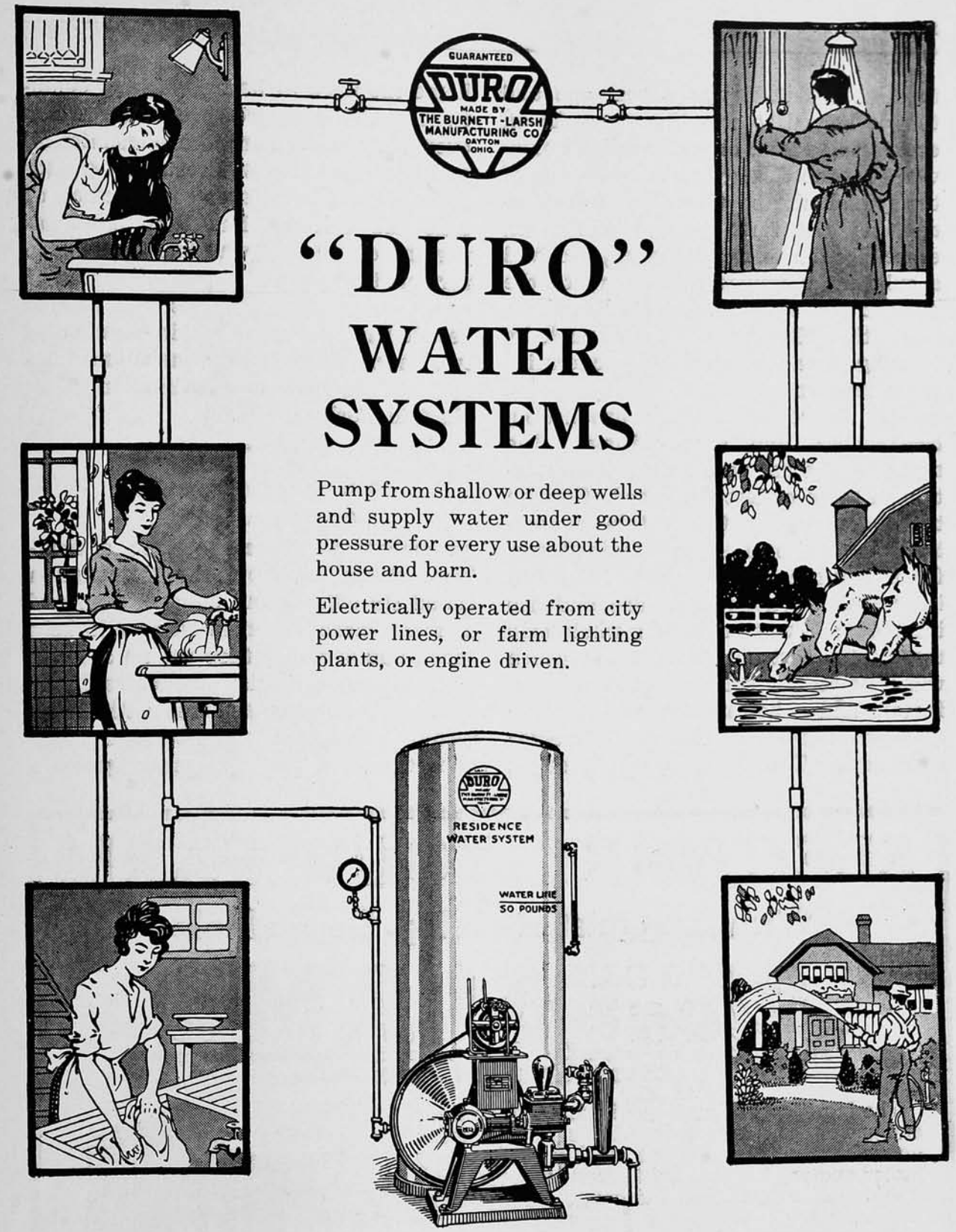
(Continued from page 224)

Commission had made tractors and ditchers available for individual and community work during the growing seasons. It was found, however, that most farmers lacked skill in operating these machines. The tractor schools, in the presentation of which the Food Commission, the tractor manufacturers, and the College cooperated, were very timely. Enrollment averaged nearly sixty persons to a school, most of whom were farmers. In addition, schools of three weeks duration each were held at the College for training tractor and ditcher operators. Not only was the entire teaching staff of the department of farm mechanics enlisted in this sort of war work, but it was necessary to take on three additional men.

It is not possible within the scope of this article to even mention all the ways in which the College helped win the war. Among other activities were the campaign to increase the use of wood as a fuel; the stimulation of honey and maple sugar production; organization for cooperative marketing of many products, notably wool, thru the county sheep producers' associations, and fruit, thru the cooperative packing-houses. Several of these projects form an interesting chapter by themselves and deserve further description.

In Conclusion

The work of those who stayed at home was neither spectacular nor exciting, but it was given in the same spirit of duty and high resolve as inspired others who made greater sacrifices. Members of the extension service like to feel that



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"DURO" Electric Water Systems are automatic, dependable and economical. Modern living conditions demand running water as the first essential in the home—You owe it to the health, welfare and contentment of your family to install a "DURO". Write for full particulars.

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their contribution was a real one and that it helped to win the war. At all events, some more or less tangible worthwhile results close at hand grew out of the special efforts. Growth and development of the farm bureau movement, especially the women's branch, received a substantial impetus which up to the present time does not seem to have been unhealthy. Great progress was made by forming organizations for cooperative marketing and by invigorating certain special interests, as milk production, bee-keeping, and sheep-raising. The spray service has resulted in the formation of more or less organized effort on the part of farmers to maintain cooperatively at full local expense trained men for highly specialized service to special interests. Economic pressure and the income tax have stimulated a wholesome respect for cost account records, which will ultimately result in a study of cost factors and a better realization of the costs of production, leading to greater efficiency. The labor crisis brought home the need of better working conditions. The high pressure under which everybody worked and the economies all practiced probably will result in greater foresight and in greater conservation of time and energy. Last, and most important of all, the war has brought to farmers the spirit of organization and of cooperation. The progress of a normal decade has been made within the span of two years. The farmer has found himself and has come to a realization of his place in world affairs.

Adventure in Education

(Continued from page 226)

an embarkation area. Three agricultural specialists from the Commission found six officers and enlisted men and as many more "Y" men who could help them, and together they set up a series of fourteen three-day institutes in as many different units, three with negro troops. The idea was new and many men came to the first meetings in a

doubtful attitude, but they remained to give close attention to the practical discussions presented. When the formal talks were finished, the speakers gave opportunity for questions and usually they were bombarded from every direction. After every session the speakers were surrounded by men eager to talk about farming "back home" and discuss farm problems more intimately. Somewhat as a bit of army pleasantry, perhaps, a squadron of men from a camp of fliers, mostly city men, was sent over to be filled up with agricultural "dope." Some of them confessed that they came as a relief from military routine. "But," said one of them, "we men who don't know much about agriculture and haven't had much sympathy with it, have had an interesting time and we've gotten a viewpoint that will do us good."

War Time Development in the Fertilizer Industry

(Continued from page 230)

market, and to substitute for them analyses conforming to the standards.

Economies resulting from this system are quite evident. Standard high grade analyses involve savings in manufacturing costs, bagging costs, selling costs, and bookkeeping costs. It will probably take some time to get the consumer in the habit of ordering only the standard analyses, but the final complete adoption of this system should bring about very material economies in fertilizer costs.

The fertilizer industry has come to a realization, also, of the fact that it must deliver not only fertilizers but service as well. In other words, it is to a considerable extent incumbent upon the manufacturer to see that the consumer gets the exact grade and analysis which will enable him to produce the best profit when used under the peculiar conditions of his individual farm. This ideal can, of course, never be fully realized. It can be much more nearly approached than at present, however, and much educational work is now being done within the industry to develop its sales force along these lines.

One of the most significant developments of this nature is the sales managers' conference, to be held at Cornell University, June 9-14, at which one hundred sales managers and associates from the leading fertilizer companies will meet for the purpose of studying the nature and effects of fertilizers, results secured by fertilizers in actual experimental tests, comparisons of different fertilizers on various crops, and a number of related subjects. The Agricultural College has very kindly placed at the disposal of the Soil Improvement Committee of the National Fertilizer Association its lecture rooms and laboratories for the period mentioned, and several of the faculty members will take part in the program.

It is believed that detailed, first-hand study of this kind will equip sales managers to better explain to their salesmen the demands which they will be expected to meet in the way of service, and to bring about a new viewpoint as to the obligations of the fertilizer industry in this direction.

A Better Understanding of Fertilizers and the Fertilizer Industry

The paramount importance of food production and the vital necessity for an adequate supply of plant food under all conditions has been strongly emphasized and brought to the public attention during the war period. More information regarding the organization and functions of the fertilizer industry has come to the public attention, and out of it all has arisen a better understanding of the functions of the fertilizer industry as a national economic asset. The next decade will see a tremendous expansion in the use of commercial fertilizers. The fertilizer industry realizes this, and is doing everything in its power to measure up to the opportunity and to merit the support and cooperation of its collaborators—the American farmers.

Culture and Agriculture

(Continued from page 232)

The study of useful plants, birds, and animals that constitutes an important part of all real farm work, is the most

helpful sort of nature study. Companionship with father and mother as well as with brothers and sisters in doing the work of the farm is a kind of education greatly needed in our day. The city boy and girl often go astray because they are so constantly associated only with those of their own inexperienced age when outside the schoolroom. The child of the farm is about the only one who has a fair chance to develop a normal human life. He learns responsibility for his own share of chores and harder work. He learns the value of money, of work, of time, and of recreation. He learns the meaning of duty that must be done at the right time, and the joy of rest after work. He can sleep nights and enjoy wholesome food and he rarely calls for the doctor. He knows the difference between the size of a rabbit and the size of a cow tho both pictures may occupy equal space in the book. He knows that milk does not originally come out of a bottle. He doesn't have to "keep off the grass." He has a thousand sources of information and delight that come only on occasions to the city boy. All of these conditions tend to develop a breadth of mind and a sturdy resourcefulness that is the best possible preparation for usefulness in later life.

Some city people have worried much over the effect of isolation on the culture of the rural home. It may, in fact, be considered an advantage rather than a disadvantage. It is true that a certain degree of isolation is characteristic of all farms that are large enough to be profitable. For normal social development the farmer's family must therefore be able in a large degree to entertain themselves at home. The man or woman who must always be making or returning calls, or attending "parties" will have to develop a more conservative social habit if he gives needed time, energy, and thought to making his farm business successful. One of the great moral advantages of country life is that it tends to develop

the habit of meditation while at work. A good countryman must be "good company" for himself and his own family. His personality must be of a high type. As Warren puts it, in relation to dairying—"No one can produce clean milk who does not have a clean body and a clean mind." As a matter of social fact, there is often more of real, helpful friendship between farm families who live two or three miles apart than exists between those living on adjacent city lots. A certain degree of seclusion is good for every family that is not dependent on neighbors for inspiration in its own home life.

I have already alluded to the teaching of agriculture in the rural school. We are passing the day when the country school and its teacher drew their inspiration from the activities of urban life. And I hope we are passing the day when the rural church and its pastor drew inspiration chiefly from the same source. The rural school that does not use its natural environment as subject matter and illustration for teaching does not encourage boys and girls to stay on the farm. And the rural church whose pastor never preaches in terms of country life, and whose congregation never interests itself in community betterment, does not perform its full duty to the state which exempts its property from taxation. If the church is merely an exclusive social club, its property should be taxed like that of any other private club. The church particularly, because it is not supported by taxation, can never thrive in an unprosperous farming community. For its own preservation it must recognize the obligation to do its share in promoting the economic welfare of its neighborhood. The rural preacher should know at least enough about farming to interest farmers themselves in the agriculture of the Bible as a means of teaching religious truth. One of the highest possibilities of country life is disclosed in the natural relationship between good preaching

and good farming. This relationship is more than economic, but it grows out of consistent economic views and principles.

If this discussion has wandered far afield, let us now in conclusion, return like the preacher to his text. Culture and agriculture are not opposing terms. We are to believe and learn that agriculture needs no importation of goods from any other realm to provide food for the care and culture of men. As the fields of the earth bring forth all manner of fruits for the sustenance of the physical life, so also does their cultivation afford stimulus and direction to the mental and moral life. For no one can be a successful husbandman who does not follow the law of Nature, which is the law of Good. "The Holy Earth" is the source of thoughts that reach to the Infinite, if we listen to her teaching.

Culture is the product of thoughtfulness, the understanding of facts, the appreciation of truth. If it be said that culture involves the love of poetry, all nature is a poem. If it includes a mastery of science, the farmer must be the broadest scientist. If it calls for statesmanship, farming itself is the foundation of the state. If it demands devotion to the arts, the husbandman is the keenest craftsman of them all. And if it requires creative genius to generate culture, the master of the farm is himself a creator of value, of beauty, of influence, and of new knowledge for the world's instruction.

If the farmer of today is not living up to the cultural possibilities inherent in his calling, it is because he is deaf and blind to spiritual invitations that solicit him to the mastery of forces that have produced the miracles and the wisdom of the ages. For most of us culture must take root in vocation; it cannot be brought from afar. But he who holds the plow may yet look off and look up. His mind may be busy with the conquest of the world. There is no enmity between culture and agriculture.

Campus Notes

(Continued from page 235)

Professor Everett of the extension department, under whose direction the annual Kermis play largely falls, advises that students who contemplate submitting plays next year get them under way during the summer months, profiting thereby in many ways. The Kermis competition is open to all students in the College of Agriculture. A sum of fifty dollars is given to the student whose play is accepted. The theme of the plays must center around some rural interest or activity.

The experiments at Cornell in the use of artificial light as an aid to egg production confirm the results secured last year. These results are to appear in bulletin form in time for use next fall.

Dr. Henius, a chemist from Chicago, exhibited to the dairy department a new test for determining the amount of butter fat in milk. It was introduced in Denmark and has proved successful. The test, in which no centrifuge and sulphuric acid is needed, is made by using an alkali and alcohol.

W. J. Demerie, formerly an assistant in Botany, has returned from overseas and was married to Miss Anna J. Hansen on April 5th. Mr. Demerie is a graduate of Wabash, while his bride graduated in Arts at Cornell.

Professor W. S. Lusk has been appointed a special agent by the Federal Board for Vocational Education. He is to make a study of land in connection with the agricultural schools of the South.

The forty-ninth Woodford Prize Contest for one hundred dollars was won by Walter Measday, Jr., '19, on Friday evening, May 2. Measday spoke on "A New Colonial Policy."

Professor Royal Gilkey, assistant professor of extension at Cornell in charge of the farm reading course, has been elected principal and teacher of agriculture at Greene.

Real Buttermilk with only the water removed

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Several agricultural colleges have analized SEMI-SOLID BUTTERMILK and verify all statements as to its purity and high food value. Semi-Solid Buttermilk is pure creamery buttermilk with nothing added—only the water content is taken away. It is not modified by the addition of sulphuric acid or any preservative. It is especially high in Protein, Butter Fat, and lactic acid. Get the complete analysis from the Kansas City Testing Laboratory, K. C., Mo.

Ames Made This Feeding Test

The Iowa Agricultural College at Ames made this feeding test: they fed two groups of hogs, same number of animals, same litter. Group No. 1 had no buttermilk. Group No. 2 had all they could drink. Here is the record per 100 lbs. of gain in weight:

	Days	Corn	Meat Meal	Wheat Middlings	Weight
No. 1	218	442 lbs.	33 lbs.	31 lbs.	296 lbs.
No. 2	156	148 lbs.	9 lbs.	14 lbs.	299 lbs.
Gain or Saving	62	294 lbs.	24 lbs.	17 lbs.	3 lbs

Buttermilk saved 62 days time.
Buttermilk saved 294 lbs. of corn.
Buttermilk saved 24 lbs. of meat meal.
Buttermilk saved 17 lbs. of wheat middlings.
Buttermilk increased the weight of the hogs while making this saving in grain.

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PARK VIEW FARM

Topeka, Kan., March 19, 1919

Consolidated Products Co.—

Please ship at your earliest convenience 5 barrels of Semi-Solid Buttermilk, via Santa Fe.

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Wishing you a continuance of your splendid business, I am, Yours respectfully

FRED B. CALDWELL

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Semi-Solid Buttermilk

It keeps them healthy as well as getting them to market earlier. Semi-Solid is a safe feed—its thoroughly sterilized and pasteurized—and its own lactic acid keeps it fresh in any climate for any length of time. WE GUARANTEE EVERY BARREL OF IT. Don't accept substitutes for Semi-Solid, or "Modified Buttermilk" which may contain sulphuric acid.

Semi-Solid is put up in 500 lb. barrels equal to 1000 gallons of buttermilk. To save you freight charges we ship from nearest of ten factories.

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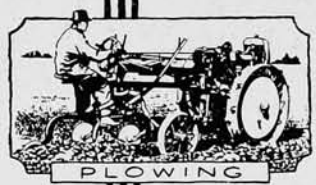
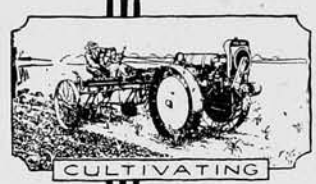
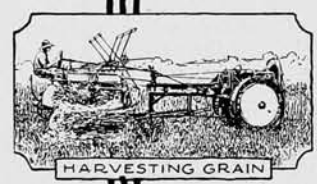


PLOWING



CULTIVATING



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"The Moline-Universal has done for me what two men and twelve horses would have done, at less expense than one man and six horses."
Jesse L. Bonsall, Scotia, Nebr.

"It saved me the price of seven horses. It has created a greater desire for farming."
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"It has accomplished just 100 per cent more than I expected it. As a hill climber there is no equal." O. H. Barkledge, Washington, Mo.

"It has saved me $600 in labor this season." Ira Brinkman, Shades, Ind.

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If space would permit we could fill up this entire paper with letters from satisfied owners of Moline-Universal Tractors. Write for full information and large list of farmers who are making more money with less hard work by farming the Moline way.

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"Moline Service Satisfies"

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And this development commenced with Edison's first lamp—hand-made, when electricity was rare.

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With power lines well distributed over the country, the use of electric lighting extended. Street lighting developed from the flickering arc to the great white way. Electric signs and floodlights made our cities brilliant at night, searchlights turned night into day at sea, and miniature lamps were produced for the miner's headlight and automobile.

While the making of the electrical industry, with its many, many interests, was developing, the General Electric Company's laboratories continued to improve the incandescent lamp, and manufacturing and distributing facilities were provided, so that anyone today can buy a lamp which is three times as efficient as the lamp of a few years ago.

General Electric Company

General Office. Schenectady, N.Y.

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Health Conditions a Big Factor

Gentlemen. "We have found that the value of a dairy ration is not always in milk production alone. The health condition of the herd is a big factor. Our experience in feeding SCHUMACHER and BIG "Q" DAIRY RATION is, that we not only get bigger milk yields, but most gratifying health conditions. Even on short and long time officials tests, our cows stand the strain wonderfully on these feeds. As evidence of our yearly results we have just received word from the Michigan Agricultural College advising that our herd is one of the Ribbon Prize Winners in the State on production for 1918. We also feed SCHUMACHER FEED extensively to hogs, horses and young cattle with splendid results."

WAH-BE-ME-ME FARMS, White Pigeon, Mich.
Breeders of Pure Bred Holsteins, Poland China and Berkshire Hogs.

SCHUMACHER FEED
AND
BIG "Q" DAIRY RATION

Wherever SCHUMACHER FEED and BIG "Q" DAIRY RATION are used you will find a herd that produces to the satisfaction of the owner. Holsteins – Jerseys—Guernseys—cows of every breed, alike testify to the value of these result-producing feeds. 32 of the World's Champion Dairy Cows have made their wonderful records with the aid of these feeds.

Fed in combination they make an ideal ration—one which you can readily regulate as to amount of protein and carbohydrate content to suit the needs of each individual cow. Their palatability, high digestibility, variety and bulk, induce cows to eat heartily and produce heavily. With SCHUMACHER FEED as the maintenance part of the ration and BIG "Q" as the protein part, you have a ration that will give you maximum long time milk production and ideal health conditions in your herd. Could you ask more? A few weeks trial will convince you. Order from your dealer. If he can't supply you, be sure to write us.

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A Lesson in Dairying

SOPHIE'S AGNES was the first Jersey cow to produce 1,000 pounds of butterfat in one year. In doing that she consumed 1,825 pounds of Buffalo Corn Gluten Feed.

The Buffalo Corn Gluten Feed was nearly ⅓ of her total grain ration of 6,205 pounds, and was the *only* high-protein concentrate she received. Her butterfat was worth $314 more than all her grain feed cost.

To study the ration Sophie was fed is to learn much about dairying.

She had her Buffalo Corn Gluten Feed straight through the year, winter and summer.

Ask us for sample, literature, and how dairymen are making money feeding Buffalo Corn Gluten Feed.

CORN PRODUCTS
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Which Separator did John Brown Buy?

SUPPOSE you were Farmer John Brown and you wanted to buy a separator. You asked several separator manufacturers to send you a **ten word** telegram, stating in the most convincing way, why their separator was the one you should buy. Sharples would only need **five** words: "Skims clean at any speed," and you would not have to ask for anything further.

No other separator manufacturer could put into five words or **fifty** words as convincing an argument as "Skims clean at any speed." They would tell you about the durability of their separator, that it was well-known, that it cost less and everything else **but** the **one** big reason why you need a separator—to get **all** the butterfat out of your milk.

SHARPLES
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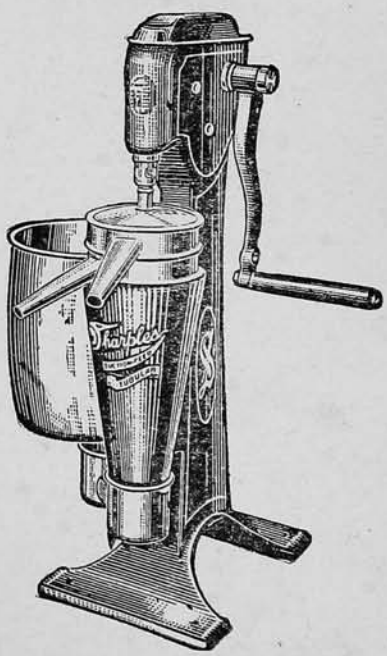

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